

Mindfulness Based Interventions in the Clinical Setting

by

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Abstract

This thesis will review the use of mindfulness meditation techniques in the clinical setting. Specifically, an in-depth literature review of the theory, research and clinical findings and applications of clinical approaches using mindfulness such as Mindfulness-based Cognitive Therapy and Mindfulness-based Stress Reduction in clinical applications for clients experiencing a variety of symptoms. Particular focus will be applied in sifting through the findings of studies that claim to have results that indicate that these mindfulness approaches are clinically effective.

The thesis shall be grounded in a manuscript style, a non-empirical basis for a thesis which pulls together contemporary research and writings on the topic of mindfulness using a best practice analysis of mindfulness in clinical applications. “Best practice analysis” will be utilised as an analytic category related to theory and practice applications. Claims of the different mindfulness modalities will be considered, contrasted and compared to the actual results found in research studies. The effectiveness of mindfulness approaches in the clinical settings, including what situations it may or may not be best suited to, shall coalesce as an intended outcome of the research.

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CHAPTER 1: INTRODUCTION

Introduction

“In the past 20 years, mindfulness therapeutic programs have moved from being a rather marginal and esoteric set of enterprises into the mainstream of clinical practice and beyond” (Wilson, J., 2014, p.4). The purpose of this thesis is to review the use of Mindfulness Based Interventions (MBIs) in clinical settings. The use of MBIs in the non-clinical population will also be discussed.

Although the concepts of mindfulness and mindfulness meditation date back thousands of years as a religious and cultural practice, the phenomenon of exploring the use of mindfulness as a clinical tool is relatively recent. In fact, the interest in meditation and mindfulness in clinical settings has increased exponentially in recent years. A perusal of the number of published articles listed in the City University of Seattle Library on the subject of meditation or mindfulness over the past 45 years is revealing. From 1970 to 1979, an average of about 275 articles per year were listed as being published on the subject of either meditation or mindfulness. In stark contrast, an average of well over 15,000 articles per year were listed as published on those subjects over the past five years (City University of Seattle Library Catalogue, 2016). Although these numbers are only a rough overview and likely includes both scholarly and non-scholarly articles, they give a sense of how the topic has grown in recent years.

When there is such a vast number of studies and articles on various aspects of a quickly emerging subject such as this, it is difficult to derive a valid and concise review of the subject and its various forms, and even more difficult to assess of the results of the research into the subject. This thesis will explore this emerging phenomenon and review what forms MBIs have taken over recent years and how these MBIs have been applied to different situations. This will be followed by a review of current research into the subject and a discussion about whether the research supports the clinical use of MBIs in a variety of settings to treat a variety of difficulties, both physical and psychological.

What is Mindfulness?

It is widely accepted that many of the current principles espoused in approaches using mindfulness are rooted in Eastern religion and philosophy, particularly Buddhism, dating back over 2,000 years (Bauer-Wu, 2010). What is less commonly acknowledged in the literature is that the tradition of mindfulness is also rooted in Jewish, Islamic and Christian religions, often in the form of prayer. Western philosophers and psychologists have also described various versions of a mindful path to becoming more aware of thoughts, feelings and bodily sensations (Trousselard, Steiler, Claverie & Canini, 2014).

Mindfulness is a central element of Buddhist scriptures and is specifically discussed in the *Adhidhamma*, a collection of Buddhist psychological and philosophical treatises. One of the foundations of the Buddhist tradition is that suffering is fundamental to the human condition (Hanh, 1998). Buddhist tradition also holds that this suffering can be decreased or overcome. One of the mechanisms in Buddhism to achieve this reduction of suffering is mindfulness, which has been defined in this context as “an understanding of what is occurring before or beyond conceptual or emotional classification about what is or has taken place” (Chiesa, 2013, p. 256). In the Buddhist tradition, mindfulness is not considered to be a goal to be attained but rather as a tool to reduce suffering and increase psychological well-being. Meditation is the most commonly cited mechanism for attaining a state of mindfulness, but it is not the only approach that is discussed in the literature. Mindfulness can also be a state of mind that is present during many activities such as walking or even eating, not just during meditation (Wheeler, Arnkoff & Glass, 2016).

There is some confusion about the precise definition of mindfulness used in the literature. A commonly used definition of mindfulness was proposed by Jon Kabat-Zinn (1994), who developed Mindfulness-based Stress Reduction (MBSR), one of the first clinical interventions using mindfulness as its foundational concept. Kabat-Zinn defined mindfulness as “paying attention in a particular way,

on purpose, in the present moment, non-judgmentally” (p. 4). Many other definitions of mindfulness and mindfulness meditation have emerged over the years, many with only subtle differences to what has come before, and some with more of an emphasis on the spiritual aspect of mindfulness. In the end it seems that there isn't one definitive definition to clearly describe a rather abstract construct and Kabat-Zinn's “ethically neutral” definition of mindfulness continues to be the definition most often quoted in secular literature (Hanley et al., 2016, p. 104).

In spite of the lack of acceptance of a specific standardized definition of mindfulness, it is generally accepted that

the concept of mindfulness is characterized by awareness and acceptance of experiences; flexible regulation of attention; an objective receptivity to experience and an orientation to the here-and-now. Interest in 'mindfulness' and 'mindfulness meditation' is recent and growing both at the levels of research and of clinical practice in the West as mindfulness is associated with health and well-being. It (mindfulness) is attained by the practice of certain types of meditation (Trousselard, Steiler, Claverie & Canini, 2016).

Mindfulness-based Interventions

Mindfulness-based interventions (MBIs) include a broad range of formalized meditation practices and psychological interventions linked by the concept of “mindfulness” (Chiesa & Serritti, 2010). Modern standardized group-based manualized meditation programs, such as mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT), as well as a number of psychological interventions, including dialectical behaviour therapy (DBT) and acceptance and commitment therapy (ACT) are commonly referred to as “mindfulness-based” interventions (Chiesa & Malinowski, 2011).

The movement towards using MBIs to treat a variety of psychological, and more recently physical, ailments is generally traced as beginning with the work of Jon Kabat-Zinn. In 1979, Kabat-

Zinn developed a mindfulness-based curriculum, now referred to as MBSR at the University of Massachusetts Medical Center to help medical patients incorporate mindfulness practice in their daily life to help them cope with stress, chronic pain and other chronic medical conditions (Kabat-Zinn, 2005). In historical terms, clinical research on MBIs began with Jon Kabat Zinn, who conducted basic program evaluation research on participants through his early MBSR classes. This was demonstrated in a study published in 1992 in which a group of 22 participants of an MBSR training course who had been diagnosed with generalized anxiety disorder demonstrated improvements over the course of the program in anxiety levels, depressive symptoms, and generalized fears, measured with reliable objective scales that remained evident three years later (Miller, Fletcher & Kabat-Zinn, 1995).

Since the development of MBSR, many other MBIs have been developed and researched in a variety of applications. In 2000, a new application of mindfulness, MBCT, was introduced to treat recurrent major depression using a combination of mindfulness techniques along with elements of Cognitive Behaviour Therapy (CBT). In particular, this program was initially designed to prevent relapse in those diagnosed with recurrent major depression but has expanded to treat other types of depression as well. New MBIs and variations of existing MBIs continue to emerge with varying degrees of emphasis on the concept of mindfulness. Other notable and studied MBIs include, Acceptance and Commitment Therapy (ACT) and Dialectical Behavior Therapy (DBT) (Hanley et al, 2014). All of these interventions will be discussed in greater detail in this thesis.

In addition to the application of MBIs in treating anxiety disorders, depression and other psychological conditions, MBIs have also been applied to improving the experience of patients experiencing a wide variety of medical conditions and to improving the well-being and health of the non-clinical population.

Research into Mindfulness Based Interventions

Since the research into the efficacy of MBSR in treating anxiety was published in 1992, thousands of studies have been published on the application of a variety of MBIs to a wide range of conditions. Several aspects of this research are reviewed in this thesis, including the application of MBIs to anxiety, depression, other psychiatric disorders and physical conditions, as well as the efficacy of MBIs in improving the well-being of non-clinical populations. While other MBIs such as ACT and DBT involve significant aspects of mindfulness, there are other aspects of these treatments that involve techniques other than mindfulness. There is a greater focus in this discussion, therefore, on the modalities of MBSR and MBCT due to fact that mindfulness is the central focus of these interventions.

When there is a large number of studies published on a subject over a relatively short period of time, the results of the studies reported often become confusing to interpret and apply to practical situations. This is particularly true when many of the studies are somewhat subjective in nature and involve relatively small samples. The risk is that the results found in a small study on a specific subject may be extrapolated to apply to situations well beyond what the study was actually reviewing. Historically, one of the methods of review that has been developed to discuss the overall results of a large number of studies is to conduct a meta-analysis of a collection of studies researching similar topics. This approach studies aggregate data from a collection of studies in an attempt to find reliable commonalities. Haidich (2010) described meta-analysis as a research method designed to “systematically assess the results of previous research to derive conclusions about that body of research” (p. 30). Although the results of a meta-analysis can be affected by factors such as the quality of each individual study review, generally meta-analysis is seen to be a valuable form of research (Shelby & Vaske, 2008). The meta-analyses of results on a variety of topics already discussed with respect to individual studies, will also reviewed in this thesis.

