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Mindfulness, Health, Well-being, and Patient Care of Oncologists

A dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy at Virginia Commonwealth University.

by

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If we are too busy, if we are carried away every day by our projects, our uncertainty, our craving, how can we have the time to stop and look deeply into the situation-our own situation, the situation of our beloved one, the situation of our family and of our community, and the situation of our nation and of the other nations?

Thich Nhat Hanh (source unknown)

The most precious gift we can offer others is our presence. When mindfulness embraces those we love, they will bloom like flowers.

Thich Nhat Hanh (source unknown)

One of our ulterior motives is to transform the way medicine is practiced. We don't have a health care system; we have a disease care system. We are trying to influence doctors and medical students in the direction of mindfulness: mindful practice of medicine, mindful communication with people who are hurting, mindful encounter with the patient as a whole person. It's almost axiomatic that people have to cultivate awareness in their own lives, in their own bodies, if they are going to be able to develop empathy and compassion for the people they see.

Jon Kabat-Zinn (1991)

Messenger

My work is loving the world.

*Here the sunflowers, there the hummingbird —
equal seekers of sweetness.*

Here the quickening yeast; there the blue plums.

Here the clam deep in the speckled sand.

Are my boots old? Is my coat torn?

Am I no longer young, and still not half-perfect? Let me

*keep my mind on what matters,
which is my work,*

*which is mostly standing still and learning to be
astonished.*

The phoebe, the delphinium.

The sheep in the pasture, and the pasture.

Which is mostly rejoicing, since all ingredients are here,

*which is gratitude, to be given a mind and a heart
and these body-clothes,*

*a mouth with which to give shouts of joy
to the moth and the wren, to the sleepy dug-up clam,
telling them all, over and over, how it is
that we live forever.*

Mary Oliver (2006)

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Abstract

MINDFULNESS, HEALTH, WELL-BEING, AND PATIENT CARE OF ONCOLOGISTS

By Amanda C. Kracen, M.S.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2009.

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Demands on physicians in the workplace are growing, as are the occupational and psychosocial stressors they encounter. However, there is scant research regarding physicians, their patient care, and strategies that enhance their well-being. Mindfulness, the ability to be present in the moment, is increasingly being encouraged among healthcare workers for personal benefits and possible positive effects for patients. Thus, the present study examined (a) the health, well-being, and patient care practices of oncologists, (b) the relationship between oncologists' mindfulness and health indicators (general health and sleep problems) with three outcomes (satisfaction with life [SWL], job satisfaction, and suboptimal patient care), and (c) whether mindfulness moderated the relationship between health and outcome variables. Survey data were collected from oncologists who were members of the American Society of Clinical Oncologists ($N = 114$, response rate of 29%). Participants were predominantly male (76%), Caucasian (78%), and married (84%), and featured a mean age of 52 years and an average work week of 58 hours. Half (51%) reported sleeping 6 or fewer hours per night and the mean sleep duration was 6.3 hours. Thirty-five percent reported not getting adequate sleep and 57%

believed that lack of sleep interfered with daily functioning. They reported very good general health, high levels of trait mindfulness, and satisfaction with their lives and jobs. They reported engaging in occasional suboptimal patient care practices and attitudes. About 20% endorsed some degree of burnout, but only 12% were considering changing jobs in the next 5 years.

Hierarchical multiple regressions indicated that general health predicted greater SWL, greater job satisfaction, and less suboptimal patient care, whereas mindfulness predicted greater SWL and less suboptimal patient care beyond the variance accounted for by general health. Sleep problems predicted less SWL, whereas mindfulness predicted less suboptimal patient care, beyond the variance accounted for by sleep problems. Finally, mindfulness moderated the relationship between oncologists' sleep problems and suboptimal patient care; as sleep problems increased for oncologists with low mindfulness, they reported that their patient care actually improved. Possible explanations for findings are presented and implications for oncologists' health, well-being and patient care are discussed.

Chapter I: Introduction

The World Health Organization (WHO) defines health as “a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity” (2001, p. 16). This definition is characteristic of a slow shift that is occurring in Western medicine and society – from focusing on disease to exploring how individuals, workplaces and communities can flourish. In particular, recognizing the hazards faced on the job, the physical and mental well-being of healthcare workers is a concern of the WHO and the Centers for Disease Control (World Health Organization, n.d.; Centers for Disease Control, n.d.). Both organizations have identified healthcare workers as a selected priority group that benefit from health promotion and intervention. Unfortunately, much of the research about physician health to date has been about pathology and stress among physicians, and there has been much less research about well-being and prevention strategies (Weiner, Swain, & Gottlieb, 1998; Weiner, Swain, Wolf, & Gottlieb, 2001). In an effort to contribute to the academic literature and affect actual medical practice, this study examined the health and well-being of oncologists and explored whether mindfulness is associated with positive outcomes for physicians and their patient care.

Research demonstrates that mindfulness promotes health and well-being (Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2004). Mindfulness, often cultivated through meditation, is being engaged and present in the current moment. It requires self-reflection and awareness, particularly of internal processes such as thoughts, feelings, and sensations. A concept familiar to Buddhists and others for centuries, there has been an increase in mindfulness teaching and research in Western cultures in the last few decades. A number of clinical interventions involving mindfulness training have been developed with the express purpose of

enhancing practitioners' health and well-being (Hayes, Strosahl, & Wilson, 1999; Kabat-Zinn, 1982; Linehan, 1993; Seagal, Williams, & Teasdale, 2002; Witkiewitz, Marlatt, & Walker, 2005).

Mindfulness may be particularly beneficial for healthcare students and professionals (Epstein, 1999; Shapiro, Schwartz, & Bonner, 1998). Trainees and physicians report struggling with workplace stressors, especially the changing landscape of medicine, demanding administrative requirements, and legal concerns (Arnetz, 2001; Grunfeld et al., 2005; Spickard, Gabbe, & Christensen, 2002). Many of these aspects are beyond their personal control. In contrast, being mindful and feeling centered is possible. Thus, practicing mindfulness may be a way to help buffer physicians from the internal and external stressors they experience. Ronald Epstein, a physician and the Director of the Rochester Center to Improve Communication in Health Care, suggested that his peers, and also their patients, will fare better by “just being” and practicing mindfully (2001). He eloquently wrote about his experience of finding what allows him to flourish – playing music and practicing meditation. He wisely acknowledged that, whereas meditation may not suit everyone, there are many ways to cultivate mindfulness and self-awareness. For example, physicians, and others, can be engaged and reflective while exercising, gardening, journaling, or being in nature. The route to mindfulness is not as important as the experience of it.

Oncology as a field deserves attention to the health and well-being of its physicians. In addition to the general stressors that affect physicians, oncologists cope with unique occupational tasks that, while also rewarding, may further tax their personal and emotional resources (Grunfeld et al., 2005; Lyckholm, 2001; Shanafelt, 2005; Sherman, Edwards, Simonton, & Hehta, 2006). For instance, they frequently invest in long-term relationships with patients,

deliver distressing news, cope with depressed patients, manage patients' pain, handle end of life care, navigate family needs, witness the death of significant numbers of patients, and balance their personal and professional lives (Armstrong, Lederberg, & Holland, 2004; Shanafelt, 2005). Early career oncologists may be especially vulnerable to stressors; in a study of new oncology fellows ($N = 272$) 50% of those surveyed reported moderate to significant concern regarding the stress of practice (Association of American Medical Colleges' Center for Workforce Studies [AAMC], 2006). The AAMC (2006) also found that higher job stress and lower job satisfaction are associated with early retirement or change in career among oncologists. This situation is worrying as the AAMC already expects a major shortage of oncologists. Specifically, the AAMC (2006) reported that the demand for oncology services will increase 48% by 2020, while the supply of oncologists is forecasted to grow by only 20% in the same period. The AAMC considers the shortage to be an "acute" situation that will affect healthcare in the United States. The evidence of stress and insufficient occupational growth provide further impetus for this study of the health and well-being of current practicing oncologists. Mindfulness, as a form of health promotion, may be a way to improve oncologists' ability to cope with unavoidable stressors, improve health and well-being, and even enhance their patient care.

Therefore, research into physician health and possible health-promoting interventions is needed for two compelling reasons. First, physical and mental health benefits individual oncologists, as well as the people in their lives, such as family and co-workers. Second, oncologists' well-being also enhances service provision because it facilitates better physician-patient relationships and prevents negative consequences for patient care (Epstein, 1999; Firth-Cozens, 2001; Grunfeld et al., 2005; Shanafelt, Bradley, Wipf, & Back, 2002). Thus, the current study examined (1) the health, well-being, and patient care of oncologists; (2) the relationship

between mindfulness and health with satisfaction with life, job satisfaction, and suboptimal patient care; (3) whether mindfulness moderates the relationship between health indicators and satisfaction with life, job satisfaction, and suboptimal patient care. Specifically, mindfulness was expected to magnify the relationship between general health and satisfaction with life and job satisfaction, while buffering the relationship between general health and suboptimal patient care. Additionally, mindfulness was expected to buffer the relationship between sleep problems and satisfaction with life, job satisfaction, and suboptimal patient care. Finally, mindfulness was expected to buffer the relationship between hazardous drinking and satisfaction with life, job satisfaction, and suboptimal patient care.

Chapter II: Literature Review

This chapter provides an overview of research about mindfulness and physician health and well-being. It commences with a review of what mindfulness is, how it is conceptualized, its association with meditation, and possible mechanisms of action. A discussion of mindfulness interventions follows. The chapter continues with an examination of the research concerning physicians' physical health, satisfaction with life, occupational concerns, and patient care practices. It concludes with a justification for the current research, the aims of the study, and the study's hypotheses.

Definitions and Conceptualizations of Mindfulness

Trying to define mindfulness is a challenging task due to its nuanced nature (Brown, Ryan, & Creswell, 2007). Five definitions developed by leaders in the field are presented in Table 1. All definitions involve an individual paying attention to and being aware of the present moment. The varied definitions have commonalities, but emphasize different aspects of the process and the outcome of mindfulness. The first four are similar in that they are derived from the Buddhist tradition and typically involve meditation, whereas Langer and her colleagues (Carson & Langer, 2004; Langer & Moldoveanu, 2000) offer a concept of mindfulness that is less influenced by Buddhism and not reliant on meditation.

Table 1

Definitions of Mindfulness

Author(s)	Definition
Nhat Hanh (1975, p. 11)	Mindfulness is “keeping one’s consciousness alive to the present reality.”
Kabat-Zinn (1994, p. 4)	“Mindfulness means paying attention in a particular way: on purpose, in the present moment, and nonjudgementally.”
Brown & Ryan (2003, p. 822)	Mindfulness is “a state of being attentive to and aware of what is taking place in the present.”
Bishop et al. (2004, p. 234)	Mindfulness is “a process of regulating attention in order to bring a quality of nonelaborative awareness to current experience and a quality of relating to one’s experience within an orientation of curiosity, experiential openness, and acceptance.”
Carson & Langer (2004, p. 173)	“Mindfulness is a flexible state of mind that results from drawing novel distinctions about the situation and environment.”

As mentioned there are nuanced differences among the definitions, which reflect the different ways mindfulness is conceptualized. A Buddhist monk, Nhat Hanh’s (1975) definition is the most general and refers to the actual practice of living consciously in the present moment. Kabat-Zinn (1994) conceptualizes mindfulness as the cognitive practice of living consciously, yet he also proposes that its practice incorporates affective qualities, such as gentleness and appreciation. He believes that every person has qualities and abilities to cultivate mindfulness, and doing so leads to “greater awareness, clarity, and acceptance of present-moment reality” (p.

4). Kabat-Zinn (1990) suggests that increased mindfulness transforms and enhances peoples' ability to live, solve problems, cope with stress, and heal.

Brown and Ryan (2003) also posit that mindfulness is a cognitive process in which individuals perceive, but do not evaluate, in-the-moment experiences or events. When mindful, people are "openly experiencing what is there" (Brown & Ryan, 2003, p. 843). They pay attention to themselves and their behavior, as well as the larger environmental context. Brown and Ryan (2003) conceptualize mindfulness as a self-regulatory function that can be cultivated with practice and contribute to well-being. They clarify that mindfulness is not about creating well-being or more positive states of mind, but just being aware of one's current personal experience.

Bishop et al. (2004), a group of 11 leaders who study and practice mindfulness, met with the express intention of drafting an operational definition of mindfulness and conceptualized it in a slightly different manner. Once again, they argue that it is a mental process of attention and awareness. They consider mindfulness to be more like a state than a trait, and they suggest that, with practice, it can be cultivated (Bishop et al., 2004). They propose a two-component model of mindfulness. The first component is the self-regulation of attention, allowing one's self to focus on the immediate moment and be aware of mental processes. The second component is the adoption of an orientation to the current moment, thereby allowing one's self to be curious, open, and accepting. They write that mindfulness can be thought of as "a clinical approach to foster an alternative method for responding to one's stress and emotional distress," which can help people to "abandon dysfunctional change agendas and adopt more adaptive strategies" (Bishop et al., 2004).

There is widespread recognition that Langer's conceptualization of mindfulness differs from previous definitions, especially because it does not involve meditative practices. Like the leaders in the field, she agrees that mindfulness involves cognitive process, but argues that it can simply be defined as, "the process of drawing novel distinctions (Langer & Moldoveanu, 2000, p. 1). She sees mindfulness as active cognitive processing that happens in the moment and allows individuals to find distinctions and solutions. Langer's concept of mindfulness is derived from her research on mindful versus mindless behavior. Carson and Langer (2004) explain that mindlessness is "a state of rigidity in which we adhere to a single perspective and act like automatons" (p. 174). Thus, mindless thinking relies on rules, routines and categories. In contrast, she posits that being mindful helps individuals process information in context in an active, flexible manner, allowing them "to recategorize and revalue events as they unfold" (Carson & Langer, 2004, p. 174).

In comparing and contrasting their construct of mindfulness to Langer's, Bishop et al. (2004) highlight that both involve attentional engagement by the individual. However, they argue that a defining difference is the individual's focus. In Langer's conceptualization, an individual draws novel distinctions when paying attention to external situations. Conversely, Bishop et al.'s (2004) and the other definitions of meditative mindfulness stress the importance of the individual paying attention mainly to internal stimuli (e.g., thoughts, feelings, sensations).

As can be seen, there are numerous ways to conceptualize mindfulness and the distinctions are often subtle. Langer's conceptualization differs the most from the others put forth by the researchers and practitioners discussed here. While recognizing the importance of Langer's conceptualization, the current study focused on the type of mindfulness that incorporates self-reflection and awareness, particularly of internal stimuli. This decision was

made because this researcher is interested in interventions that increase physicians' self-awareness for their own benefit and to enhance their physician-patient relationships.

Theoretical Underpinnings of Mindfulness

There is a surprising lack of theoretical explanations for mindfulness in the research literature, possibly because it tends to be understood as an experience and process for those who practice it. In rare discussions of theory, Brown and Ryan (2003) and Brown et al. (2007) present mindfulness within the context of Self-Determination Theory (SDT; Deci & Ryan, 2000). SDT is a theory of motivation that emphasizes humans' innate psychological needs for competence, relatedness, and autonomy. SDT posits that, when these needs are met, individuals are more likely to experience psychological growth, integrity, and well-being. According to SDT, being open and aware can help us select behaviors that are consistent with our needs, values, and interests. Thus, Brown and Ryan (2003) suggest that mindfulness can facilitate awareness and the ability to self-regulate, particularly in satisfying the psychological needs for competence, relatedness, and autonomy. Being mindful helps individuals attend to their needs and pursue behavior that fulfills them.

Mindfulness and Meditation

As noted, most conceptualizations of mindfulness highlight the importance of being aware of internal processes, such as thoughts, feelings, and sensations. Meditation is an experience that allows individuals to sharpen and train their attention and awareness, especially of these internal processes. Kabat-Zinn (1994, p. 3) suggests that, "Meditation helps us wake up from this sleep of automaticity and unconsciousness, thereby making it possible for us to live our lives with access to the full spectrum of our conscious and unconscious possibilities." Therefore, mindfulness can be cultivated through formal meditation. In fact, two recent studies

demonstrated this. Shapiro, Oman, Thoresen, Plante, and Flinders (2008) found that training college students in meditation led to increased levels of mindfulness. Similarly, Carmody and Baer (2008) established that the length of time participants ($N = 174$) engaged in the home practice of formal meditation activities was significantly associated with the degree to which their levels of mindfulness were enhanced.

In particular, mindfulness meditation has its origin in Theravada Buddhism, where it is referred to as insight meditation (vipassana). A keystone of mindfulness meditation is observing personal experience without attempting to change it. The intention behind such awareness is that it allows an individual to attend to his or her self and the environment, bringing forth insight and peace of mind (Jain et al., 2007). Unlike other types of meditation, mindfulness meditation trains individuals to be flexible in their thinking while focusing on awareness in the moment, as opposed to restricting thought, such as through the use of a mantra (Kabat-Zinn et al., 1992). Mindfulness meditation encourages detached observation so that an individual is attentive and aware, but is not evaluating his or her experience.