The Effect of Mindfulness on the Brain

In addition to research into the efficacy of MBIs in treating the symptoms of various psychological and physical ailments, research into the effect of mindfulness on the brain has also been increasing in recent years. Although research into the effect of meditation and other means of attaining a “hypo-metabolic physiological state” can be found as early as 1971 (Wallace, Benson & Wilson, 1971), it is only in recent years that this aspect of MBIs has begun to emerge in multiple studies (Farb, Anderson & Segal, 2012). This research has begun to illuminate the mechanisms that are at play in the brain as a result of MBIs and that may at least partially explain the impact of MBIs on the individual taking part in these interventions and inform future research.

Discussion

The final chapter of this thesis will attempt to synthesize the rather vast amounts of information regarding MBIs and their efficacy in a variety of situations. A discussion about some of the potential concerns about the research being reviewed will be undertaken prior to any conclusions being drawn. In that research into MBIs is relatively recent, there are many areas of potential concern to be reviewed and discussed. These include factors related to the research methods used, the individuals who are chosen to take part in the studies and various other factors that could impact the results. Potential concerns or limitations that may exist with respect to the treatment modalities themselves, such as whether the intervention is equally applicable to individuals of varying cultural and economic backgrounds, will also be reviewed.

With the plethora of studies on the subject of mindfulness and MBIs over the past 20 years, a discussion about the future direction of research is also important. There are, in fact, many avenues left to research and it will be very interesting to see what further research reveals. Perhaps the most compelling part of this thesis is the assessment of whether the evidence indicates that MBIs are

effective in treating a variety of conditions and whether there is merit in continuing to promote their use and study in both the clinical and non-clinical population.

Conclusion

The goal of this thesis is first of all to provide a review and description of mindfulness and MBIs to assist in developing an understanding of an increasingly complex and varied topic. The second goal is to provide a review and synthesis of the existing research on the subject in an attempt to allow the reader to draw their own conclusions with respect to the existing research by providing a concise and accurate synopsis of what has been studied and the results achieved.

The final goal of this thesis is to provide some thought-provoking discussion about some concerns or considerations about the existing research, to suggest some directions for future research and finally, to offer my conclusions about the use of MBIs in both clinical and non-clinical situations based on my review of the literature.

CHAPTER 2: LITERATURE REVIEW PART 1

Introduction

In this first section of the literature review, the origins of mindfulness practice will be reviewed, along with the evolution of the therapeutic use of mindfulness meditation practices. Some of the most commonly known therapeutic interventions using a mindfulness-based approach will also be discussed. A review of the research with respect to the physiological effects of mindfulness meditation on the brain and the efficacy of the application of mindfulness approaches in a variety of clinical situations will be explored in subsequent chapters of this thesis.

What is Mindfulness?

The integration of techniques involving the concept of mindfulness has been on the rise for several decades, as can be evidenced by the plethora of articles and studies reviewing various aspects of the concept (Gu, Strauss, Bond & Cavanagh, 2015). It should be noted that although mindfulness meditation is a common technique used in many established mindfulness approaches to accomplish the goals of mindfulness therapy, the concept of mindfulness that underlies the approach encompasses other concepts as well. The word “mindfulness” can be used to describe “a theoretical construct (mindfulness), a practice of cultivating mindfulness (mindfulness meditation), or a psychological process (being mindful)” (Germer, Siegel & Fulton, 2005, p. 6). Many clinical approaches using mindfulness in various forms to address a variety of psychological difficulties, some of which will be discussed in this thesis, have been developed and tested. In the literature, mindfulness meditations and mindfulness-based interventions “include a broad range of meditation practices and psychological interventions linked by the concept of “mindfulness” (Chiesa & Malinowski, 2011, p. 404). Some of these approaches are now widely in use as a therapeutic tool by therapists throughout the world.

Although it is generally accepted that mindfulness involves being aware of the present moment, a precise and consistent definition mindfulness is not easy to find. One of the most frequently quoted

definitions of “mindfulness” is one that was proposed by Jon Kabat-Zinn, who has often been credited with popularizing the concept of mindfulness for Western applications in psychology and counselling (Lin & Seiden, 2015). Kabat-Zinn (1990) defines mindfulness as “paying attention in a particular way, on purpose, in the present moment, and nonjudgmentally” (p. 31). When a person is mindful in this sense, thoughts and feelings are treated as events in the mind, events that are to be observed without over-identifying with them or reacting to them in a manner that reflects an automatic, habitual pattern that has not served the person well in the past. The goal is to learn to respond to thoughts and events less reactively and more reflectively.

Bishop et al. (2004) attempted to further refine earlier definitions of mindfulness by creating an operational definition that could be used as a framework for research and reflects the common themes within the variety of contexts in which the concept of mindfulness is applied. Bishop et al. proposed a definition made up of two components. The first component involves self-regulation of attention that involves a focus on the immediate experience, “thereby allowing for increased recognition of mental events in the present moment” (p. 232). The goal of this aspect of mindfulness is to be fully present and aware of what is happening in the present moment. The most common technique for maintaining this state, particularly during mindfulness meditation, is to focus on the breath. The second component of the definition proposed by Bishop involves “adopting a particular orientation towards one’s experiences in the present moment, an orientation that is characterized by curiosity, openness and acceptance” (p. 232). This definition continues to be referred to in research and articles dealing with mindfulness in its many clinical iterations and most approaches that have been developed embrace these concepts.

The themes of self-regulation and orientation are common to all mindfulness-based therapeutic approaches. The goal is to become aware of associated thoughts, feelings and sensations as they arise and then, rather than becoming caught up in ruminative thoughts about these associations and their

origins and implications, to experience the events directly through an observation of what the linked body and mind is experiencing at that moment (Teasdale, Segal, Williams & Mark, 1995). The goal is not to stop thoughts, but rather to observe them dispassionately and then return to a focus on the breath and the present moment without getting caught up in elaborately processing the thoughts. The goal of this approach is to inhibit usual cognitive patterns of thought and to observe thoughts and experiences in new ways without preconceived beliefs about what should or should not be present. Germer, Siegel & Fulton (2013) uses the definition that mindfulness is “awareness of present experience with acceptance” (p.7).

Two elements that tend to be mentioned in most, if not all, of these definitions are the concepts of non-judgment and acceptance. They are often mentioned together as related but different aspects of the mindfulness approach. This is particularly true as the varied concepts of mindfulness have been transported to the therapeutic realm. As Germer, Siegel & Fulton (2013) state:

Although attention regulation has received the most consideration in the psychological literature over the past decade, the quality of mindful awareness is particularly important in clinical settings, characterized by nonjudgment, acceptance, loving-kindness, and compassion. (p. 8).

This is not to say that acceptance in the context of mindfulness means endorsing maladaptive or counter-productive behaviour. Rather it refers to the ability to allow our experience to be just as it is in the present moment, accepting both pleasurable and painful experiences as they arise with self-kindness, which is often the corollary to the concept of acceptance in mindfulness practices. Neff (2003) describes self-kindness as

being kind and understanding to oneself in instances of pain or failure, common humanity as perceiving one’s experience as part of the larger human experience and mindfulness as holding painful thoughts and feelings in balanced awareness (p.85).

The word compassion is often used to describe a similar approach applied to others rather than the self. Feldman & Kuyken (2011) describe compassion as “an orientation of mind that recognizes pain and the universality of pain in human experience and the capacity to meet that pain with kindness, empathy, equanimity and patience.” (p. 143).

Historical Roots of Mindfulness and Mindfulness Meditation

Although mindfulness approaches in the context of mental health practice are now largely secular, the roots of mindfulness and mindfulness meditation can be traced to Eastern philosophies and practices espoused in Buddhism. It should be noted that a tradition of mindfulness can also be found in Jewish, Islamic and Christian religions, often in the form of prayer. Current mindfulness-based therapeutic approaches are a clear example of a link between Eastern and Western philosophies but the influence of Eastern philosophies on Western psychology practices is not new. Carl Jung was known to have a life-long interest in Eastern psychology and even Freud expressed an interest in meditation practices (Germer, Siegel & Fulton, 2013). The formal introduction of Eastern thought to Western philosophy can be traced to the late 1700s when British scholars began to translate Indian spiritual texts such as the *Bhagavad Gita*, a Hindu scripture thought to have been written between 500 and 200 BCE. In the 1960s and 1970s interest in Eastern philosophies began to flourish in Western popular culture, with particular interest being paid to Transcendental Meditation (TM) and Yoga. Famous people in popular culture, such as the Beatles, made pilgrimages to India in an attempt to find a spiritual practice that would lead to enlightenment (Rosenthal, 2011).

Influence of Eastern Philosophies on Psychotherapy

Gradually, interest in meditation and other aspects of Eastern philosophies began to be embraced by psychotherapists, both personally and as a part of therapy. Research began to be conducted into the benefits of meditation and in 1977 the American Psychiatric Association called for a formal examination into the clinical effectiveness of meditation (Shapiro, 1982). A great deal of the

focus at the time was on concentration meditation techniques such as TM, which are loosely based on Hindu traditions. In TM, the purpose of meditation is as a mechanism for avoiding distracting thoughts, attaining a state of relaxation and ultimately transcending to a different, deeper place in the consciousness. In TM a mantra is repeated continuously through the meditation with the goal of allowing the rhythmic repetition of the mantra to replace the chaotic thoughts that are getting in the way of attaining *transcendence*. Rosenthal (2011) defines *transcendence* as “a blissful state that encompasses elements of serenity, peace, and acceptance, but also exhilaration and a sense of new possibilities, both for now and for the future” (p. 8).

In the late 1970's, mindfulness meditation, an approach to meditation different from TM but also with roots in Eastern philosophy, in this case Buddhist philosophies, began to gather interest amongst therapists as a potential tool for dealing with psychological issues such as anxiety and depression. In fact, by the 1990s the preponderance of research on meditation was focused on mindfulness techniques rather than relaxation and concentration techniques such those utilized in TM (Smith, 2004). Chiesa and Malinowski (2011) described the difference between mindfulness meditation techniques and concentrative techniques by stating that

mindfulness meditations are characterized by open, nonjudgmental awareness of the sensory and cognitive fields and include a meta-awareness or observation of the ongoing contents of thought, whereas concentrative types of meditation involve focused attention on a given object such as an image or a mantra, while excluding potential sources of distractions (p. 408).

They also point out that elements of both types of meditation can be found throughout many of the current versions of meditative practice and mindfulness-based clinical interventions.

Buddhist Philosophy

Current mindfulness meditation practices can be traced most directly to Buddhist philosophies. The basic underpinnings of Buddhist philosophy have been described as articulating

the foundation of human dysfunction and dissatisfaction by enumerating four liberating propositions: 1) Life inherently entails unease, unsteadiness, turmoil, suffering, frustration, anxiety, fear, and dissatisfaction (*dukkha*). 2) This unease results from craving, attachment, or clinging to our desire that life suit expectations and attempts to force the universe to conform to desires. 3) Relief of suffering results from relinquishing clinging, desire, and attachment to beliefs about phenomena. 4) Understanding the impermanent nature of phenomena combined with mindfulness discipline and methods promote the process of reducing clinging to beliefs. (Kwee, 2010, as cited in McWilliams, 2014, p. 121).

In turn, Buddhist practices such as mindfulness meditation attempt to deconstruct views of the world and the self in the world, and to cultivate a corrective view that incorporates interdependence, impermanence, and emptiness by contextualizing entities and avoiding reification. The Buddhist philosophy suggests that “cultivating awareness of the present moment, and the process of creating self and identity, helps overcome dissatisfaction and achieve well-being” (p. 121).

The focus of many Buddhist practices is on becoming aware of the breath, physical sensations and feelings and then to be able to “label, acknowledge, experience and let go of their experiences” (Khong, 2003, p.48), thereby reducing suffering.

Buddhist Philosophy as Incorporated into Mindfulness-based Interventions

Mindfulness-based interventions (MBIs) incorporate many of these Buddhist philosophical approaches into their practices in a variety of ways. MBIs generally emphasize

techniques that are designed to help clients to gain insight into their thoughts and mental processes through observation and then to learn to accept those experiences as present reality without clinging to them or trying to change them. Closely linked with these techniques are two concepts or ultimate aims that are found in most, if not all, MBIs: awareness and acceptance.

The first step with MBIs is to become aware. Conscious experience has been described as falling into the two categories of thoughts and sensations (McWilliams 2014). Many approaches to psychotherapy focus on the mental processes of clients and attempt to find meaning in the client's experiences and recurring thoughts and beliefs. MBIs, on the other hand, focus on becoming aware of the process of thinking and the context in which the thoughts arise, distinguishing disruptive thoughts and emotions from useful ones. The goal of this awareness of thought process is to help clients recognize "self-perpetuating patterns of ruminative thought" (Segal et al. 2002, p.75). Once the client becomes aware of the maladaptive thought process, it is hypothesized that insight can be gained leading to the potential to learn a more satisfactory way of approaching these thoughts. The other aspect of awareness that is a critical part of MBIs is becoming aware of bodily sensations such as breathing, and of external stimuli such as sights, sounds, smells, tastes as they arise and fall away. While thoughts are one important part of consciousness, they often dominate the person's experience to the point where sensations go largely unrecognized. It is theorized that paying attention to sensations can help one to gather information from all conscious sources, thereby allowing the person to respond to a given situation more appropriately. It is theorized that by paying attention to sensations, the focus on thoughts becomes less prominent which allows awareness to expand and the body, to relax, as there is an emergent acknowledgement and understanding of what is actually going on.

Once there is awareness of both thought processes and sensations, the other critical element in MBIs is acceptance. Acceptance does not mean resignation, it means "noticing what is

going on in the mind and then acknowledging and accepting that rather than trying to change or banish the mind's troublesome thoughts, something that has been generally acknowledged as a futile exercise" (Efran and Soler-Baillo 2008, p. 91). Magid (2008) describes acceptance as "seeing the facts for what they are now and looking forward from there – 'what needs to be done now'?" (p. 110). The ultimate goal is for clients to learn to accept themselves and their lives as they are, without distortion or judgment, leading to an openness to initiate appropriate and realistic changes.

Specific Therapeutic Approaches Using Mindfulness

Although there are currently countless variations of therapeutic approaches utilizing MBIs, there are two modalities that are widely recognized as the predominant MBIs in current psychotherapy. They are Mindfulness-based Stress Reduction (MBSR) and Mindfulness-based Cognitive Therapy (MBCT). In addition to these two approaches, two others that employ mindfulness techniques, but with less conceptual links to meditation, are Dialectical Behavior Therapy (DBT) and Acceptance and Commitment Therapy (ACT). Each of these modalities will be described in the following section, with a focus on their commonalities and their differences.

Mindfulness-based Stress Reduction (MBSR)

One of the first researchers to investigate the impact of meditation techniques on the physiological functioning of the body was Herbert Benson, a cardiologist. While studying the effects of stress on conditions such as heart disease and high blood pressure, Benson and his colleagues (Wallace, Benson & Wilson, 1971) observed that meditators seemed to be able to regulate and control physiological aspects of the body's functioning such as heart rate, blood pressure, brainwaves and the production of cortisol and other stress hormones that were previously thought to be involuntary. Benson (1975) ultimately coined the term "The Relaxation Response" referring to the ameliorative effects of meditation on patients. He found that individuals could achieve this response regardless of

the type of meditation practiced, whether or not the meditation had religious underpinnings and the level of experience of the meditator.

The early research on the effects of meditation on stress responses of the body led to the development of the MBSR program at the University of Massachusetts Medical Center in 1979. MBSR has, in turn, provided the basic underpinnings for most of the other MBIs that developed subsequently. MBSR, unlike most of the subsequent MBIs, is overtly rooted in Buddhist philosophies and was conceived by Jon Kabat-Zinn in an effort to integrate Buddhist philosophy and practice with current psychological and medical practice (Chiesa & Malinowski, 2011). It is important to note, however, that MBSR is considered to be a secular intervention and Kabat-Zinn is very clear that the Buddhist teachings and philosophies referred to in MBSR are not meant to be dogmatic tenets or beliefs and that there is no need to change one's religion to participate in an MBSR program (Kabat-Zinn, 2003).

An MBSR program is generally delivered as a structured eight-week course during which the participant is taught to learn to observe situations and thoughts in a nonjudgmental, nonreactive and accepting manner with the goal of changing the participant's relationship with stressful thoughts and events by decreasing emotional reactivity and fostering an impartial cognitive appraisal of what is going on. There are several underlying attitudes that participants in an MBSR program are encouraged to cultivate, many of which are rooted in Buddhist philosophies (Kabat-Zinn, 1990). The first attitude is learning to become non-judgmental and to assume the stance of "an impartial witness to your own experience" (p. 33). The second attitude that is encouraged is patience. Patience is considered to be a form of wisdom and is encouraged to be practiced in the context of developing patience with one's self and one's body. Participants are encouraged to be patient and accept the "wandering tendency of the mind while reminding us that we don't have to get caught up in its travels" (p. 35). The third attitude to be cultivated is referred to as the "beginner's mind". This is based on the premise that a

person's belief about what they already know can prevent them from being open to seeing things as they really are. The beginner's mind allows the person "to be receptive to new possibilities and prevents us from getting stuck in the rut of our own expertise, which often thinks it knows more than it does" (p. 35). The fourth attitude to cultivate in MBSR is trust in yourself, your intuition and your own authority, rather than always looking outside yourself for guidance. The fifth attitude that is espoused is non-striving. This attitude is meant to allow the person to simply pay attention to what is happening, rather than setting expectations for what should be happening. The sixth attitude is acceptance of the way things are without grasping for them to be different or imposing unrealistic expectations on oneself. The final attitude is letting go or non-attachment, which entails accepting things the way they are and not trying to change what cannot be changed.