People who are learning to be more mindful are encouraged to develop a nonjudgemental, in-the-moment awareness during both formal meditation practice and daily living (Kabat-Zinn, 1990). It is important to note that mindfulness does not only exist during meditation, but also can be practiced during activities of daily living. Kabat-Zinn (1990) refers to this as informal meditation practice. Thus, one can make a bed, drive a car, and wash dishes in a mindful manner. The intent is to live in an integrated way, being mindful during formal meditation practice as well as during each moment of life.

It is important to recognize that meditation is not the only route to cultivating mindfulness. Shapiro, Carlson, Astin, and Freedman (2006) suggest that one's ability to be

mindful is a developmental process across the lifespan. As individuals grow older, their ability to shift perspective (what Shapiro et al. [2006] term “reperceive”) increases naturally. In turn, they become more capable of experiencing their own internal and external experiences. Shapiro et al. (2006) therefore believe that mindfulness practice accelerates the naturally-occurring shift. Similarly, Bishop et al. (2004) propose that mindfulness can be evoked through other methods and is not limited to meditation. They suggest that individuals can learn skills to experience mindfulness and speculate that some types of effective psychotherapy may be another route to gain insight and foster attention and awareness.

Mechanisms of Mindfulness

Although research into mindfulness has flourished over the last 30 years in the Western world and many benefits have been observed, there is a paucity of research about the mechanisms of mindfulness. There is great uncertainty about how mindfulness actually works and currently only a few hypotheses have been offered in the research literature. Baer (2003), in a review of clinical interventions using mindfulness, identifies several possible mechanisms that may bring about symptom reduction and behavior change: (1) exposure, (2) cognitive change, (3) self-management, (4) relaxation, and (5) acceptance.

Shapiro et al. (2006) posit other mechanisms. They propose a model of mindfulness that is constructed from three essential components or axioms: intention (I), attitude (A), and attention (A). The axioms combine to create a cyclical, simultaneous process, where mindfulness is the in-the-moment process. Shapiro et al. (2006, p. 377) suggest that “intentionally (I) attending (A) with openness and non-judgmentalness (A) leads to a significant shift in perspective.” They have called this shift in perspective “reperceiving” and describe it as having the ability to be in the moment, yet disengage and observe personal experiences with an

increased clarity. This group of researchers argues that reperiencing is the main mechanism of mindfulness, yet it also leads to four additional mechanisms: (1) self-regulation and self-management, (2) emotional, cognitive and behavioral flexibility, (3) values clarification, and (4) exposure.

A laboratory-based study of 60 undergraduates explored focused breathing as a possible mechanism of mindfulness (Arch & Craske, 2006). The findings lend support to the importance of the breath in meditation for focused breathing was associated with decreased negative affect and emotional volatility, as well as greater willingness to be open to negative stimuli.

Recent research by Jain et al. (2007), which explored mindfulness meditation versus relaxation training in a randomized controlled trial ($N = 83$), indicates another potential mechanism of mindfulness. The researchers suggest that mindfulness meditation's ability to decrease rumination and distraction is a unique mechanism that perhaps helps reduce psychological distress. Similarly, Shapiro et al. (2008) found that, after training college students in two different meditation practices, mindful attention and awareness significantly increased. Additionally, mindfulness served as a mediator between the treatment (the meditation practice) and the decreased outcomes of stress and rumination.

Finally, a study by Coffey and Hartman (2008) examined the relationship between mindfulness and psychological distress in a study of undergraduates ($N = 446$), specifically testing three possible mechanisms: emotion regulation, nonattachment, and rumination. As hypothesized, the authors identified a negative relationship between mindfulness and psychological distress. The relationship was mediated by each of the proposed mechanisms. Increased mindfulness was associated with an increased ability to manage negative emotions, increased nonattachment, and decreased rumination.

Benefits and Effectiveness of Mindfulness Interventions

Whereas mindfulness has been a familiar concept to Buddhists and others for centuries, there has been an increase in mindfulness teaching and research in Western cultures over the last 3 decades. The rise in popularity is surely related to the empirical results demonstrating the plethora of benefits that result from mindfulness. For instance, Brown and Ryan (2003) reported that scores of mindfulness in college students and a general adult sample were strongly inversely related to anxiety, depression, negative affect, and physical symptoms and positively correlated with self-esteem, optimism, positive affect, life satisfaction, self-actualization, and competence.

A number of clinical interventions involving mindfulness training have been developed with the express purpose of enhancing practitioners' health and well-being. One of the first interventions created was Mindfulness-Based Stress Reduction (MBSR), which was originally developed by Kabat-Zinn and colleagues (Kabat-Zinn, 1982; Kabat-Zinn et al., 1992). The original MBSR intervention took place over 8 to 10 weeks and was developed for people suffering from chronic pain and other stress-related disorders. Standard MBSR interventions now tend to be 8 weeks and include a full-day intensive mindfulness retreat. Participants meet weekly as a group for instruction and practice of mindfulness meditation skills, as well as a discussion of homework and related issues. Mindfulness skills are taught through activities such as meditation, body scans, and yoga. Participants are also requested to practice these activities 45 minutes per day, 6 days per week. Since its development in the late 1970s, MBSR has been used with many types of community and patient groups around the world. Positive outcomes are documented in the research literature, and include improvements in chronic pain (Kabat-Zinn, Lipworth, & Burney, 1985), anxiety (Kabat-Zinn et al., 1992), health-related quality of life (Reibel, Greeson, Brainard, & Rosenzweig, 2001), quality of life (Carlson, Speca, Patel, &

Goodey, 2003), sleep (Carlson & Garland, 2005), stress (Shapiro, Astin, Bishop, & Cordova, 2005), mood (Jain et al., 2007), and psychological functioning and medical symptoms (Carmody & Baer, 2008).

Mindfulness-Based Cognitive Therapy (MBCT) blends cognitive therapy and components of MBSR, resulting in an 8-week manualized group intervention to treat depression and prevent relapse of depressive episodes (Seagal et al., 2002). MBCT seeks to raise participants' awareness of their unwanted thoughts, feelings, and bodily sensations, and help them learn to respond in an intentional, compassionate manner. Recent research supports the effectiveness of the treatment for patients with an extensive history of major depression (Ma & Teasdale, 2004).

Two studies have been published that review the effectiveness of MBSR and MBCT interventions. Grossman et al. (2004) conducted a meta-analysis of 20 studies of MBSR interventions. The studies examined the effects of MBSR on patients coping with pain, cancer, heart disease, depression, and anxiety, as well as stressed non-clinical samples. Results suggest that MBSR is a useful intervention and yields medium strength effect sizes. When comparing pre-post results, among the controlled studies, the effect size for mental health and physical health were 0.54 (10 studies, $n = 771$) and 0.53 (5 studies, $n = 203$). Similar results were seen among the observational studies. The effect sizes for mental health and physical health were 0.50 (18 studies, $n = 894$) and 0.42 (9 studies, $n = 566$), respectively. Baer (2003) also used meta-analytic procedures to examine 21 research studies that explored the effectiveness of MBSR and MBCT interventions. The interventions utilized five types of participant populations: chronic pain patients, people with Axis I disorders (anxiety, eating, and major depressive disorders), patients with medical problems (fibromyalgia, psoriasis, cancer), other

populations (therapy patients and medical students), and non-clinical samples. The overall mean effect size at post-treatment was 0.59. Similar to Grossman et al.'s (2004) findings, Baer's (2003) provided support that mindfulness-based interventions can be used to treat mental and physical disorders.

Other Prominent Interventions that Incorporate Mindfulness

Dialectical Behavior Therapy (DBT) was developed by Linehan (1993) to treat borderline personality disorder (BPD). Strategies for managing BPD are taught in weekly group sessions over the course of 1 year. Mindfulness skills are often referred to as the “core” of DBT treatment (Harned, Banawan, & Lynch, 2006). The skills are used to promote the integration of clients – they are encouraged to accept their life circumstances, while also seeking change to improve their lives. The emphasis on mindfulness meditation in DBT varies by individual; the amount and frequency of meditation practice is determined based on the needs of the client. There is robust evidence of DBT's efficacy with patients (Robins & Chapman, 2004), and DBT has become the standard of care for BPD in the United States.

Acceptance and Commitment Therapy (ACT; Hayes et al., 1999) is another therapy style that integrates principles of mindfulness. ACT is based in behavior analysis and uses mindfulness skills, along with behavior change strategies, to increase clients' psychological flexibility. Clients are encouraged to acknowledge and accept their emotions, thoughts and bodily sensations, but learn to separate themselves from the experience and pursue action that is consistent with their goals. Hayes (2005) reported that ACT has successfully helped clients who are struggling with depression, anxiety, stress, substance abuse, and psychosis.

Relapse prevention (RP) is a cognitive behavioral treatment created to prevent relapse among individuals with substance abuse problems (Marlatt & Gordon, 1985). Marlatt and

colleagues argue for the inclusion of mindfulness skills to help patients accept the present moment, because inherent in the disease of addiction is a forward-focus on the next “high” (Witkiewitz et al., 2005). Thus, mindfulness skills are incorporated to help clients learn how to manage emotions, thoughts and behaviors, particularly cravings. Marlatt currently has funding from the National Institutes of Health to develop Mindfulness Based Relapse Prevention (MBRP), a manualized treatment for alcohol and drug abuse treatment (Addictive Behaviors Research Center, n.d.). MBRP incorporates cognitive therapy techniques with an emphasis on mindfulness skills.

Mindfulness among Healthcare Students and Professionals

There is a growing recognition that mindfulness may be particularly useful for healthcare students and professionals who work in environments that often feature long hours, heavy workloads, and stressful clinical situations (Irving, Dobkin, & Park, 2009). Epstein (1999, p. 833), a physician who is a major proponent of incorporating mindfulness in medical education and practice, defined a mindful clinician as one who “attends, in a nonjudgemental way, to his or her own physical and mental processes during ordinary everyday tasks to act with clarity and insight.” He argued that mindful practitioners are more able to “listen attentively to patients’ distress, recognize their own errors, refine their technical skills, make evidence-based decisions, and clarify their values so that they can act with compassion, technical competence, presence, and insight” (Epstein, 1999, p.833). He also suggested that physicians can prevent errors by developing better emotional self-regulation and self-regulation of attention (Borrell-Carrio & Epstein, 2004). Finally, Epstein (1999) writes that mindfulness is central to good patient care and helps unite patient-centered and evidence-based medicine in our current medical climate (Epstein, 1999).

Taking heed of Epstein's recommendations and the literature on physician health and well-being, a few mindfulness interventions have been developed and assessed. Preliminary research shows that training in mindfulness seems to be effective with healthcare students and professionals. In a small study by Shapiro et al. (2005), an 8-week MBSR intervention was offered to health care professionals (physicians, nurses, psychologists, physical therapists, etc.). Findings indicated that participants in the intervention group ($n = 10$), when compared to participants in the wait-list control condition ($n = 18$), experienced significantly decreased perceived stress and increased self-compassion. Additionally, participants in the intervention reported increased satisfaction with life, decreased burnout, and decreased distress.

Similar positive results were found in earlier research with medical and premedical students. Shapiro et al. (1998) found that medical and premedical students, after taking an 8-week course in stress reduction and relaxation that was modeled after MBSR, experienced positive outcomes. The students reported less anxiety and psychological distress, including depression. They also endorsed higher scores of empathy and spirituality. Shapiro et al. (1998) suggested that the intervention, besides having personal benefits, may also enhance students' abilities to be empathic and present with patients, which could, in turn, improve the important physician-patient relationship.

Rosenweig, Reibel, Greeson, Brainard, and Hojat (2003) also found an MBSR intervention to have a positive outcome. They compared the moods of medical students enrolled in an MBSR intervention seminar ($n = 140$) with their peers who were taking a didactic seminar ($n = 162$). At the completion of the seminars, the students who learned MBSR endorsed items that indicated psychological distress that was significantly lower than their peers. These findings

suggest that MBSR may be a useful and effective intervention to reduce stress and symptomatology among medical students.

The most recent relevant research is a study of 70 primary care physicians in Rochester, New York (Krasner et al., 2009). The researchers examined whether a 52-hour, 12-month intervention that involved mindfulness, communication, and self-awareness components had positive outcomes. Results suggest that participants experienced beneficial, sustained changes in their measures of mindfulness, burnout, empathy and other indicators of well-being. Drawing on their findings, the authors argue that randomized trials of mindfulness interventions are warranted for physicians, especially as a way for physicians to enjoy enhanced well-being and function more effectively in the workplace. These conclusions are consistent with the developing belief that cultivating mindfulness among healthcare workers can have personal and professional benefits for the individuals, their workplaces, and their patients.

Physician Health and Well-being

Being a physician is challenging and involves juggling many competing demands. Research suggests that, as a result of changes in health care delivery such as increasing regulations, managed care, and less time with patients, physicians today are dealing with an increasing number of psychosocial stressors, in addition to traditional occupational stressors (Arnetz, 2001). Therefore, while some physicians prioritize caring for their patients, they may neglect to care for themselves. Although many individual physicians are relatively healthy and happy, as a professional group, physicians struggle with job dissatisfaction, burnout, depression, anxiety, substance abuse, divorce, and disrupted relationships (Shanafelt, Sloan, & Habermann, 2003). There is some concern that being a physician can have negative effects on physical and

emotional health. For these reasons, more research needs to be conducted about physician health and well-being; the current study examined these important issues.

Oncologists

Oncologists are physicians who diagnose and treat cancers. To become an oncologist, an individual must complete medical school and a residency in internal medicine. Advanced training in medical, surgical, or radiation oncology is then required. Oncologists must be board certified by the American Board of Internal Medicine. A recent report by the AAMC's Center for Workforce Studies (2006) provides a great deal of data about oncologists in the United States. For instance, as of 2005, there were 13,398 active oncologists in the country, and 24% were women. One third (32%) of oncologists practiced in academic settings, whereas nearly 60% worked in private practice. Nearly all oncologists worked full-time (92%) although 40% reported being interested in working part-time. Oncologists averaged 54 hours of work per week. When analyzing the weekly patient visits of medical oncologists and hematologists/oncologists who were between the ages of 45 and 64, the gross number varied by work setting and gender. In academic settings, men averaged 64 patient visits ($SD = 4.7$) and women 56 ($SD = 6.3$), whereas in private practice, men had 103 patient visits ($SD = 2.3$) and women had 91 ($SD = 4.7$).

Each medical specialty presents unique issues for the health and well-being of physicians in that subfield. Oncology, as a career choice, can be fulfilling and satisfying for many physicians (Shanafelt, 2005). At the same time, it presents many challenges for oncologists. Lyckholm (2001, p. 750) argued that oncology is "inherently difficult and racked by emotional and psychological traumas." Shanafelt, Adjei and Meyskens (2003) suggested that oncologists may be drawn to the specialty because they are sensitive to the struggles of their patients. Once

on the job, they may be at a higher risk of negative symptoms because of the specific nature of their work. They often develop close, long term relationships with patients, and many of these patients have terminal illnesses and will die under their physicians' care (Grunfeld et al., 2005; Shanafelt et al., 2003). Additionally, research has demonstrated that longer relationships between physicians and patients are associated with stronger emotional reactions to patient death, particularly grief (Redinbaugh, et al., 2003). Oncologists must continually negotiate closeness in their relationships with patients – not getting too attached but not becoming detached – for both can affect patient care and personal well-being (Wolpin, Chabner, Lynch & Penson, 2005).

Spurred on by their passion and concern, oncologists frequently invest a great deal of time and energy in their jobs. In turn, this can result in their making personal sacrifices for patients and forgoing sleep, personal reflection, and time with family and friends (Shanafelt et al., 2003). In addition to the intense, relationship-based concerns, oncologists have identified other difficult aspects of their job. They struggle with relaying bad news, managing patients' pain, coping with angry and depressed patients, handling end of life care, and navigating family and cultural issues (Armstrong et al., 2004). In a qualitative study, Grunfeld et al. (2005) found that oncologists in cancer care treatment facilities identified many stressors; the three most prevalent sources of job stress were multiple demands on their time, too much work, and disrupted home life due to excessive time spent at work. The stressors associated with the profession can increase oncologists' vulnerability to experiencing negative symptoms, such as depression, anxiety, addiction, disturbed sleep, and burnout. Additionally, oncologists, as the caregivers who are ultimately responsible for their patients' health care, may experience personal stress and symptoms in an acute manner.