The MBSR course involves a combination of lectures, sitting and walking meditations, the body scan, which is designed to reestablish conscious contact with the body, and mindful yoga. There is an emphasis on self-care and self-compassion and participants are expected to practice mindful meditation practices daily between sessions.

Mindfulness-based Cognitive Therapy (MBCT)

Beginning in the 1980s, research began to demonstrate that depression was not a condition that could simply be treated once but rather, in many cases, it was a recurring illness that often recurred multiple times over the course of a person's life (Segal, Williams & Teasdale, 2002). MBCT was developed by Segal et al. in the 1990's as a method for the prevention of relapses of major depression. MBCT is based largely on MBSR, with the addition of elements of Cognitive Behavioral Therapy (CBT) being combined with the mindfulness practice. The approach has many of the same elements as MBSR but includes additional teaching about how to recognize a deteriorating mood with the aim of disengaging from self-perpetuating patterns of ruminative, negative thought that contribute to depressive relapse, which are based on CBT principles. MBCT also includes supporting clients to

mindfully take part in activities that enhance general well-being such as listening to music, taking a walk or taking a bath. Unlike CBT, MBCT places little emphasis on changing or altering thought content, instead focusing on increasing awareness of the person's relationship to their thoughts and feelings and learning to regard them as "mental events rather than as aspects of the self or direct reflections of the truth" (Sipe & Eisendrath, 2012, p. 64).

Dialectical Behavior Therapy (DBT)

DBT was developed by Marsha Linehan (2015) as a treatment approach for patients with borderline personality disorder, many of whom were suicidal. She developed the approach after noting that standard CBT treatments focused on assisting patients to change their thoughts, feelings and behavior, which was often unsuccessful with these types of patients who, in contrast, often felt invalidated and criticized by the approach. On the other hand, a treatment based solely on acceptance invalidated the seriousness of the patient's situation and the urgent need for change. Although DBT has a strong focus on developing a sense of mindfulness, the goal of that mindfulness is somewhat different from the goals of MBSR and MBCT. In DBT, "the ultimate goal of the therapy is not to achieve an objective distance from one's experience, but rather to enter into, participate in, and become "one with" experience" (Lynch, Chapman, Rosenthal, Kuo & Linehan, 2006, p.463). In DBT, the practice of mindfulness is focused on developing the behavioral skills of observing, describing and participating in one's actions and experiences, in a nonjudgmental manner with a focus on effective behavior. Mindfulness in DBT also involves radically accepting the current situation and a willingness to enter into life with awakesness and awareness. The ultimate goals of the developing the mindfulness skills are to assist patients to "increase their conscious control over attentional processes, achieve a "wise" integration of emotional and rational thinking and to experience a sense of unity with themselves, others and the universe" (p. 463). Mindful meditation practices and an attitude of mindfulness are taught to accomplish these goals and to assist BPD patients to control emotional over-

activity and to avoid negative self-judgements, two very common experiences that cause difficulty for such patients.

Acceptance and Commitment Therapy (ACT)

The final approach that is considered to be an MBI is Acceptance and Commitment Therapy (ACT). Although ACT treatment methods are not described in terms of mindfulness or meditation, it is often included in discussions about MBIs because so many of its strategies are consistent with mindfulness approaches (Baer, 2003, p. 128). ACT was developed by Steven Hayes in the mid-1980's as a treatment for depressed and anxious adults (Hayes, Strosahl, & Wilson, 2012). ACT was based on CBT principles but shifted the focus from challenging or trying to control negative emotions or cognitive distortions to simply noticing and accepting them. The six core principles of ACT are being in the present moment; detaching from thoughts, images and memories; accepting and making room for all feelings, sensations, urges and emotions; assessing what is valued and what truly matters; and finally taking action based on those reflections. The goal is to develop healthy and functional alternative beliefs to replace the core dysfunctional beliefs that are not working. Since its inception, ACT has expanded and become a popular treatment approach for adolescents with anxiety and depression, as well as adults.

Conclusion

In this chapter, a general overview of the subject of the clinical application of MBIs was undertaken. The history and evolution of mindfulness and mindfulness meditation practices used in clinical applications was reviewed, including the influence of Buddhist philosophies on the current practice of MBIs. Specific therapeutic interventions that utilize a mindfulness-based approach were discussed, including a discussion of the similarities and differences between the

approaches. Discussion with respect to research into the physiological effect of MBIs, and their effectiveness in a variety of clinical applications, will be undertaken in subsequent chapters.

CHAPTER 3: LITERATURE REVIEW PART 2

Introduction

In the previous section of the literature review, the origins of mindfulness practice were reviewed, along with the evolution of the therapeutic use of mindfulness meditation practices. Some of the most commonly known therapeutic modalities using a mindfulness-based approach were also discussed. In this second section of the literature review, research with respect to the clinical application of mindfulness-based interventions (MBIs) to specific psychological and medical conditions will be discussed. This chapter will be focused on the results and conclusions found in studies that examine the effectiveness of MBIs in a variety of contexts. Although there are many clinical modalities that utilize some aspects of mindfulness in their approach, research with respect to the efficacy of Mindfulness-based Stress Reduction (MBSR) and Mindfulness-based Cognitive Therapy (MBCT), two modalities with many similar attributes, will be the main focus of this review. A review of the research with respect to the physiological effects of mindfulness meditation on the brain and the findings of meta-analytic studies will be explored in a subsequent chapter of this thesis.

Relapse Prevention for Depression

Depression has been identified as a major cause of disability throughout the world (Ferrari et al., 2013). Not only is depression a potentially debilitating illness when it first occurs, it is also known to have a recurring and relapsing course that can last throughout a person's life. It has been estimated that the risk of experiencing a relapse of depressive symptoms following a depressive episode ranges between 50 and 80 percent (Richards, 2013). This recurring aspect of this disease and the debilitating effects of relapse on the people suffering from it have led to an increased focus on interventions that will effectively prevent relapse or recurrence of the depression in those individuals at highest risk (Kuyken et al., 2015). Although anti-depressive medications have been found to be effective in preventing relapse of depression in some situations, they are not always appropriate or effective, and

are dependent on the compliance of the individual taking the medication. Anti-depressant medications are also only effective for as long as they are taken and so are not always seen as a long term solution (Shallcross, 2015). These factors led to a search for a non-medicinal, long term solution for recurrent depression and ultimately, the development of Mindfulness-based Cognitive Therapy (MBCT).

MBCT is a psychosocial intervention designed to assist people with recurrent depression, and the anxiety associated with depression, to stay well over the long term (Segal, Williams & Teasdale, 2013). MBCT combines aspects of Cognitive-behavioral Therapy (CBT) for depression with the Mindfulness-based Stress Reduction (MBSR) program developed by Jon Kabat-Zinn in 1990 (Williams, Russell & Russell, 2008). MBCT teaches individuals who are in remission from recurrent major depression to become more aware of, and relate differently to, their thoughts, feelings and bodily sensations in order to resist activating the “self-denigrating depressogenic thinking similar to those that prevailed in preceding episodes [of depression]” (Williams, Russell & Russell, 2008, p. 524).

There have been many studies conducted into various aspects of the impact of MBCT on the recurrence of a depressive episode in individuals diagnosed with recurrent depression. The premise that MBCT could be helpful in preventing relapse of recurrent depression was supported in a study conducted by Teasdale et al. (2000). This study found that patients taking part in an MBCT course had a 40 percent relapse rate in the following year, as opposed to a 66 percent relapse rate for those receiving “treatment as usual” (TAU)(p. 622). These results were replicated in a second study (Ma & Teasdale, 2004), but were not fully supported in a subsequent study in 2010 (Bondolfi et al., 2010). In Bondolfi’s et. al. study, the length of time before relapse occurred was prolonged when compared to those receiving TAU but the rate of relapse was the same. This study was acknowledged to be limited by being a retrospective study.

Another study that took place in 2008 examined the response of individuals with recurrent depression currently taking anti-depressant medication (ADM) along with an 8-week MBCT class to those individuals being treated with ADM alone (Kuyken et. al, 2008). In this study all participants had a history of three or more previous episodes of depression, had been treated with ADM for at least the past six months and were currently in either full or partial remission from the most recent episode of depression. Participants were randomly assigned to either the group attending the 8-week MBCT class or the control group being treated with ADM alone. Both groups were followed at three-month intervals for fifteen months. The results indicated that the MBCT group experienced comparable results for depression relapse to those using ADM alone but “superior outcomes concerning residual depressive symptoms, psychiatric comorbidity, and the physical and psychological domains of quality of life” (p. 975). In addition, it was noted that 75 percent of the MBCT group discontinued their use of ADM by the end of the study. The authors concluded that MBCT was a promising approach to the prevention of depressive relapse but conceded that further studies were required to study the effects of other methods of psychosocial approaches to relapse prevention. They further conceded that the fact that participants in the MBCT cohort were encouraged to taper off, or discontinue their use of ADM, these facts made it more difficult to draw specific conclusions about the impact of either the ADM, MBCT or both on relapse prevention. There was a suggestion that future studies may find that the combination of ADM and MBCT might be most efficacious approach to long term relapse prevention.