Self-care among Physicians

The demands of being a physician can be stressful, and thus researchers and clinicians have identified strategies to encourage self-care among physicians. In a study of wellness promotion strategies used by primary care physicians, participants shared what buffered them from the stress they encountered (Weiner et al., 2001). The authors categorized physicians' responses into five main domains – relationships, religious beliefs/spiritual practices, work attitudes, life philosophy and self-care practices. These findings have been echoed in other studies and reviews of physician well-being (Lyckholm, 2001; Shanafelt et al., 2003). Shanafelt et al. (2003) further elucidated self-care strategies that physicians can employ to enhance their personal wellness. These include reading, exercising, participating in self-expression activities, fostering personal awareness, getting adequate sleep, eating nutritiously, seeking medical care, and availing of professional counseling. This study examined a variety of self-care strategies, specifically health behaviors and mindfulness (a form of personal awareness), and their association with satisfaction with life, job satisfaction, and patient care.

General Physical Health

Most research in the area of physician health has focused on mental health, especially the issues of depression and suicide, whereas less literature exists on physical health (Kay, Mitchell, & Del Mar, 2004). The little research that is available provides an unclear picture of international trends. Studies of American and Canadian physicians indicate that they, as a group, are healthier than members of the general public (Bazargan, Makar, Bazargan-Hejazi, Ani & Wolf, 2009; Frank, 2004; Frank & Segura, 2009). For instance, the Women Physicians' Health Study ($N = 4,501$) explored American respondents' general health habits (Frank et al., 1998). Using data from the Behavioral Risk Factor Surveillance System, researchers compared three

samples – female physicians, women who were similar in education and income to the physicians, and women in the general population. The physicians reported good general health habits regarding smoking, alcohol consumption, diet, seat belt wearing, and preventative screening practices. They regularly outperformed women of lower socioeconomic status (SES) and frequently outperformed women of similar SES. The physicians exceeded all nationally recommended health behavior goals and screening practices.

Bazargan et al.'s (2009) recent study of 763 licensed physicians in California also found that participants were generally physically healthy. Eighty-four percent of the sample reported that they were in excellent or very good health, as compared to 26% percent of a general population sample. The physicians were engaging in cancer screening behaviors at much higher rates than the general population sample.

Similarly, Canadian physicians also report being quite healthy. In a recent study by Frank and Segura (2009) of Canadian physicians ($N = 3,213$) found that participants were healthier than the general population. Ninety-two percent of the sample reported being in good to excellent health. The authors surmised that the physician's personal preventative screening practices were largely in line with national recommendations.

However, such exemplary health habits have not been found in other studies. Kay et al. (2004) identified and reviewed nine studies, including the Frank et al. (1998) study, in which physicians' health behaviors concerning vaccination, cardiovascular measurements and cancer screening were assessed. These studies analyzed the behavior of physicians in the U.S., Australia, Asia, and Europe, and the results depicted a great deal of variability in the percentage of physicians who engaged in health prevention behaviors. The authors concluded that physicians frequently do not follow recommended guidelines for preventative care. For instance,

more than 30% of female physicians in an Irish study included in Kay et al.'s (2004) review reported never having had a Pap test (O'Connor & Kelleher, 1998).

There is more consistency in findings regarding physician health as measured by mortality rates. An American study examined mortality rates of male physicians (Frank, Biola, & Burnett, 2000). The authors analyzed the nearly 4 million deaths in 28 states between 1984 and 1995. Findings demonstrated that Caucasian and African American male physicians at death (average age = 73 years; 69 years; standard deviations not reported) were older than lawyers (72 years; 62 years), all professionals (71 years; 65 years), and men in the general population (70 years; 64 years). Lower mortality rates among physicians, when compared with the general population, have been replicated in other studies and with samples in other countries, including Australia and Denmark (Juel, Mosbech, & Hansen, 1999; Schlicht, Gordon, Ball, & Christie, 1990; Torre et al., 2005).

Unfortunately, physicians frequently compromise their physical health by not following recommendations they might provide to patients. Research suggests that physicians often do not have a personal physician and are less likely than members of the general population to have a regular healthcare provider (Baldwin, Dodd, & Wrate, 1997; Gross, Mead, Ford, & Klag, 2000). For instance, in Bazargan et al.'s (2009) study of California physicians, 28% of the sample ($N = 763$) reported not having a family doctor. Additionally, in a study of 142 physicians in Scotland, the authors found that, although participants were not frequently ill, they did not take care of themselves appropriately when sick (Baldwin et al., 1997). They tended to carry on working, medically treat themselves, and not consult their own physician. Women took an average of 1.8 sick days in the previous year, whereas men took 2.2 days (standard deviations not reported). Most participants (81%) reported coming to work on multiple days in the last year when they

were “unfit” ($M = 4.6$ days for women; $M = 3.1$ days for men). More than half of respondents (52%) had not taken sick leave in the previous year, and an additional 33% had only done it once. Additionally, they frequently treated themselves medically or asked a friend or colleague to do so, instead of seeking an independent appointment.

Sleep Quality

Sleep is a necessary activity for humans and provides many beneficial physical and psychological outcomes (Morin, Savard, Ouellet, & Daley, 2003). However, research suggests that approximately a third of the adult population had problems sleeping or were dissatisfied with their sleep in the previous year (Morin et al., 2003). Individuals with poor sleep quality often experience partial sleep deprivation, which is a night of reduced or interrupted sleep (Weinger & Ancoli-Israel, 2002). Partial sleep deprivation is common and, if it is recurrent, can lead to problems with mood, quality of life, and performance on cognitive and motor tasks, especially when sustained attention is required (Weinger & Ancoli-Israel, 2002).

Sleep deprivation and fatigue negatively affect the clinical performance of medical personnel, and thus, sleep among physicians is an important public safety issue (Weinger & Ancoli-Israel, 2002; West, Tan, Habermann, Sloan & Shanafelt, 2009). In a review of 25 studies concerning the effect of sleep deprivation and fatigue on physicians’ performance, the authors found some obvious trends among the conclusions (Samkoff & Jacques, 1991). Physicians’ performance was affected. They were able to compensate for sleep deprivation on shorter, novel tasks, but made errors on longer, more mundane tasks. This suggests that they may be at a higher risk of making mistakes when performing the routine, repetitive tasks that make up much of their work (Samkoff & Jacques, 1991). Fatigued residents also experienced increased levels of hostility and anger and reported more symptoms of depression than better rested peers

(Samkoff & Jacques, 1991). Similarly, in a recent study of 356 medical residents, self-perceived major medical errors were significantly associated with greater fatigue and sleepiness (West et al., 2009). Feeling depressed and burned out, as well as having a lower quality of life, also increased a resident's likelihood of reporting a medical error.

A landmark study compared performance impairment that resulted from residents' work schedule and moderate alcohol use (Arnedt, Owens, Crouch, Stahl, & Carskadon, 2005). The findings suggest that residents working a heavy call schedule (average of 90 hours/week) were similarly impaired as peers who worked a lighter call schedule (average of 44 hours/week) and who then consumed alcohol to achieve a blood alcohol concentration of 0.05 gram%. These results demonstrate the danger of fatigue and sleep deprivation, which has historically been a hallmark of medical education. As a result of findings like these and with the hope of improving patient outcomes, policy changes have recently been implemented. The most significant change occurred in 2003 when the Accreditation Council for Graduate Medical Education instituted an 80-hour work week for American residency programs.

Although medical students and trainees may be most affected by sleep deprivation, fatigue is also an important issue for fully-qualified physicians (Gaba & Howard, 2002). Unfortunately, there seems to be a lack of research concerning sleep among experienced physicians. For instance, a literature search yielded only one study that collected data regarding sleep hours of physicians (Bazargan et al., 2009). This study, examining the health of 763 licensed physicians in California, found that 66% of participants reported sleeping 7-9 hours, whereas 33% slept 6 or fewer hours in the previous 24 hours. One small study did explore the effects of deprivation on experienced physicians' patient care tasks (Smith-Coggins, Rosekind, Buccino, Dinges, & Moser, 1997). Emergency room physicians ($N = 6$) were enrolled in a

prospective, double-blind, placebo-controlled study that featured a fatigue-decreasing intervention. The intervention had no significant effects. However, the results demonstrated that physicians had slower reaction times for a vigilance task and an intubation task on night shifts compared to day shifts, although their performance on an electrocardiogram analysis did not significantly differ. The night shift was associated with a decrease in mood when compared to the day shift; physicians were more sluggish, less motivated and less clear thinking. It seems even practiced physicians are affected by fatigue and experience changes in their motor performance and mood.

Physicians themselves are identifying fatigue as a key concern that influences their personal and professional well-being, as well as the care they provide to patients. In a multi-method, multi-site study at five U.S. medical centers, 84% of participants ($N = 145$ residents) endorsed a level of sleepiness (moderate – severe sleepiness) for which clinical intervention is recommended (Papp et al., 2004). Sixty-four percent reported that sleep loss and fatigue had a major impact on their personal lives and 46% said that it affected their ability to carry out their professional work. In focus groups, the participants described their experience with sleep deprivation while in training and identified three major domains in which they were affected – learning and cognition (ability to think and learn), job performance (professionalism and task performance), and personal life (personal well-being and personal relationships). In another study, 76 British hospital and general physicians provided an example from their lives to illustrate how stress affects their clinical care of patients (Firth-Cozens & Greenhalgh, 1997). The investigators classified participants' responses into five categories of attributions, and 57% identified tiredness as a reason for a lack of patient care.

Although oncology as a specialty offers more regular work hours than many other physician specialties, oncologists still tend to have heavy workloads. However, without research available, it is not possible to comment on the sleep quality and quantity of oncologists. However, if fatigued like other physicians, oncologists may suffer the effects of sleepiness on their health and job performance, particularly their ability to learn, perform on tasks, make decisions, and care for patients in a safe manner (Parshuram, 2006). Additionally, sleep quality may affect the quality of relationships that they have with their patients, especially their ability to be fully engaged with them.

Alcohol Consumption

Research demonstrates that there is a high prevalence of alcohol consumption by physicians in the United States and Western Europe. Although there are many measurement issues among studies, it is clear that most physicians consume alcohol (Baldwin et al., 1997; Frank et al., 1998; Hughes et al., 1992; Kenna & Wood, 2004; Sebo, Bouvier Gallacchi, Goehring, Kunzi, & Bovier, 2007). In a major study, Hughes et al. (1992) surveyed a national sample of physicians about their substance use ($N = 5,426$), and then compared the results with data from the National Household Survey on Drug Abuse (NHSDA). Their results demonstrated that 77% of respondents had consumed alcohol in the previous month, and 9% were classified to be at-risk drinkers because they reported consuming five or more drinks in a day during the past month. Ten percent of respondents self-identified as daily drinkers (defined as drinking on 20 or more days in the past month), whereas 8% of the sample reported substance abuse or dependence problems (alcohol and/or drugs) at some point in their lives. When compared with the NHSDA findings, a pattern existed – across all age categories and for both genders, physicians reported higher rates of alcohol use than the general population. However, Hughes et al. (1992) suggested

that increased prevalence of consumption is a factor of socioeconomic status (SES), rather than a characteristic of the profession.

To explore the issue of physician drinking rates and SES, the Women Physicians' Health Study ($N = 4,501$) examined drinking among female physicians (Frank et al., 1998). Researchers compared three samples – female physicians, women who were similar in education and income to the physicians, and women in the general population. Contrary to Hughes et al.'s (1992) conclusion regarding SES, Frank et al.'s (1998) results indicated that female physicians drank more than their matched counterparts. Results indicated that 72% of physicians reported drinking in the past month, as opposed to 63% of high-SES women and 44% of women in the general population. On average, the physicians drank twice per week. Although they drank more frequently than other women, they tended to drink more moderately than their peers and reported rarely drinking more than four drinks per episode.

Two more recent studies have also assessed alcohol consumption among healthcare professionals. In Kenna and Wood's (2004) study of 104 physicians, 66% were regular drinkers (alcohol consumption on four or more days/month) and 8% reported frequent use (alcohol consumption on 20 or more days/month). Similar to Frank et al. (1998) finding, participants were much less likely than the general population to binge or have sustained heavy use. Finally, in Bazargan et al.'s (2009) study of physicians in California, 6% of the sample was classified as potentially hazardous drinkers.

To summarize, data indicate that most physicians drink alcohol, and 6% to 10% exhibit risky drinking behavior (Bazargan et al., 2009; Frank et al., 1998; Hughes et al., 1992; Kenna & Wood, 2004). SES may be a confounder when measuring prevalence, although Frank et al.'s (1998) study suggests that, at least among women, physicians drink more than those with similar

education and income. Findings also demonstrate that American physicians may drink more frequently than the general population, but in a moderate manner (Frank et al., 1998). Frank et al. (1998) speculated that the higher prevalence among physicians may reflect how educated, health-aware physicians may follow guidelines to drink little to moderately, as some research suggests alcohol can be protective against cardiovascular disease, dementia, diabetes and osteoporosis (Standridge, Zylstra, & Adams, 2004).

Satisfaction with Job and Life

There is evidence indicating that physicians are deriving less pleasure and satisfaction from their jobs and careers (Landon, Reschovsky, & Blumenthal, 2003; Sullivan & Buske, 1998; Zuger, 2004). In a Special Report article in *The New England Journal of Medicine*, Zuger (2004) reviewed research showing physicians' dissatisfaction with practicing medicine in the United States. She suggested possible causes, such as the rise of managed care, more frequent malpractice suits, disparities in personal expectations and realities of the job, lack of time, and an increase in work roles beyond the physician-patient relationship. Dispirited physicians are also found in other countries, where research demonstrates the effects of job stress on physicians. For instance, a survey of more than 3,500 Canadian physicians highlighted their low morale (Sullivan & Buske, 1998). Two-thirds of those surveyed reported a workload they found too heavy and 55% stated that their choice of medicine as a career has negatively affected their family and personal life. Similarly, Arnetz's (1991) study of Swedish physicians found that a third of participants reported that a regular work day left them too tired to socialize or engage with their family and friends, whereas only 10% of non-medical employees reported the same. A quarter (25%) of the physicians also indicated that they were not able to unwind after a typical day at work, which was twice as high as other employees.

Although there are indications suggesting that physicians are becoming increasingly dissatisfied, there is a surprising lack of research into their job satisfaction (Duffy & Richard, 2006). The classic definition of job satisfaction is “the feelings a worker has about his [sic] job (Smith, Kendall, & Hulin, 1969, p. 100). Job satisfaction is particularly important because it affects the quality of care provided to patients; higher job satisfaction is associated with better prescribing practices, patient adherence, and patient satisfaction (Grembowski et al., 2003). Because of its importance, Duffy and Richard (2006) recommended further research into job satisfaction and, as variation exists among fields, encouraged researchers to study physicians by medical specialty.

The research specifically regarding oncologists also depicts mixed results, which may be expected as cancer care can be a stressful environment to work in (Grunfeld et al., 2005; Shanafelt, Chung, White, & Lyckholm, 2006). The good news is that, in a Canadian study of 122 oncologists in cancer treatment centers, more than half (58%) reported a high level of overall job satisfaction (rating of 3 or more on a 0-4 scale; Grunfeld, Whelan, Zitzelsberger, Willan, Montesanto, & Evans, 2000). However, the remaining oncologists were not very satisfied, and 42% of the sample reported high level of job stress. The same research group conducted a mixed method study of job stress and satisfaction among Canadian cancer care workers (Grunfeld et al., 2005). The researchers carried out focus groups with 108 cancer care workers, including 29 physicians, and surveyed 620 cancer care workers, including 122 physicians. The qualitative and quantitative findings indicated that participants’ top sources of job satisfaction came from having good relationships with patients, families and colleagues. The most prominent stressors identified were the heavy and increasing workload and the disruption of personal lives. Focus group participants reported that the most significant consequences of a heavy workload were

decreased quality of patient care, burnout among peers, and concerns that colleagues may leave the workplace.

Similar findings regarding job satisfaction and stressors were seen in a study of British oncologists, radiologists and gastroenterologists (Taylor, Graham, Potts, Richards, & Ramirez, 2005). The study assessed changes in participants' mental health between 1994 and 2002. Findings showed a decline in mental health, and the change was attributed to the oncologists. They experienced increased job stress without a similar increase in job satisfaction, when compared to the radiologists and gastroenterologists. Fifty-seven percent to 68% of oncologists reported moderate/high job satisfaction, whereas 34% to 45% of oncologists reported moderate/high jobs stress. Oncologists indicated that they derived job satisfaction from relationships with patients, relatives, and staff, while job stress came from their workload and its effect on their home life.

Burnout is a major concern for oncologists (Lyckholm, 2001; Sale & Smoke, 2007; Sherman et al., 2006). Maslach (p.397) wrote that burnout is "a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, cynicism, and inefficiency (Maslach, Schaufeli, & Leiter, 2001). Research indicates that prevalence rates of burnout are high among oncology physicians and have ranged from 25% to 60% of study participants (Sherman et al., 2006). In a notable study of oncologists, 56% of respondents ($N = 598$) reported experiencing workplace burnout (Whippen & Canellos, 1991). Significant differences in incidence were found by the type of practice; lower rates were detected among academic oncologists versus community oncologists. In another study, the AAMC's Center for Workforce Studies (2006) reported that, of the more than 1,500 oncologists surveyed, 91% felt burned out at some point in their careers and 32% felt burned out once or more per

week. It is interesting to note that physicians can report job satisfaction, yet simultaneously experience burnout. In the Grunfeld et al. (2005) study in which 58% of 122 oncologists reported a high level of overall job satisfaction, 48% of the sample endorsed low levels of personal accomplishment and 53% indicated high emotional exhaustion, both criteria for burnout.