A subsequent study (Segal et al., 2010) reviewed the rates of relapse of depression for patients in remission between those receiving a course in MBCT alone, maintenance ADM alone or placebo. Some of the patients in the MBCT group had taken ADMs but had stopped taking them prior to beginning the MBCT sessions. This study concluded that patients receiving MBCT were approximately equivalent to those taking ADM in terms of the risk for relapse of depressive symptoms. Those patients in the study who received placebo were significantly more likely to suffer a

relapse of their depressive symptoms, particularly if their depressive remission was deemed to be unstable. The results for patients who were considered in stable remission were not significant between the groups. The results of this study are therefore less clear due to the variability of the stability of the remission of the participants.

One of the most recent studies designed to assess the impact of MBCT as compared to ADM treatment on prevention of depressive relapse was published in 2015 (Kuyken et al., 2015). This study was somewhat larger than many previous studies and randomly assigned patients who had experienced three or more episodes of depression, were currently in remission and who were on a maintenance dose of ADM to one of two groups. Participants were randomly assigned to either a group attending an MBCT course or being maintained on ADM alone. The results of this study indicated that there was no evidence that MBCT in addition to ADM was superior to ADM alone in preventing relapse in individuals at risk for recurrence of depression. It did indicate, however, that both treatments associated with “enduring positive outcomes in terms of relapse or recurrence, residual depressive symptoms and quality of life” (p.63). Another recent study concluded that MBCT did not have superior results when compared with an active control condition that involved supportive group therapy of a similar structure and length as the course of MBCT (Shallcross et al., 2015). The findings also indicated that both the supportive group therapy and MBCT were effective for preventing depression relapse, reducing depressive symptoms and improving life satisfaction.

Overall, studies have consistently demonstrated that MBCT is at least somewhat beneficial in preventing relapse and reducing depressive symptoms in recurrent depression but there continues to be outstanding questions with respect to whether MBCT is superior to other modalities. Further studies may shed further light on this issue.

Treatment of Depression

MBCT was designed specifically to address the issues faced by individuals with recurrent depression, particularly with respect to avoiding or delaying symptoms of relapse but it was not originally thought to be suitable for those experiencing an acute episode of depression (van Aalderen et al., 2012). The intensity of negative thinking and difficulty with concentration often experienced during acute depressive episodes was originally thought to preclude the ability to acquire attention control skills that were central to the application of MBCT (Segal, Williams & Teasdale, 2002). Individuals experiencing a current episode of depression were therefore generally excluded from earlier MBCT studies (Teasdale et al, 2000; Ma & Teasdale, 2004). More recently, however, researchers began to question whether MBCT may also be effective in addressing symptoms experienced during a depressive episode, in addition to those symptoms that were thought to lead to a relapse during remission. Results from three relatively small, non-random, uncontrolled studies suggested that depressed patients who took part in courses of MBCT were less depressed at the end of the course (Kenny & Williams, 2007; Eisendrath et al, 2008; Barnhofer et al, 2009). One of the first randomized and controlled studies to purposefully include patients who were currently acutely depressed in the cohort being studied was published in 2012 (van Aalderen et al., 2012). In that study, the effects of MBCT plus TAU were compared to TAU alone, with patients who had experienced three or more previous depressive episodes. The difference between this study and most previous studies is that patients who were currently experiencing depressive symptoms were not excluded from the study but rather were identified as a separate group with the purpose of assessing the efficacy of MBCT on those patients who were not currently in remission. The results of this study indicated that the MBCT plus TAU group reported less depressive symptoms, worry and rumination after treatment than the TAU alone group. What was of particular interest with these results was that the reduction of depressive symptoms was comparable for those who were, and those who were not, experiencing a

current episode of depression. It was suggested that the decrease in depressive symptoms was mediated by decreased levels of rumination and worry for both groups.

Another recent study that applied MBCT to currently depressed individuals focused on a group of elderly people who were experiencing symptoms of long term bereavement distress including chronic depression and complicated grief (O'Connor, Piet & Hougaard, 2014). This study was non-randomized and compared groups who completed an MBCT course to those in a wait list control group. The results of this study indicated that depressive symptoms were significantly decreased in the MBCT group at the end of treatment, in comparison to the control group. Although these results are promising, it should be noted that the sample size was small.

Two studies assessing the efficacy of MBCT on currently depressed patients have been published in 2015. The aim of the first study was to investigate the efficacy of MBCT as a monotherapy for the treatment of acute depression, compared to the monotherapy of sertraline, an ADM (Eisendrath et al., 2015). The results of this study indicated that both treatments were equally effective in reducing symptoms of depression and that both cohorts showed significant improvement in depression ratings. This study was limited by a small sample size and non-random design but raises the possibility that MBCT may be a viable alternative to ADM in the treatment of acute depression. The other research on the subject published in 2015 was a randomized and controlled study that compared the efficacy of MBCT plus TAU, to a group version of the cognitive behavioral analysis system of psychotherapy (CBASP) plus TAU, in treating chronically depressed patients. The control group received TAU. There were some mixed results as to whether MBCT was equally effective to TAU or superior to TAU in reducing depressive symptoms, but the overall results of the study indicated that MBCT was no more effective at treating depressive symptoms than TAU. CBASP, on the other hand was found to be consistently more effective than TAU at reducing depressive symptoms.

It should be noted that MBCT was found to be at least equal to TAU in all of the studies reviewed. In light of the somewhat mixed results to date with respect to the superior effectiveness of MBCT in treating current depressive symptoms, however, further research is required to draw any conclusive conclusions.

Treatment of Anxiety

Although the treatment of anxiety through MBIs is often studied in the context of a symptom that often accompanies depression (Finucane & Mercer, 2006; Desrosiers, Vine, Klemanski, & Nolen-Hoeksema, 2013), some studies have endeavored to study the effectiveness of MBIs specifically in the context of the treatment of anxiety and anxiety disorders (Jazaiera, Goldin, Werner, Ziv & Gross, 2012). One of the first studies to address this issue was conducted in 1992 by Jon Kabat-Zinn and his colleagues (Kabat-Zinn et al, 1992). In this study, 22 individuals between the ages of 26 and 64 years who were found to meet the criteria for generalized anxiety disorder or panic disorder took part in an eight week MBSR course. The participants were chosen from among all patients taking part in a stress reduction and relaxation program during a two year period. The criteria for inclusion in the study was a diagnosis of generalized anxiety disorder or panic disorder based on a series of standardized tests and a structured clinical interview. At the end of the course, and three months following the course, 20 out of the 22 participants documented reductions in levels of anxiety and panic symptoms. A follow up to this study that took place three years after the initial study indicated that the gains noted in the original study were maintained in most of the subjects (Miller, Fletcher & Kabat-Zinn, 1995). A subsequent study also found that MBCT was effective in reducing symptoms of anxiety in individuals with generalized anxiety disorder (Evans et al, 2008).

A study conducted in 2009 reviewed the effectiveness of MBCT as an adjunct to pharmacotherapy in patients diagnosed with anxiety disorder (Kim et al., 2009). In this study 46 patients who were being treated for anxiety disorder with medication were randomly assigned to

either an eight-week course of MBCT or an eight week course of anxiety disorder education. At the end of this study, the patients who were in the MBCT group demonstrated significantly more improvement in their anxiety related symptoms than the group taking part in anxiety disorder education.

Cognitive behavior therapy (CBT) has been shown to be effective for anxiety disorders and is generally considered to be one of the first choices for treatment (Ponniah & Hollon, 2008). In 2010, a randomized study was conducted comparing 26 participants with social anxiety who were randomly assigned to either eight two-hour sessions of MBCT or 12 two-hour sessions of group CBT (Piet, Hougaard, Hecksher & Rosenberg, 2010). The results indicated that while both groups improved following treatment, the CBT group improved slightly more than the MBCT group. No explanation was given for the difference in number of weeks for the two different interventions and there was no discussion about whether the length of the CBT program could have impacted the results.

In 2012, a study was conducted to determine whether MBSR and aerobic exercise could be effective alternatives to traditional treatments such as medications and CBT for treating social anxiety disorders. In this study, 56 adults who were of a variety of ages, genders and ethnicities, and who had been diagnosed with social anxiety disorder, were randomly assigned to either a group that would undergo a course of MBSR or to the control group which would take part in regular aerobic exercise (Jazaieri, Goldin, Werner, K. Ziv, & Gross, 2012). Somewhat to the surprise of the researchers, who expected that the MBSR group would experience a greater improvement than the control group, MBSR and regular aerobic exercise were found to be equally effective in reducing clinical symptoms of anxiety and increasing feelings of general well-being. While both interventions produced positive results, there was no statistically significant difference between the two interventions.

Overall, most of the studies reviewed reported some improvement in symptoms of anxiety following an MBI, although the magnitude of the improvement varied. It should be noted that all of the above studies involved a relatively small number of participants.