Burnout is a concern for oncologists themselves and the effects it has on their patient care (Sherman et al., 2006). For instance, 76% of internal medicine residents ($N = 115$) met criteria for burnout, and burnout was strongly associated with suboptimal patient care practices (Shanafelt et al., 2002). Burnout may also be a threat to their colleagues. Recent research suggests that burnout may be “contagious” in that “burned out” healthcare workers can increase their peers’ likelihood of also experiencing burnout (Bakker, Le Blanc, & Schaufeli, 2005).

After examining the occupational hazards for physicians and oncologists in particular, it may be no surprise to learn that those who are dissatisfied are leaving the workplace or are considering retiring or working part-time (AAMC’s Center for Workforce Studies, 2006). In a study of more than 16,000 physicians, it was observed that physicians who are dissatisfied with their careers are two to three times more likely to leave their jobs than satisfied peers (Landon et al., 2006). Among oncologists ($N = 122$), Grunfeld et al. (2000) found that that many were considering alternative work options: 39% considered a job outside cancer care, 48% were thinking about reducing the hours worked, and 30% were contemplating early retirement. Alternative work options were predicted by three factors: burnout, high job stress, and the number of years they had worked at the cancer center. Conversely, high job satisfaction reduced the odds of them contemplating leaving.

Patient Care Practices

Americans want high quality healthcare that is cost-efficient, personalized, and safe. However, research in the last two decades has demonstrated that inefficient healthcare systems are not providing consistent, quality care to patients (Institute of Medicine [IOM], 2001). One issue of concern is errors made by healthcare staff when providing patient care. A landmark study of nearly 31,000 patient records from New York hospitals revealed that 4% of hospitalized patients suffered disabling adverse events (Leape et al., 1991), and nearly 14% of the patients who experienced errors died (Brennan et al., 1991). Errors were made in diagnosis, treatment, and providing preventative services; however, the researchers determined that a great deal of the errors were preventable (Leape, Lawthers, Brennan, & Johnson, 1993). Subsequently, the IOM (2000) released data indicating that 44,000 to 98,000 Americans die annually from medical errors. These findings highlight that patient care practices are a public safety issue in the United States.

In addition to a medical system in which patients expect to receive safe healthcare, they also have expectations and hopes for the relationship they have with their physicians. In a recent qualitative study, faculty, residents, students and patients were asked to define the elements of medical professionalism (Wagner, Hendrich, Moseley, & Hudson, 2007). All groups identified three core themes – knowledge/skill, patient relationship, and character virtues. However, patients spent more time discussing the importance of the relationship than the other groups. It seems as if patients want trusting relationships with their physicians. Research has also shown that being comforting and caring and possessing good communication skills are just as important to patients as demonstrating competency (Thom, 2001).

Physicians also want positive and meaningful relationships with their patients (Wagner et al., 2007), but may be hindered in their efforts due to personal and organizational demands. Research demonstrates that relationships can be compromised by variety of factors, including stress, long work hours, and lack of personal self-awareness (Baldwin et al., 1997; Firth-Cozens & Greenhalgh, 1997; Meier, Back, & Morrison, 2001). Recognizing the importance of the physician-patient relationship to quality healthcare, the IOM (2001; 2004) called for patient-centered care that emphasizes relationships with healthcare providers; it also made the ability to provide-patient centered care one of its five core competencies.

Statement of the Problem

As has been discussed, demands on physicians in the workplace appear to be growing. Thus, physicians are coping with increasing occupational and psychosocial stressors. With the rise of managed care, escalating regulations, heavier workloads, and less time with patients, working as a physician can take a toll on one's physical and emotional health. Oncologists, in particular, experience unique aspects of their job that can be very stressful. They invest in long-term relationships with patients, deliver distressing news, cope with depressed patients, manage patients' pain, handle end of life care, navigate family needs, and witness the death of significant numbers of patients. Additionally, oncologists may also struggle with multiple demands on their time, too much work, and disrupted personal relationships due to their involvement at work. While many oncologists likely find a personal balance and enjoy their job, many are vulnerable to experiencing negative symptoms, such as depression, anxiety, addiction, disturbed sleep and burnout. These stressors can affect oncologists themselves, as well as their families, colleagues and patients.

Unfortunately, there is a lack of information available about the health and well-being of oncologists. Additionally there seems to be scant research into the effects of their health and well-being on patient care, as well as what strategies may mitigate the stressors physicians encounter. Therefore, this study had three specific aims:

Aim 1: To examine the health, well-being, and patient care practices of oncologists

As limited information regarding oncologists is available, this study collected data regarding the health, well-being, and suboptimal patient care practices of oncologists in the United States. Specifically, the study measured mindfulness, health (general physical health, sleep problems, and hazardous drinking), satisfaction with life, occupational satisfaction (job satisfaction, burnout, and job retention), and suboptimal patient care. This information helps provide a better understanding of profession-specific strengths, weaknesses, and areas for intervention and support.

Aim 2: To investigate the direct association of both mindfulness and health with satisfaction with life, job satisfaction, and suboptimal patient care practices

Preliminary research and anecdotal evidence suggest that certain behaviors and strategies can lead to more positive outcomes among health professionals. Evidence indicates that being mindful and enjoying better physical health may help healthcare professionals combat workplace stressors. Therefore, the present study examined the relationship of mindfulness and health with outcomes of satisfaction with life, job satisfaction, and suboptimal patient care practices.

Additionally, the analyses investigated whether mindfulness statistically predicted the outcomes above and beyond the contribution of health.

Aim 3: To examine the moderating role that mindfulness plays in the relationship between health and outcome measures

Because healthcare professionals who took part in interventions designed to increase mindfulness have been shown to derive benefits, this research sought to better understand the relationship between mindfulness and other important outcomes. It was expected that the relationship between the independent variables (general health, sleep problems, or hazardous drinking) and dependent variables (satisfaction with life, job satisfaction, or suboptimal patient care practices) varies across levels of mindfulness endorsed by oncologists. Therefore, the study tested mindfulness as a moderator.

Hypotheses

The study tested four hypotheses:

Hypothesis 1: Mindfulness will have a significant, positive relationship with satisfaction with life, job satisfaction, and better patient care.

Hypothesis 2: Health indicators will be associated with satisfaction with life, job satisfaction, and better patient care. Specifically, general health will have a significant, positive relationship with satisfaction with life and job satisfaction, whereas it will be significantly negatively correlated with suboptimal patient care. Additionally, sleep problems and hazardous drinking will have significant, negative relationships with satisfaction with life and job satisfaction, whereas they will be significantly positively correlated with suboptimal patient care.

Hypothesis 3: Mindfulness will account for a significant amount of variance in satisfaction with life, job satisfaction, and suboptimal patient care above and beyond the variance accounted for by general health, sleep problems, and hazardous drinking.

Hypothesis 4: Mindfulness will moderate the relationship between health indicators (general health and sleep problems) and satisfaction with life, job satisfaction, and suboptimal patient care. Specifically, mindfulness is expected to magnify the relationship between general

health and satisfaction with life and job satisfaction, while buffering the relationship between general health and suboptimal patient care. Additionally, mindfulness is expected to buffer the relationship between sleep problems and satisfaction with life, job satisfaction, and suboptimal patient care. Finally, mindfulness is expected to buffer the relationship between problem drinking and satisfaction with life, job satisfaction, and suboptimal patient care.

Chapter III: Method

Participants

Participants in the current study were oncologists belonging to the American Society of Clinical Oncology (ASCO), a professional organization with nearly 25,000 members. They had completed a fellowship in oncology and were residing in the United States. Five hundred and one surveys were sent out to ASCO oncologists. One hundred and forty-seven members returned their surveys (29.3% response rate). Of these, 16 individuals declined to participate and 17 individuals were excluded because they did not meet inclusion criteria (e.g., indicated they were retired or a student), resulting in a sample size of 114 participants.

Table 2 summarizes demographic characteristics of participants. Participants ($N = 114$) were 76% male, with a mean age of 51.56 years ($SD = 10.45$). Most (78%) were Caucasian and married (84%). The mean for the sample was 1 child ($M = 0.99$, $SD = 1.15$) under 18 years of age living with them, although it should be noted that 50% had no children in the home. The sample reported working an average of 58 hours ($SD = 15.49$, $Mdn = 60.00$, *range* 6 – 90) each week, and over half the respondents (55%) indicated that they spent 75% to 100% of their work week during the past year in direct patient care.

These data indicate that the current sample is very similar to oncologists practicing in the United States (AAMC's Center for Workforce Studies, 2006). The 2006 study reviewing the professional field found that the majority of oncologists are Caucasian males (76% male), 54% are aged 50 or older, and they averaged 54 hours of work per week. Such similarities between these samples suggest that the oncologists in the current study are representative of the members of the profession in the United States.

Table 2

Demographic Characteristics of Participants

Variable	<i>N</i>	<i>n</i>	%	<i>M</i>	<i>SD</i>	Sample range
Age	113			51.56	10.45	32–77
Gender	113					
Male		86	76.10			
Female		27	23.90			
Ethnicity	113					
Caucasian		88	77.90			
Asian/Pacific Islander		13	11.40			
Latino		4	3.50			
African American		3	2.60			
Other		5	4.40			
Relationship status	114					
Married		96	84.21			
Single		9	7.89			
Partnered		4	3.51			
Divorced		5	4.39			
Children in the home	114			0.99	1.15	0–4
Average hours worked/week	114			57.64	15.49	6–90
Time spent in direct patient care during last year	113					
0 – 24%		14	12.40			
25 – 49%		14	12.40			
50 – 74%		23	20.40			
75 – 100%		62	54.90			

Note. Sample sizes (*n*) vary between 113 and 114 due to missing data.

Measures

Mindfulness. The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15-item scale that assesses dispositional mindfulness or “individual differences in the frequency of mindful states over time” (p. 824). Asking about common daily experiences, the MAAS measures an individual’s ability to experience life in the moment. Example items include, “I snack without being aware that I’m eating” and “I rush through activities without being really attentive to them.” Each item is measured by the frequency of the experience on a Likert-type scale that ranges from 1 (*almost always*) to 6 (*almost never*). The scale is scored by calculating the total of the selected answers; higher scores indicate higher levels of dispositional mindfulness. Research with samples of college students, community members and cancer patients supports the validity and reliability of the scale (Brown & Ryan, 2003). In test construction research, the scale demonstrated good internal consistency among samples of students ($\alpha = .82$) and general adults ($\alpha = .87$); additionally, it displayed good test-retest reliability ($r = .81$) when administered to students over a 4-week period (Brown & Ryan, 2003). In the current sample, Cronbach’s alpha was .93.

General health. Physical health was measured using the 5-item General Health Perceptions subscale of the RAND 36-Item Short Form Health Survey 1.0 (SF-36) from the Medical Outcomes Study (Ware & Sherbourne, 1992). SF-36 is one of the most widely used instruments, and the subscale items assess perceptions of health status. The first question, “In general, how would you say your health is...”, is a global measure of health status. Response options range from 1 (*excellent*) to 5 (*poor*). The four other items ask participants “How true or false is each of the following statements for you?” Example items include, “I seem to get sick a little easier than other people” and “My health is excellent.” Response options are on a Likert-

type scale and range from 1 (*definitely true*) to 5 (*definitely false*). The scale is scored by recoding items using a standardized RAND scoring key, after which the five items are averaged. Higher scores reflect more favorable perceptions of health. The SF-36 is considered to have excellent psychometric properties (McDowell & Newell, 1996). The General Health Perceptions subscale has demonstrated good internal consistency and high test-retest correlations. In the current sample, the Cronbach's alpha was .72, which is comparable to McDowell and Newell's (1996) review of five studies that featured coefficient alphas ranging from .78 to .95. Bazier et al. (1992) reported 2-week test-retest correlations that exceeded .80. Numerous studies to date have yielded content, concurrent, criterion, construct, and predictive evidence of validity (Ware, n.d.).

Sleep. The Medical Outcomes Study (MOS) Sleep Scale is a brief 12-item self-report instrument that yields the quantity of sleep and a summary score of sleep problems (Hays & Stewart, 1992). Sample items include: "On the average, how many hours did you sleep each night during the past 4 weeks?" Ten items, such as "How often during the past 4 weeks did you have trouble staying awake during the day?," are presented to participants with a Likert-type scale that ranges from 1 (*all of the time*) to 6 (*none of the time*). The quantity of sleep is scored as the average hours slept per night. The summary score is transformed linearly to range from 0 to 100, where higher scores indicate increasing problems. Research with samples of community members and neuropathic pain patients ($N = 1,011$; $N = 173$, respectively) support the reliability and validity of the scale (Hays, Martin, Sesti, & Spritzer, 2005). Scale reliability in the current study was .80. The scale also possesses good face validity (Smith & Wegener, 2003) and is appropriate for assessing members of the general population (Hays et al., 2005).

To assess sleep interference with daily functioning, one item from the Sleep Impairment Index was presented to this sample (Morin, 1993). The item read, “To what extent do you consider problems with sleep to interfere with your daily functioning (e.g., daytime fatigue, ability to function at work/daily chores, concentration, memory, mood) currently?” Participants endorsed their response on a Likert-type scale that ranges from 1 (*not at all interfering*) to 5 (*very much interfering*).

Exercise. Physical activity was measured with 1 item taken from the 1993 Youth Risk Behavior Survey (YRBS; Kann, Warren, Harris, Collins, Douglas, Collins, et al., 1995). Participants were asked, “On how many of the past seven days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities?” Participants wrote in a number between 0 and 7.

Alcohol abuse. An abbreviated version of the World Health Organization’s Alcohol Use Disorders Identification Test (AUDIT) was used to screen for hazardous drinking (Saunders, Aasland, Amundsen, & Grant, 1993). The AUDIT was developed as a cross-national instrument and is considered to be an accurate measure across culture, age and gender (Babor, Higgins-Biddle, Saunders & Monteiro, 2001). The three AUDIT alcohol consumption questions (AUDIT-C) have been found to be a brief and effective measure of problem drinking (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). Participants are asked, in the past year, how often they have had an alcoholic drink, how many drinks they had on a typical day, and how often they had six or more drinks on one occasion. Responses are scored between 0 to 4 points, and scores are summed to provide a score between 0 and 12 with higher scores indicating more severe drinking. In studies comparing the diagnostic ability of both instruments, the AUDIT-C

performed similarly or better than the AUDIT in detecting excessive drinkers (Bush et al., 1998; Gomez et al., 2005; Gordon, et al., 2001). The AUDIT-C appears to be psychometrically sound. In a study of male outpatients at Veterans Affairs Medical Center, 3-month test-retest reliability estimates for respondents who reported not changing their drinking habits ranged from .65 to .85 for the three questions (Bradley et al., 1998). Gomez et al. (2005) reported an internal consistency coefficient (Cronbach's alpha) of .84 among primary care patients in Spain. Surprisingly, the AUDIT-C scale in the current study had an extremely low Cronbach's alpha value ($\alpha = .27$).

Satisfaction with life. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larson, & Griffin, 1985) is a 5-item self-report measure used to assess a person's subjective beliefs about his or her life. It has been widely used for the last 20 years in a variety of populations (Pavot & Diener, 1993). Participants are asked to report their level of agreement with five statements. Examples of the items are "I am satisfied with my life" and "If I could live my life over, I would change almost nothing." Responses are on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Scores range from 5 to 35, where higher scores represent more satisfaction. The SWLS displays good psychometric properties. In the original scale development article, Diener et al. (1985) reported a 2-month test-retest correlation coefficient of .82 and a coefficient alpha of .87 among a sample of college students. Pavot and Diener (1993) reviewed research using the scale in which test-retest correlation coefficients ranged from .50 to .84 and coefficient alphas ranged from .79 to .89. In the current sample, Cronbach's alpha was .93.

Job satisfaction. The Abridged Job in General scale (AJIG) is an 8-item self-report measure that was derived from the widely used Job Descriptive Index family of job attitude measures (Ironson, Smith, Brannick, Gibson, & Paul, 1989; Russell et al., 2004; Stanton et al.,

2001). The AJIG is a global measure of job satisfaction that taps into an individual's evaluative or affective judgment about his or her job. Participants are instructed to "Think of your job in general. All in all, what is it like most of the time?" Example items include "undesirable," "better than most," "makes me content," and "poor." They are asked to circle *yes*, *no*, or *?*. After recoding responses, the positive responses are summed; scores range from 0 to 24, with higher scores representing greater job satisfaction. Although a relatively new scale, research with three separate samples of U.S. workers support the AJIG's validity as a brief measure of overall job satisfaction (Russell et al., 2004). Across the three samples, the items yielded alpha coefficients between .85 and .87. The shorter version was correlated strongly with the original scale ($r = .97$, p not reported). The AJIG also correlated with commitment to one's job ($r = .48$, $p < .05$), organizational identification ($r = .47$, $p < .05$), and organizational commitment ($r = .59$, $p < .05$). Scale reliability in the current study was .87.

Patient care practices and attitudes. An 8-item instrument developed by Shanafelt et al. (2002) was administered to measure patient care practices and attitudes. Respondents were asked to rate the frequency (*never*, *once*, *several times per year*, *monthly*, and *weekly*) that they exhibit specific practices (5 items) and attitudes (3 items). Example questions include: "I did not fully discuss treatment options or answer a patient's question" and "I had little emotional reaction to the death of one of my patients." Shanafelt et al. (2002) analyzed results descriptively and did not provide scoring instructions; additionally, psychometric properties of the measure have not been assessed. In the current study, each item was scored from 1 (*never*) to 5 (*weekly*), and items were summed to provide a global score (range 8-40). Higher scores represented respondents' impressions of more frequent suboptimal clinical care. In the current sample, Cronbach's alpha was .73.

Demographic and personal information. Participants were asked to provide their age, gender, state of residence, ethnicity, relationship status, number of children under 18 years old in the home, year of oncology fellowship completion, occupational discipline, primary focus of practice, average hours worked per week, and percent of time spent in direct patient care.

Burnout. Occupational burnout was assessed using a 1-item measure that was developed to measure burnout among physicians (Rohland, Kruse, & Rohrer, 2004); the item was adapted from the Physician Worklife Study (Williams et al., 1999). This single-item screener was included instead of the commonly used and much longer Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996). In a validation study, the single-item measure was correlated at $r = 0.64$, ($p < 0.0001$) with the MBI's emotional exhaustion subscale, which has been considered the most essential subscale of the burnout construct (Rohland et al., 2004). The item reads "Using your own definition of 'burnout,' please check one of the following." A 5-point scale provides respondents with options describing degrees of burnout ranging from 1 (*I enjoy my work. I have no symptoms of burnout*) to 5 (*I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.*)

Intention to leave job. Participants' intention to leave their jobs was assessed with a single-item measure that was used in a study of women physicians (Barnett, Gareis, & Carr, 2005). The original item read "How likely are you to leave academic medicine within 5 years and go into another line of work (for example, clinical practice, industry, etc.)?" The item was modified slightly to be suitable for the participants of this study. It read "How likely are you to leave clinical oncology within 5 years and go into another line of work?" The item asks

respondents to indicate the likelihood on a 5-point scale that ranges from 1 (*not at all likely*) to 5 (*very likely*). Psychometric properties of the item have not been assessed.

Order of Measures

The survey contained the measures just described. The dependent measures of satisfaction with life, job satisfaction, and patient care practices were presented to participants first in order to avoid the possibility of carry-over effects from the measures of mindfulness and health. Therefore, the order of measures appeared as follows: Satisfaction with Life Scale, Abridged Job in General, the patient care practices and attitudes measure, General Health Perceptions subscale, Mindful Attention Awareness Scale, Alcohol Use Disorders Identification Test, MOS Sleep Scale, sleep inference question, exercise question, demographic questions, occupational burnout question, and intention to leave job question.

Procedure

An extensive review of the methodological literature was conducted to identify strategies to increase participation rates in this study. As guided by the literature, the following strategies were used to boost participation: featuring a clear and simple survey design; pre-testing the survey with oncology fellows; emphasizing the endorsement of the study by Virginia Commonwealth University's Massey Cancer Center; including a cover letter that was signed by prominent oncologists; including a self addressed stamped envelope; coding survey materials so non-responders were contacted; mailing survey materials to all non-responders 6 weeks later; asking non-responders to return the blank questionnaire in the enclosed envelope.

In accordance with recommendations from literature about research with physician participants, the following strategies were also employed:

- Keeping data collection to a minimum with the inclusion of the fewest items possible (Levinson, Dull, Roter, Chaumeton, & Frankel, 1998)
- Using a personalized cover letter that emphasized the importance of the oncologists' involvement and their contribution (Leece et al., 2006)
- Using first class postage instead of metered postage (Kellermen & Herold, 2001)
- Providing an incentive prior to survey completion instead of after submission (Leung et al., 2004)

As physician samples tend to have lower response rates than non-physician respondents (Asch, Jedrzewski, & Christakis, 1997), oversampling was done. Thus, in May 2008, the postal survey was mailed to 501 individuals randomly selected from an ASCO mailing list of 1,000 practicing oncologists. Non-responders received a second request for participation in mid-June 2008. Each survey was accompanied by a cover letter, on VCU Medical Center letterhead, which was signed by two oncologists and explained that the questionnaire should take less than 10 minutes to complete. Participants were provided with a Consent Statement, which they were asked to read and indicate their willingness to participate by checking a box.

Guided by the literature regarding physician recruitment, a secondary methodological study regarding incentives was conducted within this proposed study (complete details of this secondary study are not presented here). Participants were randomized into one of three conditions: standard cover letter (Condition A), token gift (Condition B), and personalized health feedback (Condition C). Participants in Condition B received a bookmark that featured the Massey Cancer Center logo and thanked them for their participation in the research. Participants in Condition C were offered personalized health feedback based on their survey responses. Feedback was compiled and mailed to participants who requested it in October 2008. Briefly,

findings from this secondary study indicated that there were no statistical differences among groups based on the incentive provided to participants.

Chapter IV: Results

Data Cleaning

Cleaning the data commenced with checking 5% (7) of the surveys for data entry errors. One coding error was found for a single item on one survey. Thus, this item was checked on all 131 surveys and re-coded on approximately 10 surveys. Next, descriptive statistics were run for each item and no out-of-range values were detected. Subsequently, the data were examined to ensure each participant met inclusion criteria. Sixteen participants were excluded from analyses as they did not meet criteria; specifically their data were removed if they indicated that they were a student, oncology fellow or retired. Additionally, one participant was excluded because of excessive missing data. Data for the remaining 114 participants then were examined for missing responses. Scale scores were computed if an individual had completed at least 80% of a scale; their mean score of the completed items was substituted for each missing datum on a particular scale.

Preliminary Analyses

SPSS Version 17.0 was used in all analyses. Diagnostic analyses were performed to ensure the assumptions of hierarchical multiple linear regression tests were met. Visual inspection of histograms, normal probability plots and detrended probability plots indicated normal distribution of data for all key variables, except job satisfaction. The skewness (-2.54) and kurtosis (6.25) of job satisfaction suggested limited variability; essentially respondents were very satisfied with their work. Finally, all outliers were

inspected and determined to be valid observations, thus no alterations were made to the dataset.

Internal Consistency Reliability

The internal consistency of each continuous scale was estimated using Cronbach's alpha values (see Table 3). Nearly all scales displayed adequate internal consistency (alpha values above .70) and values were consistent with those found in similar research. However, the AUDIT-C scale, measuring hazardous drinking, had an extremely low Cronbach's alpha value ($\alpha = .27$), suggesting that the scale's three items did not measure the same construct. An alpha value of .27 is an inadequate value of internal consistency reliability, and findings using such a value are not interpretable.

Ultimately, it was decided not to run the proposed analyses with the AUDIT-C as it does not seem to be a valid screening test for hazardous drinking in this sample. This decision was made after much deliberation and consultation. Additionally, two other possible options were explored before deciding not to run the analyses. First, a 2-item scale was considered. When the first item of the AUDIT-C scale was dropped and the second and third item were combined to make a 2-item scale, the Cronbach's alpha value for the present sample increased ($\alpha = .56$). However, this alpha value was still not adequate in terms of internal consistency reliability. Additionally, there was very little variability among responses; only 14 of the 114 participants scored a 1 or 2 (possible range 0-4) on either item on the scale, whereas the remaining respondents scored 0. Second, using a single question as the independent variable was considered, specifically using the first question as the variable ("How often did you have a drink containing

alcohol in the past year?”). However, this is not a good option as it does not measure hazardous drinking (only frequency), results demonstrate limited variability among response options, and most single-item measures are presumed to have unacceptably low reliability.

Descriptive Analyses

Table 3 contains descriptive characteristics of participants and scale reliability coefficients. The data suggest that the oncologists tended to perceive themselves as being able to experience life in the moment. Assessed with the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), respondents' mean score was 4.38 ($SD = 0.90$) on a six-point scale, where higher scores indicate greater levels of mindfulness. This mean is higher than four other diverse samples surveyed by the MAAS scale developers. This sample of oncologists scored higher than a sample of 60 college students ($M = 3.77$, SD not reported), 50 general community adults ($M = 3.97$, $SD = 0.64$), 41 early stage cancer patients ($M = 4.27$, $SD = 0.64$), and a Zen practitioner group of 50 adults ($M = 4.29$, $SD = 0.66$) (Brown & Ryan, 2003).

On the General Health Perceptions subscale of the RAND 36-Item Short Form Health Survey (Ware & Sherbourne, 1992), respondents reported enjoying very good general health ($M = 75.41$, $SD = 17.62$), where scores range from 0 to 100 and higher scores reflect more favorable perceptions of health. Again, these oncologists demonstrated much higher scores when compared to the normative adult community sample ($N = 2,471$, $M = 58.3$, $SD = 21.4$) (Hays, Sherbourne, & Mazel, 1995).

Table 3

Descriptive Characteristics of Participants and Scale Reliability Coefficients

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Sample range	Possible range	Cronbach's alpha
Mindfulness	112	4.38	0.90	1.07–6.00	1–6	0.93
General health	112	75.41	17.62	25–100	0–100	0.72
Sleep hours/night	113	6.31	0.97	4–9		
Sleep problems	113	26.74	14.20	0–73.33	0–100	0.80
Sleep interference	113	1.86	0.93	1–5	1–5	
Exercise	113	2.78	2.19	0–7	0–7	
Satisfaction with life	109	27.17	6.69	8–35	5–35	0.93
Job satisfaction	106	21.29	4.92	0–24	0–24	0.87
Patient care	111	13.09	4.16	8–23	8–40	0.73
Burnout	114	2.07	0.74	1–5	1–5	
Leave oncology	114	1.78	1.18	1–5	1–5	

Note. Sample sizes (*n*) vary between 106 and 114 due to missing data.

The MOS Sleep Scale (Hays & Stewart, 1992) measured the physicians' sleep quantity and problems. In general, participants were not getting adequate sleep, yet the duration of their sleep was consistent with national averages. Specifically, 51.3% of participants reported typically sleeping 6 or fewer hours per night in the last month and the average sleep duration for this sample was 6.3 hours ($SD = 0.97$) per night when 7 to 9 hours is recommended for adults (National Sleep Foundation [NSF], n.d.). However, respondents were getting almost the same amount of sleep as most American adults. For according to the NSF's 2009 Sleep in America Poll, adults in this country average 6 hours, 40 minutes of sleep on weekdays (NSF, 2009).

Sleep problems were assessed by transforming scores linearly to a range of 0 to 100, where higher scores indicate more problematic sleep. Results suggest that participants were experiencing sleep problems. They acknowledged that, in the last 4 weeks, they had struggled with sleep problems a little to some of the time ($M = 26.74$, $SD = 14.20$); participants featured slightly higher sleep problem scores than a general population adult sample ($N = 1,011$, $M = 25.79$, SD not reported) (Hays et al., 2005).

Participants were also asked to what extent sleep interferes with daily functioning. More than a third (35.1%) of the oncologists reported that they were not getting the amount of sleep they needed and more than half (57.1%) of respondents believed that their lack of sleep interfered with daily functioning. These findings are in line with Papp et al.'s (2004) study of 145 medical residents, who on average might work even longer hours. The researchers found that 84% of the participants endorsed a moderate to severe level of sleepiness. Among these residents, 64% reported that fatigue had a major impact on their personal lives and 46% stated that it affected their ability to carry out their professional work.

On a one-item measure of exercise, participants reported the number of days in the previous week in which they exercised vigorously for at least 20 minutes. These oncologists, as a group, indicated that they did so on 2.78 days in the week ($SD = 2.19$).

As a group, participants in this study tended to be satisfied with their lives. They possessed a mean score of 27.17 ($SD = 6.69$) on the Satisfaction with Life Scale, where scores range from 5 to 35 and higher scores represent greater satisfaction (Diener et al., 1985). According to scoring guidelines, scores ranging from 26-30 represent the *satisfied*

category. Pavot and Diener (1993), after reviewing 35 samples ($N = 4,632$) in which the scale was administered, summarized that most groups' mean scores fall between the range of 23-28 (*slightly satisfied, satisfied*). The most similar sample to the group of oncologists in the present study, that of 255 nurses and health workers (Judge, 1990 as cited in Pavot & Diener, 1993), featured a lower mean score of 23.6 ($SD = 6.1$).

Interestingly, of the 35 diverse samples reviewed by Pavot and Diener (1993), all but one group is below the mean of the oncologists in the current study. Only older French Canadian men ($N = 77$) reported a higher mean satisfaction with life score ($M = 27.9$, $SD = 5.7$) (Blais, Vallerand, Pelletier, & Briere, 1989 as cited in Pavot & Diener, 1993).

The oncologists indicated that they were also very satisfied with their work. On the Abridged Job in General scale (Ironson et al., 1989), they endorsed a mean score of 21.29 ($SD = 4.92$) when the scale's ceiling is 24. In contrast, 110 middle-aged IT professionals who were surveyed reported a mean score of 17.52 ($SD = 6.82$) (Russell et al., 2004).

Participants admitted to engaging in occasional suboptimal patient care practices and attitudes. Their mean score on the Patient Care Practices and Attitudes scale (Shanafelt et al., 2002) was 13.09 ($SD = 4.16$), where the possible score range is 8 to 40 and higher scores indicate perceptions of poorer clinical care. Table 4 compares the suboptimal patient care practiced weekly or monthly by the current sample of oncologists to a sample of 115 internal medicine residents as reported in Shanafelt et al. (2002). Interestingly, of all the items on the scale, the oncologists endorsed one item ("I had little emotional reaction to the death of one of my patients") more frequently than the other

items. As can be seen, the oncologists reported many fewer incidents of suboptimal patient care than the residents.

As a group, the oncologists denied being burned out, but attested to feeling stressed at work. They endorsed a mean score of 2.07 ($SD = 0.74$) on a single item measuring occupational burnout (Rohland et al., 2004). However, based on their responses to the 5-point scale, 19.3% ($n = 22$) of the total 114 respondents reported that they were burning out, experiencing burnout symptoms that won't go away, or completely burned out. This percentage of oncologists reporting burnout symptoms is similar to the percentage (22.7%) found in a recent study of 307 physicians who were alumni of the Texas Tech University School of Medicine in which the same 1-item measure of burnout was used (Rohland et al., 2004)

Finally, on a single item that measures physicians' intention to leave their jobs (Barnett et al., 2005), the oncologists endorsed a mean score of 1.78 ($SD = 1.18$) on a 5-point scale (with 1 being *not at all likely* and 5 being *very likely*) when asked if they planned to leave clinical oncology in the next 5 years to go into another line of work. Looking at these data in another way, only 12.3% of the sample indicated that they were considering living their jobs in the next 5 years (endorsing a 4 or 5 on the scale), whereas 79.8% reported no intention to leave their jobs (endorsing a 1 or 2 on the scale), and 7.9% had no intention either way (endorsing a 3 on the scale).

Table 4

Self-Reported Suboptimal Patient Care Practiced at Least Monthly

Item	Current sample % (n)	Shanafelt et al. (2002) sample % (n)
I found myself discharging patients to make the service 'manageable' because the team was so busy.	5.4 (6)	36 (41)
I did not fully discuss treatment options or answer a patient's question.	4.5 (5)	9 (10)
I made treatment or medication errors that were not due to a lack of knowledge or inexperience.	0.9 (1)	9 (10)
I ordered restraints or medication for an agitated patient without evaluating him or her.	0 (0)	14 (16)
I did not perform a diagnostic test because of desire to discharge a patient.	1.8 (2)	14 (16)
I paid little attention to the social or personal impact of an illness on a patient.	5.4 (6)	30 (35)
I had little emotional reaction to the death of one of my patients.	11.7 (13)	18 (21)
I felt guilty about how I treated a patient from a humanitarian standpoint.	0 (0)	13 (15)

Note. Due to missing data, the sample size for each of the items in the current sample varied between 111 and 112. The Shanafelt et al. (2002) sample was composed of 115 internal medicine residents.

Secondary Methodological Study

As mentioned in the Method chapter, a secondary methodological study regarding incentives was conducted within this study. Participants were randomized into one of three conditions: standard cover letter (Condition A), token gift (Condition B), and personalized health feedback (Condition C). Forty-four participants returned surveys in

Condition A, whereas 45 and 41 participants returned surveys in Conditions B and C, respectively. Contrary to what was hypothesized, there were no statistical differences between group response rates based on the incentive provided to participants.