Psychiatric Diagnoses other than Anxiety and Depression

Most of the studies reviewing the effectiveness of MBIs for psychiatric disorders have focused on the areas of depression and anxiety. Recently, however, there has been some interest in the application of MBIs to other psychiatric diagnoses. A study published in 2014 examined the outcomes in a heterogeneous psychiatric outpatient population following mindfulness training (Bos, Merea, van den Brink, Sanderman, & Bartels-Velthuis, 2014). This study also compared the results among different diagnostic groups. The participants in this study were chosen from among all outpatients attending an outpatient psychiatric clinic in the Netherlands. The ultimate participants varied in age, gender and diagnostic category and were found to have a stabilized psychiatric disorder that was not in an acute phase. There is no mention of the ethnic make-up of the group. When comparing the group as a whole, the results indicated a general improvement on all outcome measures including physical and psychological health and social relationships. When the results were analyzed in the context of specific psychiatric diagnoses, however, the results were more varied. The results for those patients with anxiety disorders showed moderate improvement, but less than those with depression or adjustment disorder. The results for the patients diagnosed with bipolar disorder showed much less improvement than the other diagnoses. In fact, the patients with bipolar disorder showed the least benefit from the training of any group and significantly less than the other diagnostic categories. There were several limitations noted in this study, including the lack of a control group and a large attrition rate (33%) amongst the participants. The study's authors acknowledged the need for follow-up studies to be carried out prior to any definitive conclusions being reached.

A study published in 2015 reported the results of an eight-week course of MBCT taken by 18 adolescents who had been diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD) by a qualified health professional (Haydicky, Shecter, Wiener & Ducharme, 2015). A separate MBCT group was formed for the parents of the adolescents with ADHD with 17 parents taking part. The families taking part in the study involved a mix of intact and separated parents and were from a variety of ethnic backgrounds including North American, European, Asian and Carribean, with the majority being from North America (the ethnic background of the participants from North America was not indicated). Results revealed reductions in the adolescents' inattention, conduct problems and problems with peer relations following the intervention. The parents reported reductions in parenting stress and increases in mindful parenting following the intervention. Overall, the results were promising that MBCT may be a valuable treatment for adolescents with ADHD and their parents.

Amelioration of Psychological and Physical Symptoms of Medical Disorders

Along with the review of the effectiveness of MBIs in the reduction of negative symptoms of psychiatric disorders, recent studies have begun to review the impact of MBIs on both the psychological and physical effects of medical diagnoses such as cancer and heart disease. One example of this is a study that reviewed the impact of MBSR on the psychological functioning and quality of life of patients who had been diagnosed with cancer (Labelle, Campbell, & Carlson, 2010). In this study, 77 women who had completed cancer treatment were randomly assigned to either a group taking an eight-week course of MBCT or to a wait-list group. No other information about the demographics of the group were given. The results showed that the MBSR participants improved significantly more with respect to depressive symptoms and rumination than the waitlist group. Another study conducted in 2012 examined the levels of attention, rumination and resting blood pressure in women with cancer (Campbell, Labelle, Bacon, Faris, P. & Carlson, 2012). This was also a wait-list controlled investigation in which 35 women who had completed cancer treatment were

randomly assigned to either an eight-week MBSR group or a wait-list control group. The results showed that the women in the MBCT group demonstrated higher levels of mindful attention and decreased rumination when compared with the control group, but no significant difference in blood pressure. This supports the premise that MBSR may be efficacious in increasing mindful attention and rumination in women with cancer, but does not support the premise that MBSR impacts blood pressure in this situation. A study published in 2014 investigated whether MBSR had a positive impact on rumination about recurrence, as well as stress and anxiety, in patients who had completed treatment for breast cancer. In this study 82 women were randomly assigned to either a group taking part in a six-week MBSR program or to a group undergoing TAU. Results indicated that the MBSR group experienced a reduction in the level of rumination about fear of recurrence and in levels of stress and anxiety when compared to the control group.

MBIs have also been studied as a treatment for chronic insomnia. It has been estimated that between six and 20 percent of adults suffer from an insomnia disorder, which is characterized by persistent difficulty in falling or staying asleep, or both (Ong et al., 2014). This study involved a total of 54 participants who met the criteria for insomnia, did not have a precluding medical or psychiatric condition and were not taking regular medication for sleep. The participants were recruited through public advertisements and included a mix of ethnicities including White (the majority), Black, Hispanic, and various others, the majority of whom were female. The qualifying participants were randomly divided into either a group taking an eight-week MBSR course, a group taking an eight-week Mindfulness-based Therapy for Insomnia (MBTI), which is a variance of the MBSR course that focuses discussions particularly on the issue of insomnia, or a control group that was asked to self-monitor sleep patterns for the same period of time. Results showed that both MBSR and MBTI resulted in a significant improvement in the symptoms of insomnia when compared to the control group but no significant difference between the two different interventions. At the six-month follow-

up, however, the group that participated in the MBTI intervention showed greater sustained improvement than the MBSR group. As a result of this study, the researchers were cautiously optimistic that MBIs could be helpful in treating insomnia but acknowledged that further studies were required for any definitive conclusions.

Depression and anxiety are known to be common symptoms that accompany many chronic diseases and are, in many cases, thought to exacerbate some of the symptoms of the disease and the general lack of well-being of the patient (Parswani, M.J., Sharma, M.P. & Iyengar, S.S., 2013). Several studies have investigated the positive impact of MBIs on patients experiencing anxiety and depression along with chronic medical conditions such as diabetes and heart disease (Parswani, M.J., Sharma, M.P. & Iyengar, S.S., 2013; Keyworth et al., 2014; O'Doherty et al, 2015). In each of these studies, MBIs were found to be effective in reducing anxiety and depression and in improving the patients' attitude towards their illness. In the study conducted by Parswani, Sharma and Iyengar the participants in the study were also found to have improved blood pressure and body mass indexes, although these results were not replicated in the other studies.

Fibromyalgia is a chronic pain syndrome that occurs mostly in women and often involves chronic fatigue and a variety of other somatic and psychological symptoms. The onset of the syndrome is often preceded by a traumatic event. Complex interactions between endocrine physiology, psychosocial factors and the symptoms reported by the patient, pose significant challenges for the successful treatment of the disorder (Wolfe et al., 2010). In a study reported in 2015, 91 female patients over the age of 18 years who had been diagnosed with fibromyalgia and had been recruited through public advertisements were randomly assigned to either an eight-week MBSR course or a control wait-list group (Cash et al., 2015). Any respondents with a known severe mental illness were excluded from the study. Other demographic information about the participants, such as age and ethnicity, was not reported. The results of this study indicated that those in the MBSR group

experienced a decrease in some of the major symptoms of fibromyalgia such as stress, sleep disturbance and general symptom severity. These participants also reported a reduced subjective illness burden. Those in the MBSR group did not, however, experience a significant improvement in the experience of pain or physical functioning. These results are promising as far as ameliorating some of the symptoms of fibromyalgia but further research is acknowledged by the authors to be required to confirm and expand these results.

Improvement of Well-being in Non-Clinical Population

As discussed above, the application of MBIs as an intervention to address various clinical populations has been increasing in recent years. For many years, however, mindfulness principles and techniques were more commonly applied to non-clinical populations in an effort to improve the general well-being of individuals who have not been diagnosed with a specific ailment, but might experience times of anxiety, stress and signs of depression, simply due to the stressors of everyday life (Kabat-Zinn, 2003). Many of the most popular books on the subject of mindfulness are focused on this application of mindfulness (Kabat-Zinn, 2005; Siegel, 2010). The success of MBIs in this context is most often largely anecdotal in nature but there have been a few studies that have examined the efficacy of MBIs in the context of a non-clinical population.

One example of such a study was carried out in 2010 involving 29 healthcare professionals, the majority of whom were female, who were seeking stress reduction techniques (Martín-Asuero & García-Banda, 2010). The participants were adults, had post-secondary degrees and were employed in a variety of capacities within the healthcare system. Healthcare professionals are known to experience high levels of stress due to the nature of the work environment and the responsibilities that are part of the role of the professional working in healthcare (Shapiro, Shapiro & Schwartz, 2000). To participate in the study, the participants could not be receiving psychological or psychiatric treatment, and were expected to be willing and able to complete an eight-week MBSR course. This was not a randomized

or controlled study. Results based on assessments conducted before and after the intervention showed a 35% reduction in levels of distress, along with a 30% reduction in rumination and a 20% decrease in negative affect in those participants who completed the MBSR course. These results were found to have been maintained during a three-month follow-up.

Another potential application of MBIs in the non-clinical environment is with respect to individuals experiencing acute stress due to life events. A randomized, controlled study published in 2011 examined the impact of a course of MBCT on the levels of depression and anxiety experienced by students facing an exam situation, at the time of the exam, as well as before and after the exam (Kaviani, Javaheri & Hatami, 2011). In this study 45 female students were randomly selected from the dormitories at a University in Iran and were assigned to participate in a course of MBCT or be placed into the wait-list control group. None of the participants had a history of neurological or mental disorders. The results indicated that MBCT was effective in helping participants to deal with their depressive and anxiety feeling before, during and after the stressful circumstance of the exam when compared to the control group. It was also found that these improvements were still evident six months after the intervention.

A final study reviewed involved students at two unnamed universities in the United States in which the impact of a mindfulness-based group intervention (MI) was compared to an interpersonal process group (IP) or to a control group (Byrne, Bond & London, 2013). The students who participated in the study were drawn from those seeking mental health service at the university and excluded those with an acute psychiatric illness or significant suicidal ideation. The students, who were mostly female and White, self-selected into either the MI or the IP group with those who were accepted into one of the groups but did not attend forming the control group. Following the intervention both the MI and IP group participants exhibited significant reductions in anxiety and depression when compared with the control group. Only the MI group, however, maintained these

reductions after six months. It was hypothesized that the reason for this difference may be that the IP group relied on the temporal interpersonal support of the group for improvement, while the MI group learned new ways of interacting with their thoughts and unhelpful thinking patterns. Further studies are required to test this hypothesis.

Conclusion

Over the past ten to twenty years, many studies have been undertaken on the effectiveness of MBIs to a variety of clinical applications. In addition to studying the efficacy of MBIs in treating depression and anxiety, there has also been research conducted into the use of MBIs to treat a wide variety of medical issues, either as an adjunct to more traditional treatment or as a treatment on its own. This section reviewed many of these individual studies and the conclusions reached. The results of the studies reviewed have varied in their conclusions as to the efficacy of MBIs, although all studies showed at least a marginal improvement in those individuals taking part in an MBI. It should be noted that the studies reviewed varied widely in their scientific rigor. Many studies involved a relatively small number of participants, some were retrospective in nature and many did not use control groups. To establish a greater certainty with respect to the conclusions to be reached from the studies to date, a review of meta-analysis of multiple studies on a variety of applications of MBIs will be reviewed in the next section, along with studies that examine the physiological mechanisms of MBIs.

CHAPTER 4: LITERATURE REVIEW PART 3

Introduction

In the first section of the literature review, the origins of mindfulness practice were reviewed, along with the evolution of the therapeutic use of mindfulness meditation practices. Some of the most commonly known therapeutic modalities using a mindfulness-based approach were also discussed. In the second section of the literature review, research with respect to the clinical application of mindfulness-based interventions (MBIs) to specific psychological and medical conditions was discussed, with a focus on individual studies focusing on various aspects of the clinical application of MBIs. In this chapter, a review of the research with respect to the mechanism of MBIs and the physiological effects of mindfulness meditation on the brain will be reviewed, followed by a review of the findings of meta-analytic studies on the subjects explored in the second chapter.

Effect of Mindfulness and Meditation on the Brain

As demonstrated in this and previous chapters, there has been a significant amount of research into the efficacy of MBIs ameliorating a wide variety of symptoms, but in particular, into reducing symptoms of anxiety and depression and increasing general well-being. What has been less well studied and understood is the effect that mindfulness has on the brain that may explain why this intervention works (Farb, Anderson & Segal, 2012). An increasing number of studies into the effects of MBIs on brain function have been published in recent years.

Rumination on past failures and negative events has been proposed as a significant element in depression. Anxiety is also a significant element in depression and is often characterized by catastrophic worries about the future (Sipe & Eisendrath, 2012). The limbic system is comprised of the parts of the brain that process emotional experience. The pre-frontal cortex is the structure within that system that most clearly differentiates human brains from the brains of other primates. This region of the brain exerts a relatively sophisticated, moderating influence on the simpler, more

impulsive and less flexible structures of the limbic system, which humans share with other mammals. One of these more primitive structures is the amygdala, which functions as a threat detector in the brain and is the source of the more primitive “fight or flight” response to stimuli (Kim & Whalen, 2009). When visceral signals are received by the limbic system, particularly the amygdala, they are cognitively appraised by the pre-frontal cortex as to whether the signals pose a real or imagined threat. Stimulation of the amygdala in results in fear-related responses, and is also associated with some of the symptoms of anxiety and depression (Marchand, 2013). In healthy people, the cognitive reappraisal by the pre-frontal cortex uses narrative elaboration to reassess negative appraisals as less negative and avoid triggering a fear response from the amygdala. It is theorized that in mood and anxiety disorders this cognitive control is impaired, bringing the focus on dysphoric mood and negative feelings without the commensurate reduction in the intensity of the negative feelings that is usually accomplished in the pre-frontal cortex (Farb, Anderson & Segal, 2012). Depression has been found to be characterized by higher baseline amygdala activity and reactivity to emotional stimuli, and dysfunction between the limbic and pre-frontal cortex circuits that regulate affective states (Sipe & Eisendrath, 2012). The strength of connection between the pre-frontal cortex and the amygdala has also been found to predict individual differences in trait anxiety (Kim & Whalen, 2009). It has been suggested, therefore, that

By cultivating nonjudgmental present-moment awareness of one’s experience, including sadness itself, mindfulness may interrupt the cycle of rumination about past regrets or future fears, and enhance self-compassion, breaking the link between cognitive reactivity and increasing depressive symptoms. (p.65)

Sipe & Eisendrath (2012) further suggest that as a person develops an ability to label thoughts and feelings as mental events and cognitions, the distressing thoughts become less threatening and emotional reactivity is diminished. It has also been suggested that mindfulness training may improve

attentional control and memory by overcoming emotionally intrusive and distracting thoughts that are often characteristic of depression and anxiety disorders.

Although these theories about how MBIs work to decrease symptoms of anxiety and depression have not been fully confirmed through research, there have been studies that suggest that meditation does have an impact on brain function. In one study, brain imaging carried out while participants were performing a task that was deemed to be similar to mindfulness meditation showed increased activation of the pre-frontal cortex and decreased activation in the amygdala (Stein, Ives-Deliperi, & Thomas, 2008). In another study, subjects with social anxiety disorder undergoing mindfulness training displayed reduced amygdala activity and increased activity in brain regions involved in attentional deployment (Goldin & Gross, 2010). A recent study used Magnetic Resonance Imaging (MRI) technology to compare the effects of distraction in the form of attending to the breath (ATB) before meditation training, to the effects of mindfulness meditation after meditation training, on state anxiety in the same subjects. The findings indicated that while ATB did not reduce state anxiety, state anxiety was noted to be significantly reduced in sessions in which the subjects meditated. It was also noted that meditation-activated anxiety relief was associated with increased activity in the pre-frontal cortex, supporting the theory that mindfulness meditation attenuates anxiety through mechanisms involved in the regulation of self-referential thought process.

It has been suggested that, over time, meditation actually alters the functional and structural areas of the brain underlying attention and emotion. In one study a group of neuroscientists set out to examine the differences in brain structure between long time meditators and controls using MRI and other forms of brain imaging (Kang et al., 2013). In this study the brain structure of 46 experienced meditators was compared to that of 46 meditation-naïve volunteers. The meditators showed increased thickness in the anterior parts of the brain, such as the pre-frontal cortex, and decreased thickness in the posterior parts of the brain. It is theorized that these structural differences, particularly in the

frontal areas of the brain, may be associated with repeated practice of attentional and emotional regulations. Further studies are required to test this theory and the mechanisms that might be at play in this phenomenon.

Although these studies are interesting and appear to support the concept that meditation and mindfulness have an impact on brain function, much more research is required to fully understand the neural mechanisms involved in meditation and mindfulness, and the impact that these mechanisms have on the mental health and well-being of individuals taking part in MBIs.

Results from Meta-analysis Reviews

Clinical decision-making in healthcare settings is increasingly based on what has been referred to as “evidence-based” principles (Haidich, 2010, p. 29). Evidence-based medicine has been defined as “the systematic, quantitative, preferentially experimental approach to obtaining and using medical information” (p.29). The use of meta-analysis as a technique for synthesizing the results of multiple individual research studies has played an increasing role in establishing scientifically supported approaches to healthcare since its introduction as a research technique in the 1970s. Meta-analysis facilitates the synthesis of the results of several studies but as Haidich (2010) points out, the veracity and usefulness of the results is dependent on the selection process for included studies, and the criteria and measures used to analyze the collective data.

As can be seen in the previous chapter of this thesis, health care interventions are typically studied more than once and often the studies produce differing results. There are many factors that can influence the results in a study, which is why the results of a single study are generally not considered to be sufficient to impact evidence-based approaches to care. Meta-analysis was developed as a technique to mitigate some of the factors in individual studies that may cause different results from what appears to be a similar approach by studying the aggregate data from many studies to find commonalities that could be relied on. One of the earliest definitions of a meta-analytic approach was

“The statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings” (Glass, 1976, p.3). A more recent description of meta-analysis is that it is a research method designed to “systematically assess the results of previous research to derive conclusions about that body of research” (Haidich, 2010, p.30). It should be noted that the reliability of a meta-analysis can be significantly affected by the criteria set for the inclusion or exclusion of studies from the cohort, by the studies that may be excluded or overlooked in the literature review for relevant studies and by the number of studies included. The results can be enhanced when standardized assessment tools are used in the studies being reviewed. These factors may also explain differences in the conclusions between meta-analytic studies that appear on their face to be reviewing the same research topic. Overall, however, meta-analysis is generally thought to be the most reliable and valuable form of research when establishing evidence-based principles for both medical and psychological best-practice approaches to care (Shelby & Vaske, 2008).