Correlations

Pearson correlations were run to examine the relationships among all variables; key variables are displayed in Table 5. There were numerous statistically significant findings among the variables used in testing the study's hypotheses. General health was positively correlated with mindfulness, satisfaction with life, and job satisfaction, while it was negatively correlated with sleep problems and suboptimal patient care. Sleep problems was negatively associated with mindfulness. Mindfulness was positively correlated with satisfaction with life, and job satisfaction, whereas it was negatively related to suboptimal patient care.

Potential Covariates

Variables of interest were assessed using tests of differences to determine whether they were associated with the dependent variables (satisfaction with life, job satisfaction, patient care). One-way ANOVAs were run to test categorical variables (recruitment condition, ethnicity, and relationship status), independent groups *t* tests examined the dichotomous variable of gender, and correlation was used to test for a significant association with age. Results were not statistically significant, suggesting that demographic variables were not linearly associated with the criterion variables.

Table 5

Correlations between Key Variables

Variable	1	2	3	4	5	6
1. General health	-					
2. Sleep problems	-.40**	-				
3. Mindfulness	.33**	-.46**	-			
4. Satisfaction with life	.42**	-.45**	.33**	-		
5. Job satisfaction	.38**	-.19	.21*	.58**	-	
6. Suboptimal patient care	-.20*	.12	-.29**	-.15	-.17	-

Note: General health (Ware & Sherbourne, 1992) is a five-item scale; higher scores indicate better health. Sleep problems (Hays & Stewart, 1992) is a nine-item subscale; higher scores suggest more problematic sleep. Mindfulness (Brown & Ryan, 2003) is a 15-item scale; higher scores indicate greater mindfulness. Satisfaction with life (Diener et al., 1985) is a five-item scale; higher scores suggest greater satisfaction. Job satisfaction (Ironson et al., 1989) is an eight-item scale; higher scores indicate greater satisfaction. Suboptimal patient care is an eight-item scale (Shanafelt et al., 2002); higher scores indicate poorer clinical care.

* $p < .05$. ** $p < .01$

Hypothesis Testing

Hypothesis 1: Mindfulness will have a significant, positive relationship with satisfaction with life, job satisfaction, and better patient care.

Analysis of Hypothesis 1: Pearson correlations demonstrated that mindfulness was significantly positively correlated with satisfaction with life ($r = .33, p = .001$) and job satisfaction ($r = .21, p = .03$). Mindfulness was significantly negatively correlated with suboptimal patient care ($r = -.29, p = .002$). Therefore, the first hypothesis was supported.

Hypothesis 2: Health indicators will be associated with satisfaction with life, job satisfaction, and better patient care. Specifically, general health will have a significant, positive relationship with satisfaction with life and job satisfaction, whereas it will be

significantly negatively correlated with suboptimal patient care. Additionally, sleep problems will have a significant, negative relationship with satisfaction with life and job satisfaction, whereas it will be significantly positively correlated with suboptimal patient care.

Analysis of Hypothesis 2: Pearson correlations revealed that general health was significantly positively correlated with satisfaction with life ($r = .42, p < .001$) and job satisfaction ($r = .38, p < .001$). General health was significantly negatively correlated with suboptimal patient care ($r = -.20, p = .04$). Therefore, this component of the hypothesis was supported.

Another set of Pearson correlations showed sleep problems to be significantly negatively correlated with satisfaction with life ($r = -.45, p < .001$), thus supporting the hypothesis. However, contrary to the hypothesis, correlations between sleep problems and job satisfaction ($r = -.19, p = .06$) and sleep problems and suboptimal patient care ($r = .12, p = .22$) were not significant.

As the results regarding sleep problems, job satisfaction, and suboptimal patient care were unexpected, exploratory one-way between-groups ANOVAs were run to further examine the associations between sleep problems and the outcome variables. This was done to determine whether individuals with extreme sleep problems differed significantly from other individuals on the outcome variables. Participants were categorized into three groups that were created by dividing the participants into tertiles using their scores on the MOS Sleep Scale – little sleep problems (score 0 – 24, $n = 50$), moderate sleep problems (score 25 – 49, $n = 50$), and extreme sleep problems (50 – 74, n

= 8). There was a significant association between degree of sleep problems and satisfaction with life, $F(2, 105) = 12.65, p = .00$. Post hoc comparisons using the Tukey HSD test indicated that all pairwise differences among means were significant, $p < .05$. Of particular interest, the extreme sleep problems group ($M = 18.63, 95\% \text{ CI } [12.63, 24.62]$) had significantly lower satisfaction with life ratings than the little sleep problems group ($M = 29.58, 95\% \text{ CI } [28.19, 30.97]$), $p = .00$. Additionally, the extreme sleep problems group ($M = 18.63, 95\% \text{ CI } [12.63, 24.62]$) had significantly lower satisfaction with life ratings than the moderate sleep problems group ($M = 26.06, 95\% \text{ CI } [24.09, 28.03]$), $p < .01$. Consistent with the correlational results described previously, there was not a significant association between degree of sleep problems and the outcomes of job satisfaction or suboptimal patient care at the $p < .05$ level, $F(2, 102) = 1.43, p = .24$; $F(2, 107) = .80, p = .45$, respectively.

Hypothesis 3: Mindfulness will account for a significant amount of variance in satisfaction with life, job satisfaction, and suboptimal patient care above and beyond the variance accounted for by general health and sleep problems.

Hypothesis 4: Mindfulness will moderate the relationship between health indicators (general health and sleep problems) and satisfaction with life, job satisfaction, and suboptimal patient care. Specifically, mindfulness is expected to magnify the relationship between general health and satisfaction with life and job satisfaction, while buffering the relationship between general health and suboptimal patient care. Additionally, mindfulness is expected to buffer the relationship between sleep problems and satisfaction with life, job satisfaction, and suboptimal patient care.

Analysis of Hypotheses 3 and 4: The third and fourth hypotheses were analyzed together by running six separate hierarchical regression analyses to examine the influence of health (general health and sleep problems) and mindfulness on satisfaction with life, job satisfaction, and suboptimal patient care. Before running analyses, the independent variables were centered, which is a linear transformation where the predictor's mean is subtracted from each score on the predictor (Cohen et al., 2003). Cohen et al. (2003) recommend centering because it reduces multicollinearity and provides more meaningful interpretations of the regression coefficients. Interaction terms were then created (general health \times mindfulness, or sleep problems \times mindfulness). In the regression models, general health or sleep problems was entered in Step 1, while mindfulness was entered in Step 2. The interaction term was entered in Step 3 (general health \times mindfulness, or sleep problems \times mindfulness). The dependent variables were satisfaction with life, job satisfaction, and suboptimal patient care. The results of the regression analyses are presented in Tables 6 and 7.

Table 6

Hierarchical Multiple Regression Analyses Predicting Satisfaction with Life, Job Satisfaction, and Suboptimal Patient Care from General Health and Mindfulness

Step and Variable	<i>df</i>	<i>R</i> ²	ΔR^2	ΔF	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>t</i>
<i>Equation 1: Predicting Satisfaction with Life</i>								
1. General health	(1,105)	.18	.18	22.97**	.16	.03	.42	4.79**
2. Mindfulness	(2,104)	.22	.04	5.38*	1.58	.68	.21	2.32*
3. General Health \times Mindfulness	(3,103)	.24	.02	3.10	-.05	.03	-.15	-1.76
<i>Equation 2: Predicting Job Satisfaction</i>								
1. General health	(1,104)	.14	.14	17.37**	.10	.03	.38	4.17**
2. Mindfulness	(2,103)	.15	.01	0.85	.49	.53	.09	.92
3. General Health \times Mindfulness	(3,102)	.16	.01	1.10	-.02	.02	-.10	-1.05
<i>Equation 3: Predicting Suboptimal Patient Care</i>								
1. General health	(1,108)	.04	.04	4.73*	-.05	.02	-.21	-2.18*
2. Mindfulness	(2,107)	.10	.06	6.48*	-1.13	.44	-.25	-2.55*
3. General Health \times Mindfulness	(3,106)	.10	.00	0.00	.00	.02	-.00	-.01

Note. All statistics are reported at the step at which the predictors are entered. Sample sizes vary due to missing data. Mindfulness (Brown & Ryan, 2003) is a 15-item scale; higher scores indicate greater mindfulness. General health (Ware & Sherbourne, 1992) is a five-item scale; higher scores indicate better health. Satisfaction with life (Diener et al., 1985) is a five-item scale; higher scores suggest greater satisfaction. Job satisfaction (Ironson et al., 1989) is an eight-item scale; higher scores indicate greater satisfaction. Suboptimal patient care is an eight-item scale (Shanafelt et al., 2002); higher scores indicate poorer clinical care.

* $p < .05$. ** $p < .01$.

The first hierarchical regression examined the influence of general health and mindfulness on satisfaction with life (see Table 6). The full model was statistically significant, $F(3, 103) = 11.00, p < .001$. General health in Step 1 was significant, $F\Delta(1, 105) = 22.97, p < .001$ and accounted for 18% of the variability in satisfaction with life; better general health ($\beta = .42, p < .001$) predicted greater satisfaction with life. The addition of mindfulness in Step 2 was also significant, $F\Delta(2, 104) = 5.38, p = .02$, and explained an additional 4% of variability; specifically being more mindful ($\beta = .21, p = .02$) statistically predicted greater satisfaction with life. Inconsistent with the hypothesis, the addition of the interaction term (general health \times mindfulness) in Step 3 was not statistically significant, which indicates that a moderating relationship does not exist.

The influence of general health and mindfulness on job satisfaction was assessed in the second hierarchical regression (see Table 6). The overall model was significant, $F(3, 102) = 6.44, p < .001$. However, only the addition of general health in Step 1 significantly contributed to the model, $F\Delta(1, 104) = 17.37, p < .001$. General health accounted for 14% of the total variance in job satisfaction. The addition of mindfulness and the interaction term (general health \times mindfulness) were not significant. Thus, results indicate that a statistical direct effect exists: better health ($\beta = .38, p < .001$) predicted greater job satisfaction.

The third hierarchical regression model examined the influence of general health and mindfulness on suboptimal patient care (see Table 6). The overall model was significant, $F(3, 106) = 3.78, p = .01$. General health in Step 1 was significant, $F\Delta(1, 108) = 4.73, p = .03$, and accounted for 4% of the total variance in oncologists'

perceptions of the patient care that they provide; better general health ($\beta = -.21, p = .03$) predicted less suboptimal patient care. The addition of mindfulness in Step 2 was significant, $F\Delta(2, 107) = 6.48, p = .01$, and explained another 6% of variance; specifically being more mindful ($\beta = -.25, p = .01$) predicted less suboptimal patient care. Contrary to predictions, the interaction term (general health \times mindfulness) in Step 3 did not explain additional variance and was not statistically significant.

Table 7

Hierarchical Multiple Regression Analyses Predicting Satisfaction with Life, Job Satisfaction, and Suboptimal Patient Care from Sleep Problems and Mindfulness

Step and Variable	<i>df</i>	<i>R</i> ²	ΔR^2	ΔF	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>t</i>
<i>Equation 1: Predicting Satisfaction with Life</i>								
1. Sleep problems	(1,105)	.20	.20	26.03**	-.21	.04	-.45	-5.10**
2. Mindfulness	(2,104)	.22	.02	2.42	1.14	.73	.15	1.56
3. Sleep Problems \times Mindfulness	(3,103)	.22	.00	0.13	.02	.04	.03	.36
<i>Equation 2: Predicting Job Satisfaction</i>								
1. Sleep problems	(1,103)	.04	.04	3.68	-.07	.03	-.19	-1.92
2. Mindfulness	(2,102)	.05	.02	1.99	.83	.59	.15	1.41
3. Sleep Problems \times Mindfulness	(3,101)	.06	.01	0.96	-.04	.04	-.10	-.98
<i>Equation 3: Predicting Suboptimal Patient Care</i>								
1. Sleep problems	(1,107)	.02	.02	1.83	.04	.03	.13	1.35
2. Mindfulness	(2,106)	.10	.08	9.11**	-1.42	.47	-.31	-3.02**
3. Sleep Problems \times Mindfulness	(3,105)	.15	.05	6.13*	.07	.03	.24	2.48*

Note. All statistics are reported at the step at which the predictors are entered. Sample sizes vary due to missing data. Sleep problems (Hays & Stewart, 1992) is a nine-item subscale; higher scores suggest more problematic sleep. Mindfulness (Brown & Ryan, 2003) is a 15-item scale; higher scores indicate greater mindfulness. Satisfaction with life (Diener et al., 1985) is a five-item scale; higher scores suggest greater satisfaction. Job satisfaction (Ironson et al., 1989) is an eight-item scale; higher scores indicate greater satisfaction. Suboptimal patient care is an eight-item scale (Shanafelt et al., 2002); higher scores indicate poorer clinical care.

* $p < .05$. ** $p < .01$.

The influence of sleep problems and mindfulness on satisfaction with life was assessed in the fourth hierarchical regression (see Table 7). The overall model was statistically significant, $F(3, 103) = 9.57, p < .001$. However, only the addition of sleep problems significantly contributed to the model, $F\Delta(1, 105) = 26.03, p < .001$. Sleep problems accounted for 20% of the total variance in satisfaction with life. Contrary to the hypothesis, the addition of mindfulness and the interaction term (sleep problems \times mindfulness) were not statistically significant. These findings indicate that a statistical direct effect exists: fewer sleep problems ($\beta = -.45, p < .001$) predicts greater satisfaction with life.

The fifth hierarchical regression explored the influence of sleep problems and mindfulness on job satisfaction (see Table 7). Neither the overall model, $F(3, 101) = 2.22, p = .09$, nor any of the individual steps of the regression model were statistically significant.

The sixth hierarchical regression examined the influence of sleep problems and mindfulness on suboptimal patient care (see Table 7). The full model was statistically significant, $F(3, 105) = 5.91, p < .001$. Sleep problems in Step 1 was not statistically significant. The addition of mindfulness in Step 2 was significant, $F\Delta(2, 106) = 9.11, p = .003$ and accounted for 8% of the total variance in oncologists' perceptions of the suboptimal patient care that they provide. Consistent with Hypothesis 4, the addition of the interaction term (sleep problems \times mindfulness) in Step 3 was statistically significant, $F\Delta(3, 105) = 6.13, p = .02, \Delta R^2 = .05$.

The moderating relationship can be seen in Figure 1. In this figure, the regression of Y on X is plotted for three values of mindfulness (Z). Low mindfulness is one standard deviation below the mean value for mindfulness, medium mindfulness is the mean value, and high mindfulness represents one standard deviation above the mean value for mindfulness. The interaction is indicated as the regression lines are not parallel and actually would intersect because the regression of Y on X is changing as a function of Z . Thus, as depicted in Figure 1, mindfulness appears to moderate the relationship between oncologists' sleep problems and suboptimal patient care, but it did not serve as a buffer as expected. Tests of simple slopes were calculated to assess if the slope of the high and low regression lines were statistically different from zero. The slope for high mindfulness (.19, 1 standard deviation above the mean) was not significant, $t(108) = 1.44, p = .154$, whereas the slope for low mindfulness (-.29, 1 standard deviation below the mean) was marginally significant, $t(108) = -1.93, p = .056$. Thus, mindfulness moderated the relationship between oncologists' sleep problems and suboptimal patient care, such that among oncologists low on mindfulness, suboptimal patient care decreased as sleep problems increased.

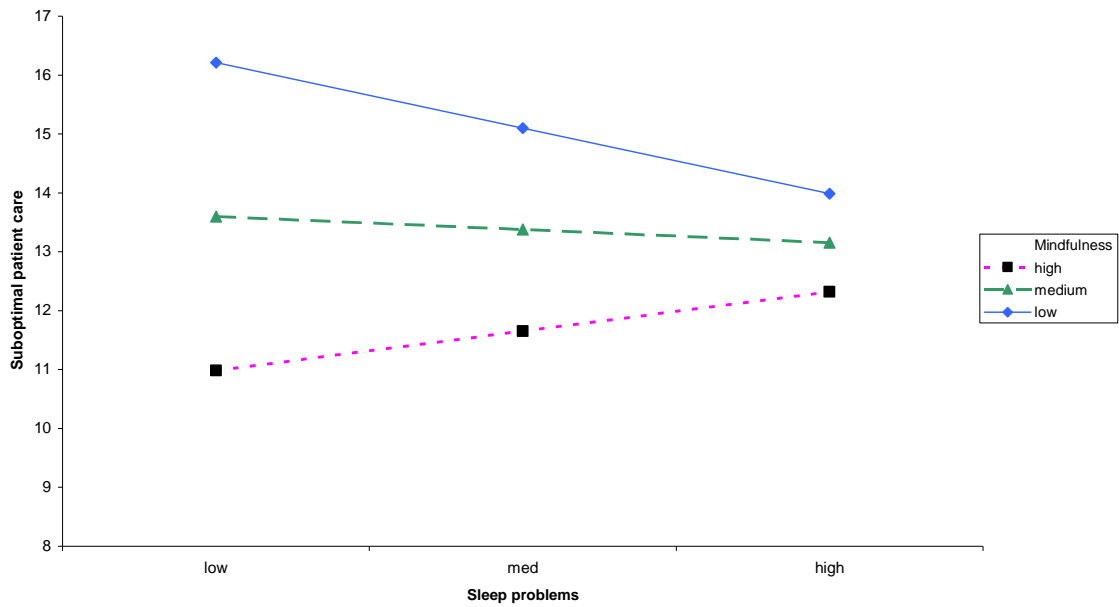


Figure 1. Interaction of sleep problems and mindfulness predicting suboptimal patient care.

Chapter V: Discussion

More research is needed to examine the health and well-being of physicians, particularly of oncologists. Therefore, the current study sought to accomplish three aims. First, the study explored the health, well-being, and patient care practices of oncologists. Second, the study investigated the relationship between oncologists' mindfulness and health indicators (general health and sleep problems) with three outcomes (satisfaction with life, job satisfaction, and suboptimal patient care). Third, the study measured whether mindfulness moderated the relationship between the health variables and the outcomes of satisfaction with life, job satisfaction, and suboptimal patient care. This chapter provides a summary and interpretation of the research findings and a review of their implications for the field of oncology. Subsequently, limitations of the study are discussed. Finally, the chapter concludes with recommendations for future research and the contributions this study has made to the field.

Summary, interpretation and implications of findings

As mentioned, an aim of this study was to explore the health, well-being, and patient care practices of oncologists because there is a lack of descriptive research about physicians in general. Thus, descriptive findings indicate that the study participants, like the larger group of oncologists in the United States, were mostly middle-aged Caucasian married men. These demographic characteristics are particularly of note as the oncologists represent a privileged group that does not reflect their more diverse patient population. In addition, despite the increasing diversity seen in medical school classes, new fellows in oncology do not appear to be more diverse than practicing oncologists; the one exception to this pattern is the increasing number of women in the field (AAMC's Center for Workforce Studies, 2006). These data have

consequential implications for medical care. Specifically, aware of such differences between patients and providers, it is especially important for oncologists to be provided with and seek out information about and training in health disparities for minority groups, multicultural awareness, and patient-provider communication.

In our American work-focused culture, it is important to note that the participants in this study were working very long hours. They reported working an average of nearly 60 hours per week, which means that many oncologists are working even more hours each week.

Unfortunately common for physicians in the United States, such long work weeks are detrimental to the health and well-being of most individuals, as well as to their patients.

Interestingly, in a recent study of licensed physicians in California ($N = 763$), the average work week for the participants was 10 hours more than that of the general California population and 21% of the physicians reported working more than 60 hours per week (Bazargan et al., 2009).

Participants who reported working excessively (defined as 65 or more hours per week) were statistically less likely to exercise, eat breakfast, and get sufficient sleep. They also were more likely to endorse a “severe” daily level of stress. Unfortunately, as demand is expected to grow for oncology services due to our aging population and other factors, work demands for oncologists are not forecasted to abate (AAMC's Center for Workforce Studies, 2006).

The oncologists in this study worked hard and, not surprisingly, attested that they were not getting adequate sleep (6.3 hours per night). In fact, the duration of their sleep was consistent with national averages (NSF, 2009) and other physician samples (Bazargan et al., 2009). Many respondents also acknowledged that they struggled with sleep problems; however this sample of oncologists featured much lower sleep problem scores than the normative adult community sample (Hays, Sherbourne, & Mazel, 1995). More than a third of the oncologists in

this study reported that they were not getting the amount of sleep they needed and more than half of respondents believed that their sleep interfered with daily functioning. These findings, along with previous research findings about sleep habits among healthcare workers, highlight that sleep is a serious concern for physicians' personal well-being and for the professional care that they provide (Gaba & Howard, 2002). Yet, it is interesting that the vast majority of research concerns physician-residents, as opposed to experienced physicians. This discrepancy underscores the need for further education, intervention, and research into the sleep habits of and consequences for more experienced seasoned physicians.

Although they tended to work too much and sleep too little, respondents still reported that they enjoyed very good general health. Their general health scores were much higher than those of an adult community sample (Hays et al., 1995). These findings are in line with the body of research published by Erica Frank; she has found that American and Canadian physicians report being healthier and living longer than members of the general public (Frank, 2004; Frank et al., 1998; Frank & Segura, 2009). Clearly, good health benefits individuals themselves, and it is important to note that a physician's personal health influences his or her likelihood to counsel patients on health behaviors (Frank, 2004). In light of these findings, oncologists should be encouraged and supported to maintain or improve their general health.

A unique and curious finding of this study is that oncologists perceived themselves as having high levels of dispositional mindfulness, even higher scores than a group of Zen practitioners (Brown & Ryan, 2003). There are numerous ways to conceptualize this finding, including the following possibilities. Maybe individuals with elevated levels of mindfulness self-select into the profession of clinical oncology because characteristics of the profession appeal to them. Or maybe, with their constant involvement in issues such as suffering and death,

experienced oncologists have cultivated the ability to be in the moment with their patients and in their own lives. Or maybe this finding is a function of occupational demands: oncologists have learned to focus and attend to the present due to short appointments with patients and the multiple demands on their time. Or this finding might be an artifact of oncologists' personality; as a professional group, they may not be as humble as other groups of people, particularly Zen masters, and merely perceive themselves to be mindful. Or maybe those individuals with high levels of mindfulness self-selected into this research study as they tend to be more interested in the health, well-being, and patient care practices of oncologists, which is how the study was introduced to them. There is too much uncertainty about this finding to explain it, but it definitely warrants further research.

In light of recent evidence suggesting that physicians are deriving less pleasure and satisfaction from their jobs and careers (Landon et al, 2003; Sullivan & Buske, 1998; Zuger, 2004), a cheering, and somewhat unexpected, finding of this study is that respondents tended to be satisfied with both their lives and their jobs. Interestingly, although satisfied, many oncologists also reported to feeling stressed at work when questioned about burnout. And, it is important not to forget, that about 20% of the sample reported some degree of burnout. It is interesting to reflect on these variables – life satisfaction, job satisfaction, and burnout – and wonder if and how they might be related among oncologists. For it seems that some oncologists might consider themselves to be burning out, yet also be satisfied with their lives and jobs. This finding is consistent with a previous study of 122 oncologists in which 58% reported a high level of overall job satisfaction, and yet 48% of the sample endorsed low levels of personal accomplishment and 53% indicated high emotional exhaustion, both criteria for burnout (Grunfeld et al., 2005). Although there are many ways to interpret the current exploratory

finding and Grunfeld et al.'s (2005) results, one may wonder if some oncologists could be experiencing features of the burnout syndrome, while simultaneously feeling fulfillment from some aspects of their work. Clearly, further research is needed to understand the complex nature of competing feelings of burnout and satisfaction among oncologists.

There is growing awareness that physicians are human beings who, at times, provide less than excellent care and even make mistakes. This study provided oncologists with the opportunity to report engaging in suboptimal patient care practices and attitudes. As expected, for the most part, they perceived themselves to be providing good care but they did report occasional suboptimal practices and attitudes. It was not surprising that these oncologists reported many fewer incidents of suboptimal patient care than the medical residents in a previous study (Shanafelt et al., 2002), highlighting that experience in the field affects the care provided and/or how physicians perceive the care they provide.

It is very important to note that of all the items on Shanafelt et al.'s (2002) scale of patient care practices and attitudes the oncologists endorsed one item ("I had little emotional reaction to the death of one of my patients") more frequently than all other items. This finding could benefit from further exploration in future research. Additionally, it may be useful for oncologists themselves to explore this concept on their medical teams and with residents and fellows. There seem to be both benefits and drawbacks to having little emotional reaction to a patient's death, and discussion around this topic could yield very beneficial learning among professionals.

Finally, on a single-item that measured physicians' intention to leave clinical oncology in the next 5 years to go into another line of work, the oncologists endorsed a mean score of 1.78 ($SD = 1.18$; with 1 being *not at all likely* and 5 being *very likely*). This finding is informative but

not conclusive. It appears that, as a collective group, they are somewhat interested in pursuing other fields of work. This finding is in line with previous research that suggests many oncologists are unhappy in their careers and are seeking alternatives (AAMC's Center for Workforce Studies, 2006; Zuger, 2004). However, analyzing these data in a more meaningful way indicates that only 12% of the sample was considering leaving their jobs in the next 5 years, whereas 88% reported no intention to leave. Of course, the finding is limited because it was a self-reported single item and the item asked only about career change and not about retirement. A more definite conclusion about oncologists' career intentions requires research that fully examines the issues of career change, retirement, and preferences for part-time work.

The second aim of the study was to investigate the relationship between oncologists' dispositional mindfulness and health with three outcomes (satisfaction with life, job satisfaction, and suboptimal patient care). It was hypothesized that mindfulness would be significantly positively related to satisfaction with life, job satisfaction, and better patient care practices. This hypothesis was supported, and the findings are not surprising. Over the last decade, the body of research examining mindfulness indicates that it tends to be associated with more positive states of being and behaviors. In particular, Brown and Ryan (2003) and Shapiro et al. (2005) found that scores on a mindfulness scale correlated with scores on a measure of life satisfaction. In contrast to the current finding that mindfulness is correlated with job satisfaction, a recent study of mindfulness in rehabilitation workers ($N = 98$) did not detect a statistically significant association with work satisfaction (McCracken & Yang, 2008). Finally, although discussed in the literature, previous research on mindfulness has not measured its relationship with patient care practices. For example, Epstein (1999) wrote that he believes mindfulness is central to good patient care, while Shapiro et al. (1998) have suggested that mindfulness enhances healthcare

workers' abilities to be empathic and present with patients. Therefore, the current findings help elucidate the relationship between mindfulness and the occupational factors of job satisfaction and patient care practices. Clearly it would be important to replicate these findings in future research.

It was also hypothesized that health indicators would be associated with satisfaction with life, job satisfaction, and better patient care; this hypothesis was partially supported. Specifically, it was thought that general health would be significantly positively related to satisfaction with life and job satisfaction, whereas it would be significantly negatively correlated with suboptimal patient care. This component of the hypothesis was supported and is consistent with previous research regarding physical health (Aasland et al., 1997; Frank, 2004; Pavot & Diener, 1993).

Sleep problems were posited to have a significant, negative relationship with satisfaction with life and job satisfaction, whereas they would be significantly, positively correlated with suboptimal patient care. Pearson correlations showed sleep problems to be significantly negatively correlated with satisfaction with life, thus supporting the hypothesis. This finding is in line with the body of research regarding sleep problems and their effects (Morin et al., 2003). However, contrary to the hypothesis and previous research regarding fatigue (NSF, 2009; Parshuram, 2006), correlations between sleep problems and job satisfaction and between sleep problems and suboptimal patient care were not statistically significant. A potential explanation for these nonsignificant correlations might be how they are measured on these short instruments. The Abridged Job in General scale (Ironson et al., 1989) is a global measure of job satisfaction that taps into an individual's affective judgment about his or her job. However, it may not be a good measure of job satisfaction in relation to job performance, which might be more affected by

sleep problems. Regarding patient care, the Shanafelt et al. scale (2002) asks about the frequency of patient care practices and attitudes, and responses are measured over one's lifetime (*never, once, several times per year, monthly, or weekly*). A correlation may not be very meaningful when measuring the relationship between a relatively infrequent occurrence (participants' behaviors or attitudes) and sleep problems in the past 4 weeks.

The third aim of the study was to measure if mindfulness moderated the relationship between health variables and the outcomes of satisfaction with life, job satisfaction, and suboptimal patient care. The direct relationships between general health and mindfulness and the outcome variables were analyzed first. Thus, the study's third hypothesis was that mindfulness would statistically predict greater satisfaction with life, greater job satisfaction, and less suboptimal patient care, above and beyond the variance accounted for by general health and sleep problems. This hypothesis was partially supported.

In hierarchical regression models, general health statistically predicted greater satisfaction with life, greater job satisfaction, and less suboptimal patient care, whereas mindfulness statistically predicted greater satisfaction with life and less suboptimal patient care. Mindfulness did not predict variance in job satisfaction. First, these findings highlight the importance of an individual's physical health across multiple domains. Not surprisingly, among oncologists in this study, better health directly predicted that they were more satisfied with their lives. Better health was also associated with workplaces outcomes. Namely, healthier oncologists reported that they were more satisfied with their jobs and provided better patient care. Second, these findings provide valuable information about dispositional mindfulness among physicians. The fact that mindfulness statistically predicted greater satisfaction with life offers more evidence for the growing literature demonstrating the positive effects of nurturing

mindfulness among healthcare professionals. Additionally, these findings also support mindfulness interventions for oncologists as they appear to benefit patients, considering that more mindful participants reported providing better patient care. Also, although the difference is not statistically significant, interestingly mindfulness accounted for more variance (6%) than general health (4%) in the model predicting patient care. Overall, these findings suggest that mindfulness has both personal and professional benefits for oncologists that should be encouraged.

Another set of hierarchical regression models revealed that sleep problems statistically predicted less satisfaction with life, but were not associated with job satisfaction or suboptimal patient care. The finding regarding satisfaction with life is in line with previous research regarding sleep problems (Pilcher, Reimer, & Dailey, 1997); as expected, experiencing sleep problems takes a toll on individuals' satisfaction with their daily living and on how they perceive the conditions of their lives. In these models, mindfulness was not associated with satisfaction with life or job satisfaction, but it statistically predicted less suboptimal patient care, above and beyond the variance accounted for by sleep problems. This finding, again, provides support for interventions that teach mindfulness to oncologists, as being more mindful was associated with better patient care.

Finally, it was hypothesized that mindfulness would act as a moderator within the regression models. Specifically, mindfulness was expected to magnify the relationship between general health and satisfaction with life and job satisfaction, while buffering the relationship with suboptimal patient care. Additionally, mindfulness was expected to buffer the relationship between sleep problems and satisfaction with life, job satisfaction, and suboptimal patient care.

This hypothesis was only partially supported because mindfulness served as a moderator in only one of the six hierarchical regression models that were run.

Mindfulness moderated the relationship between oncologists' sleep problems and suboptimal patient care, but it did not serve as a buffer as hypothesized. It was thought that mindfulness would "protect" oncologists from providing poor patient care should they be experiencing sleep problems. Instead, for oncologists who were low on dispositional mindfulness, suboptimal patient care decreased as sleep problems increased. Or stated another way: as sleep problems increased for oncologists who were low on dispositional mindfulness, they reported that their patient care actually improved. One possible cause for this finding might be a measurement issue – it may be a function of perception, not actual patient care. Shanafelt et al.'s (2002) measure of suboptimal patient care asks respondents to assess their perceptions of their practices and attitudes; it does not measure observed behaviors. It is a self-report measure and thus limited by the respondents' perceptions. In this case, if an oncologist is not very mindful, as sleep problems increase, he may become even less aware of the patient care that he is providing and might over-rate the quality of his patient care.

Mindfulness did not moderate the relationship between sleep problems and suboptimal patient care for oncologists who were high on mindfulness; however it is speculated that a statistically significant moderating relationship may have been detected with a larger sample. Thus, future research may examine these relationships, and in light of the weakness of self-report measures, it would be beneficial to use objectively verified measures or multimodal measures of beliefs and behaviors, such as sleep diaries and patient ratings of physicians' care practices.

As mentioned, mindfulness did not serve as a moderator in five of the six hierarchical regression models, and there are a couple of possible explanations for these nonsignificant

findings. Other attributes that were not included in the regression models may have accounted for the variance in the outcomes. Or, there may simply be no moderating effect of mindfulness under the specified parameters; instead mindfulness may have influenced the outcome variables, regardless of the levels of the independent variable in the model.

Limitations

Like all research, this study had limitations, particularly concerning design and measurement issues. Despite oversampling because physician samples tend to have lower response rates than non-physician respondents (Asch et al., 1997), the number of participants who took part in this study, was lower than expected. However, the study's response rate of 29% is similar to response rates in studies of physicians that are published in peer-reviewed journals. Another limitation was that because participation in the study was voluntary, there may have been a self-selection bias. For instance, oncologists who participated were likely more interested in issues such as health, well-being and patient care compared to those oncologists who did not take part. A further limitation is that, due to convenience and a lack of financial resources, this study used only self-report measures to obtain data. Thus, the conclusions of this study are drawn entirely from the oncologists' perceptions of themselves. The findings of the study could be enhanced with objectively verified measures and/or multimodal measures of beliefs and behaviors.

Although useful data were collected, a limitation of this study was the brevity of the measures. The selection of instruments was guided by the literature that physicians participate less frequently in research than most other populations, and when they do, they desire minimal demands on their time (Asch et al., 1997; Levinson et al., 1998). Therefore, many of the measures that were used in this study were selected because they are brief screening instruments,

which was appropriate because the study was exploratory. However, longer instruments may yield richer, more valid responses. The brief measures used in the current study include: the five-item General Health Perceptions subscale of the RAND 36-Item Short Form Health Survey (Ware & Sherbourne, 1992), the three consumption questions of the Alcohol Use Disorders Identification Test (AUDIT-C; Saunders et al., 1993), the eight-item Abridged Job in General scale ([AJIG]; Ironson et al., 1989), a one-item measure of burnout among physicians (Rohland et al., 2004), and a one-item measure to assess participants' intention to leave their jobs (Barnett et al., 2005). Although these measures were used to minimize time demands on participants, the scales also were selected because they had good psychometric properties.

There are additional concerns regarding some of the instruments. For instance, the psychometric properties of Shanafelt et al.'s (2002) measure of suboptimal patient care have not been assessed. However, as there appear to be no other self-report instruments that assess the appropriateness of patient care, that measure was used. Further, there is a concern about the AJIG scale (Ironson et al., 1989); there seems to be a ceiling effect in the data for the physician sample that suggests the AJIG may not have been sensitive enough to detect variation among participants. Finally, the AUDIT-C scale (Saunders et al., 1993) had an extremely low Cronbach's alpha value ($\alpha = .27$) in the present study, suggesting that the scale's three items do not measure the same construct. An alpha value of .27 is an inadequate value of internal consistency reliability, and findings using such a value are not interpretable. As the measure failed to achieve an adequate alpha level (.70), it was excluded from further analyses. The AUDIT-C does not seem to be a valid screening test for hazardous drinking in this sample; whereas it has been shown to be a valid primary care screening test for heavy drinking and active

alcohol abuse or dependence, it may not be appropriate for the lighter drinking habits the oncologists reported.

Another limitation of this study is its generalizability. As mentioned previously, the descriptive findings suggest that the study participants tend to reflect the larger group of oncologists in the United States because they were mostly middle-aged Caucasian married men. Therefore, these findings may generalize to most oncologists in the United States, but it is important to keep in mind that there are individual differences among American oncologists. Consequently the conclusions drawn in this study may not generalize well to more diverse subsamples of oncologists. That said, although this current sample featured little diversity, tests of differences indicated that demographic variables (e.g., age, gender, ethnicity) were not linearly associated with any of the dependent variables.

Finally, the research design of the present study is a limitation for it does not allow for causation to be inferred. It was not possible to do experimental research and manipulate the independent variables (general health, sleep problems, and mindfulness). Because this study was observational research, the results suggest a causal relationship but it is important to be aware that there are also alternative explanations for such findings. For instance, although mindfulness was found to statistically predict variance in the outcome measures of satisfaction with life and suboptimal patient care, these outcomes could also influence mindfulness among the participants. Therefore, there may actually be a reciprocal relationship between variables that was not detected because of the research design and analyses.

Future research

As this study was exploratory in nature, several potential areas of future research are suggested. First, as variation exists among medical specialties, more research is needed to better

understand oncologists, particularly as the demand for their services is forecasted to increase in the coming years (AAMC's Center for Workforce Studies, 2006). Although research of medical students and residents is very important, it is more common due to the accessibility of these groups. However, research is also needed to understand more experienced oncologists who are at later stages in their careers. This study highlighted the need for research into sleep habits, sleep problems, and interference with daily functioning. Further research could also help clarify why oncologists might be experiencing such high life and job satisfaction, especially while some are also feeling burned out. In light of their elevated scores in dispositional mindfulness, future research could elucidate why oncologists perceived themselves to be so mindful; such findings would be very interesting and a unique contribution to the research literature.

A second area that warrants further research is the nature of mindfulness, especially as it is a newly burgeoning subject of Western research. Research is needed into the mechanisms of mindfulness and how it interacts with personal and situational variables to explain outcomes. In light of the current finding that mindfulness rarely acts as a moderator of health behaviors and personal outcomes, future research is needed to confirm this finding. Also, an examination of potential mediating models of mindfulness within a physician population might clarify the influence of these factors. Further, research into the high scores of dispositional mindfulness in the current sample of oncologists should be explored. It would be useful to confirm these findings, compare scores across medical specialties, and obtain multimodal types of data (e.g., self-report, patient-report, direct observation).

Finally, as the AUDIT-C is a very popular screening instrument, it was surprising that it was not a reliable measure of hazardous drinking in this sample. Thus research is suggested in two related directions. First, although alcohol and drug use is expected to be low among

oncologists, research is needed to confirm such hypotheses. Second, research into the use of the AUDIT-C with physician populations may be beneficial to understand if it is an appropriate measurement tool for these samples.

Contributions and conclusion

The present study enhances the understanding of physician health, well-being, and patient care, and provides valuable information about the associations mindfulness has with outcomes for oncologists and their patient care. First, few recent studies have collected descriptive data specifically about oncologists. Therefore, this study provides a better understanding of profession-specific strengths, weaknesses, and opportunities for targeted interventions to support oncologists and improve their patient care practices. Second, the current study is one of only a few studies that examine mindfulness among physicians, and possibly the first to do so exclusively among oncologists. Third, it is also one of few studies that analyze potential moderation effects of mindfulness, thereby extending previous research into the role of mindfulness in complex behavioral outcomes. This study's findings are particularly valuable as more and more mindfulness interventions are being developed for healthcare workers.

The current study highlights that being healthier and more mindful has benefits for individual oncologists, as well as for their patients. These findings can inform the development of effective interventions to increase physicians' self-care practices. Additionally, it is hoped that these results might be used to enhance care for patients, improve medical education practices for physicians in training, and guide policy recommendations for the medical field in general.

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Appendix A

Cover Letter to Prospective Participants in Condition A

[Date]

Dear Dr. [XXXX],

We are writing to ask your help in a study of clinical oncologists being conducted by Virginia Commonwealth University's Massey Cancer Center. As you know, oncology is a demanding field and requires great personal investment. Therefore, we are interested in learning more about your health, well-being, and patient care practices.

Your answers are not only important, but needed to understand patterns of physician health, well-being, and patient care among oncologists. The findings from this study are intended to design interventions to support oncologists in stressful work environments.

The survey should take about 10 minutes to complete. Your answers are completely anonymous and will be released only as summaries in which no individual's answers can be identified. Participating in this survey is voluntary. However, **you can help us greatly by completing this survey**. If you prefer not to respond, please let us know by returning the blank questionnaire in the enclosed envelope.

If you have any questions or comments about this study, we would be happy to talk with you. Please email Amanda Kracen at kracenac@vcu.edu or telephone us at XXXX. Thank you very much for helping with this important study.

Kind regards,

Tom Smith, M.D.
Chair
Hematology/Oncology and Palliative Care

Laurie Lyckholm, M.D.
Associate Professor
Hematology/Oncology and Palliative Care

Kathy Ingram, J.D., Ph.D.
Associate Professor
Department of Psychology

Amanda Kracen, M.S.
Doctoral student
Department of Psychology

Appendix B

Cover Letter to Prospective Participants in Condition B

[Date]

Dear Dr. [XXXX],

We are writing to ask your help in a study of clinical oncologists being conducted by Virginia Commonwealth University's Massey Cancer Center. As you know, oncology is a demanding field and requires great personal investment. Therefore, we are interested in learning more about your health, well-being, and patient care practices.

Your answers are not only important, but needed to understand patterns of physician health, well-being, and patient care among oncologists. The findings from this study are intended to design interventions to support oncologists in stressful work environments.

The survey should take about 10 minutes to complete. Your answers are completely anonymous and will be released only as summaries in which no individual's answers can be identified. Participating in this survey is voluntary. However, **you can help us greatly by completing this survey**. As a token of our thanks, please enjoy the enclosed bookmark. If you prefer not to respond, please let us know by returning the blank questionnaire in the enclosed envelope.

If you have any questions or comments about this study, we would be happy to talk with you. Please email Amanda Kracen at kracenac@vcu.edu or telephone us at XXXX. Thank you very much for helping with this important study.

Kind regards,

Tom Smith, M.D.
Chair
Hematology/Oncology and Palliative Care

Laurie Lyckholm, M.D.
Associate Professor
Hematology/Oncology and Palliative Care

Kathy Ingram, J.D., Ph.D.
Associate Professor
Department of Psychology

Amanda Kracen, M.S.
Doctoral student
Department of Psychology

[Note: A bookmark was attached to this cover letter.]

Appendix C

Cover Letter to Prospective Participants in Condition C

[Date]

Dear Dr. [XXXX],

We are writing to ask your help in a study of clinical oncologists being conducted by Virginia Commonwealth University's Massey Cancer Center. As you know, oncology is a demanding field and requires great personal investment. Therefore, we are interested in learning more about your health, well-being, and patient care practices.

Your answers are not only important, but needed to understand patterns of physician health, well-being, and patient care among oncologists. The findings from this study are intended to design interventions to support oncologists in stressful work environments.

After you return your survey, you have the unique opportunity to receive personalized feedback regarding your health and well-being. Just return the enclosed stamped postcard and your results will be sent to you.

The survey should take about 10 minutes to complete. Your answers are completely confidential and will be released only as summaries in which no individual's answers can be identified. Participating in this survey is voluntary. However, **you can help us greatly by completing this survey**. If you prefer not to respond, please let us know by returning the blank questionnaire in the enclosed envelope.

If you have any questions or comments about this study, we would be happy to talk with you. Please email Amanda Kracen at kracenac@vcu.edu or telephone us at XXXX. Thank you very much for helping with this important study.

Kind regards,

Tom Smith, M.D.
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Laurie Lyckholm, M.D.
Associate Professor
Hematology/Oncology and Palliative Care

Kathy Ingram, J.D., Ph.D.
Associate Professor
Department of Psychology

Amanda Kracen, M.S.
Doctoral student
Department of Psychology

Appendix D
Study Questionnaire

The Health, Well-Being, and Patient Care Practices of Oncologists

Consent Statement

The purpose of this research study is to examine the health, well-being, and patient care practices of oncologists. If you decide to participate in this study, you will be asked to spend less than 10 minutes answering questions about your job, health, and patient care practices. All participants are asked to complete the questionnaire and are randomly assigned to one of three groups. Participants may receive no incentive (Group 1), a bookmark (Group 2), or personalized feedback about their health and well-being (Group 3).

This research poses little risk to you. It is possible that participants may experience some emotional discomfort as they reflect on their health, well-being, and patient care practices. Additionally, participants in Group 3 will be offered the opportunity to have personalized feedback mailed to them. As some personal information (name and address) will be collected, there is a temporary risk that this information could be linked with their questionnaires, and confidentiality would be compromised. To protect the confidentiality of participants who request feedback, all personal information will be kept in separate locked file cabinets and will be shredded after the feedback is sent. Conversely, participants may enjoy taking part in the research, particularly as findings are intended to design interventions to train and support oncologists.

Participating in this survey is completely voluntary, and you may discontinue at any time. You may also choose not to answer any question.

If you have any questions, complaints, or concerns about the research, please contact:

Kathleen Ingram, J.D., Ph.D.

Associate Professor, Virginia Commonwealth University

Telephone: (804) 828-6346, Email: kingram@vcu.edu

By checking this box, completing the questionnaire, and returning it to the researchers, I signify my willingness to participate in this research study.

I agree.

Instructions: Please do the best you can to answer all the questions. Thank you for taking the time to complete this questionnaire.

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below indicate your agreement with each item by placing the appropriate number on the line preceding that item.

7	6	5	4	3	2	1
Strongly agree	Agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Disagree	Strongly disagree

____ In most ways my life is close to my ideal.

____ The conditions of my life are excellent.

____ I am satisfied with my life.

____ So far I have gotten the important things I want in life.

____ If I could live my life over, I would change almost nothing.

Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	2	3	4	5	6
Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	5	6
I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
I forget a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	4	5	6
I rush through activities without being really attentive to them.	1	2	3	4	5	6
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	1	2	3	4	5	6
I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
I find myself listening to someone with one ear, doing something else at the same time.	1	2	3	4	5	6
I drive places on "automatic pilot" and then wonder why I went there.	1	2	3	4	5	6
I find myself preoccupied with the future or the past.	1	2	3	4	5	6
I find myself doing things without paying attention.	1	2	3	4	5	6
I snack without being aware that I'm eating.	1	2	3	4	5	6

How often did you have a drink containing alcohol in the past year? (check one only)

- Never
 Monthly or less
 Two to four times a month
 Two to three times per week
 Four or more times a week

How many drinks did you have on a typical day when you were drinking in the past year? (check one only)

- 1 or 2
 3 or 4
 5 or 6
 7 to 9
 10 or more

How often did you have six or more drinks on one occasion in the past year? (check one only)

- Never
 Less than monthly
 Monthly
 Weekly
 Daily or almost daily

How long did it usually take for you to fall asleep during the past 4 weeks? (circle one)

- 0-15 minutes.....1
 16-30 minutes.....2
 31-45 minutes.....3
 46-60 minutes.....4
 More than 60 minutes.....5

On the average, how many hours did you sleep each night during the past 4 weeks?

Write in number of hours per night _____

How often during the past 4 weeks did you... (circle one number on each line)

	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
Feel that your sleep was not quiet (moving restlessly, feeling tense, speaking, etc.) while sleeping?	1	2	3	4	5	6
Get enough sleep to feel rested upon waking in the morning?	1	2	3	4	5	6
Awaken short of breath or with a headache?	1	2	3	4	5	6
Feel drowsy or sleepy during the day?	1	2	3	4	5	6
Have trouble falling asleep?	1	2	3	4	5	6
Awaken during your sleep time and have trouble falling asleep again?	1	2	3	4	5	6
Have trouble staying awake during the day?	1	2	3	4	5	6
Snore during your sleep?	1	2	3	4	5	6
Take naps (5 minutes or longer) during the day?	1	2	3	4	5	6
Get the amount of sleep you needed?	1	2	3	4	5	6

To what extent do you consider problems with sleep to interfere with your daily functioning (e.g., daytime fatigue, ability to function at work/daily chores, concentration, memory, mood) currently? (circle one)

Not at all interfering A little Somewhat Much Very much interfering

On how many of the past seven days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities? _____ (answer between 0-7)

What is your age? _____

What is your gender? (circle one) Female or Male

In which U.S. state do you live? _____

What is your racial/ethnic background? (check all that apply)

- African American or Black Caucasian or White
 Asian/ Pacific Islander American Indian or Alaska Native
 Latino/a or Hispanic Other (specify) _____

What is your relationship status? (check one only)

- | | |
|---|------------------------------------|
| <input type="checkbox"/> Single | <input type="checkbox"/> Married |
| <input type="checkbox"/> Partnered or in a significant relationship | <input type="checkbox"/> Separated |
| <input type="checkbox"/> Divorced | <input type="checkbox"/> Widowed |

How many children under the age of 18 years old live with you? _____

In what year did you complete your oncology fellowship training? _____

Which best describes your discipline? (check one only)

- | | |
|--|---|
| <input type="checkbox"/> Medical oncology | <input type="checkbox"/> Surgical oncology |
| <input type="checkbox"/> Pediatric oncology | <input type="checkbox"/> Gynecological oncology |
| <input type="checkbox"/> Urological oncology | <input type="checkbox"/> Radiation oncology |
| <input type="checkbox"/> Hematology | <input type="checkbox"/> Bone marrow transplant |
| <input type="checkbox"/> Palliative and hospice medicine | <input type="checkbox"/> Other _____ |

What is the primary focus of your practice? (check one only)

- | | |
|--|--|
| <input type="checkbox"/> Private practice | <input type="checkbox"/> Academic practice |
| <input type="checkbox"/> Academic research | <input type="checkbox"/> Administrative |
| <input type="checkbox"/> Other _____ | |

In the past month, how many hours have you typically worked per week? _____

During the past year, what percent of your time was spent in direct patient care?

- | | |
|---------------------------------|----------------------------------|
| <input type="checkbox"/> 0-24% | <input type="checkbox"/> 50-74% |
| <input type="checkbox"/> 25-49% | <input type="checkbox"/> 75-100% |

Using your *own* definition of "burnout," please check one of the following:

- I enjoy my work. I have no symptoms of burnout.
- Occasionally I am under stress, and I don't always have as much energy as I once did, but I don't feel burned out.
- I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion.
- The symptoms of burnout that I'm experiencing won't go away. I think about frustration at work a lot.
- I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.

How likely are you to leave clinical oncology within five years and go into another line of work? (circle one number)

Not at all likely				Very likely
1	2	3	4	5

Thank you for completing this questionnaire.

Vita

Amanda C. Kracen was born in 1976 in Washington D.C. and is an American citizen. She graduated from the Illinois Mathematics and Science Academy in 1994 and attended Brown University, where she graduated with a Bachelor of Arts in Sociology in 1998. She has done additional undergraduate work at Trinity College Dublin and Dublin Business School in Ireland. Amanda earned a Master of Science in Counseling Psychology in 2005 from Virginia Commonwealth University. After completing a clinical internship at the St. Louis Veterans Affairs Medical Center, she plans to graduate in 2010 with her doctorate in Counseling Psychology from Virginia Commonwealth University.