Depression and Anxiety

There have been several meta-analytic reviews of the effectiveness of MBIs in treating depression, and associated anxiety symptoms. One such study conducted a meta-analysis of 39 studies, totaling 1,140 participants, who had received mindfulness-based therapy for a range of conditions, including anxiety and depression and had utilized standardized testing tools for the assessment of results (Hofmann, Sawyer, Witt and Oh, 2010). The focus of this review was the diminution of depressive and anxiety symptoms in individuals with a variety of diagnoses, and not only depression and anxiety disorders. The findings of this meta-analysis were that there was a pattern of results that suggested that MBIs are an effective modality for the treatment of symptoms of anxiety and depression. This study also suggested that the effectiveness of MBIs in treating these symptoms may not be diagnosis-specific and may address processes that occur in multiple disorders by

“changing a range of emotional and evaluative dimensions that underlie general aspects of well-being” (p. 180).

A meta-analysis review of studies was carried out to evaluate the effect of an MBI, specifically Mindfulness-based Cognitive Therapy (MBCT), on prevention of relapse of a depressive episode in individuals diagnosed with Recurrent Depressive Disorder (RDD) (Piet & Hougaard, 2011). The criteria for inclusion in this review was relatively narrow and included requirements that the study must be directly on the topic of the application of MBCT for prevention of relapse of depression, must be randomized and controlled and have similar outcome measures for measuring success. Ultimately, six randomized controlled studies (RCTs) using similar assessment criteria, with a total of 593 participants, met the criteria set out by the researchers for inclusion in the review. The review found that there was a significant decrease in the rate of relapse of depression in the patients in the studies who took part in a course of MBCT. It was interesting to note that MBCT appeared to be more effective in patients who had already experienced three or more depressive episodes. This was considered to be a paradoxical finding and it was acknowledged that further research would be required to conclusively explain this finding. This review also noted that MBCT appeared to be comparable to anti-depressive medications in the prevention of recurrence of depression, a finding that could have cost implications, as well as greater choice for treatment of patients diagnosed with the disorder.

A subsequent meta-analysis examined the efficacy of MBIs on depressive symptoms among those with many different types of underlying mental disorders, not only depression (Klainin-Yobas, P., Cho, M.A. & Creddey, D., 2012). The review included 39 studies, with a total of 1,847 participants that were conducted in ten countries using a variety of methodologies but similar standardized tools for assessment of results. The results of this review indicated that there was consistent, statistically significant improvement of depressive symptoms for those individuals who took part in MBIs when

compared to controls, which usually involved treatment as usual (TAU). The exception to this finding was a study in which Cognitive Behaviour Therapy (CBT) was used with the control group. In that study the results were similarly positive for both interventions.

A recent meta-analysis reviewed MBIs as an intervention for individuals who were experiencing a current episode of an anxiety or depressive disorder (Strauss, Cavanagh, Oliver & Pettmen, 2014). It was acknowledged that recent studies have established that MBIs can reduce the risk of recurrence for individuals diagnosed with RDD. The focus of this study was specifically designed to determine whether MBIs were found to be effective in treating current symptoms of the disorders. Ultimately, the review included 12 studies, with a total of 578 participants, all of whom were required to be diagnosed with a current Major Depressive Disorder (MDD) or an anxiety disorder. Not surprisingly, given the results of other meta-analyses, the results of this review indicated that the use of MBIs for the treatment of depressive symptoms experienced as part of a MDD was significantly effective. What was somewhat surprising was that the use of MBIs for the treatment of symptoms of anxiety disorders was found to be only neutral when compared with control groups. It was noted that there were significantly more studies exploring the effect of MBIs on individuals diagnosed with a current episode of MDD than there were studies exploring the effect of MBIs on individuals diagnosed with an anxiety disorder. The conclusion of this review was that MBIs are an efficacious treatment for depressive symptoms experienced during an acute episode of major depression but that the evidence for the efficacy of MBIs in the treatment of anxiety symptoms during an acute episode of an anxiety disorder is less robust.

Treatment of Anxiety Disorders

As discussed in the section above, the evidence with respect to the efficacy of MBIs on the treatment of anxiety, and specifically anxiety disorders has been less consistent than the evidence with respect to the efficacy of MBIs in treating depressive symptoms and preventing relapse of depression.

Studies often explore the effectiveness of MBIs on anxiety in the context of studying other phenomenon such as the effect of MBIs on depressive symptoms. A few studies, however, have examined the efficacy of MBIs in the treatment of anxiety disorders. A meta-analysis was carried out in a study reviewing the efficacy of mindfulness- and acceptance-based interventions (MABIs), which include MBIs and Acceptance-based behaviour therapy (ABBT), in the treatment of anxiety disorders (Vøllestad, Nielsen, & Nielsen, 2012). ABBT is a multi-component intervention augmenting CBT with components from ACT, dialectical behaviour therapy (DBT), and MBCT. The majority of the 19 studies, involving a total of 491 participants, that met the criteria of utilizing a MABI as the main treatment modality, and involving patients who had been diagnosed with an anxiety disorder, utilized either MBCT or MBSR. The majority of the studies in this review were uncontrolled. The conclusion of this analysis was that MABIs are associated with “robust and substantial reductions in symptoms of anxiety and comorbid depressive symptoms” (p. 239) in patients diagnosed with an anxiety disorder. The authors of this review acknowledged that further randomly controlled studies were required for more reliable conclusions to be reached.

A recent meta-analysis once again reviewed the efficacy of MABIs on the treatment of anxiety disorders, in this case specifically social anxiety disorder (SAD) (Norton, Abbott, Norberg & Hunt, 2015). Nine studies were ultimately identified as meeting the criteria of including quantitative research methods, being aimed at adults who had been diagnosed with SAD and which employed a MABI as a primary therapeutic intervention. As with the earlier review of studies with respect to the use of MABIs as a treatment modality for the treatment of anxiety disorders, the researchers discovered that there were far fewer studies reviewing the impact of MABIs on anxiety disorders than on depression, and that most studies on the subject were not randomly controlled. Those studies with control groups tended to use CBT as the control and the results between the two interventions were neutral for MABIs at best. Review of the studies provided inconclusive support for the use of MABIs

as a first-line treatment for social anxiety. Although studies indicate that MABIs provide significant benefits for reducing the symptoms of anxiety among SAD patients, it is not clear that these benefits are more significant than the benefits achieved through CBT interventions. Clearly, further randomly controlled studies are required to draw any conclusions about the efficacy of MABIs in the treatment of anxiety disorders, particularly in comparison to CBT interventions.

Amelioration of Psychological and Physical Symptoms of Medical Disorders

As discussed in a previous chapter, a diagnosis such as cancer or heart disease results in a complex set of physical and psychological issues that often result in the patient experiencing symptoms of anxiety and depression (Ledesma & Kumano, 2009). Ledesma and Kumano performed a meta-analysis of ten research studies, comprising of a total of 583 individuals, to review the effectiveness of MBIs in ameliorating these symptoms in patients with a diagnosis of cancer. The authors found only four studies that met their criteria of being an RTC and therefore included several studies that were observational in nature as well. The results showed evidence of a moderate improvement in the levels of anxiety and depression amongst the participants of the various studies but the authors were cautious in their conclusions due to the number of variables that were present in the studies reviewed. A subsequent meta-analysis reviewing the effectiveness of MBIs in the treatment of anxiety and depression in cancer patients reviewed a total of 13 studies, and included both quantitative and qualitative studies in their analysis (Shennan, Payne & Fenlon, 2010). Although the authors noted difficulties in directly comparing effectiveness of MBIs due to the disparity of study designs and measures, they cautiously concluded that “there is evidence of quantitative and subjective benefit for the interventions” (p. 693). A more recent meta-analysis of studies reviewing the effectiveness of MBIs on improving the mental health of breast cancer patients concluded that MBIs have a moderate to large positive effect on cancer patients, although it was acknowledged that further

studies, particularly RTCs, were required before any firm conclusions could be reached (Zainal, Booth & Huppert, 2013).

Overall, it appears that there is promising evidence that MBIs may be effective in alleviating symptoms of anxiety and depression in patients with a diagnosis of cancer. The results, however, indicate a wide range of the level of effectiveness found. Although there was no indication that MBIs were harmful to patients with cancer, there is a clear need for further study into the subject before conclusions about the effectiveness of MBIs in cancer treatment can be established.

A meta-analysis that was published in 2014 with respect to patients who had been diagnosed with vascular disease sought to determine the effectiveness of MBIs on not only psychological outcomes, but also on physical outcomes such as blood pressure and the production of stress hormones (Abbott et al., 2014). The 578 participants in the nine studies reviewed had been diagnosed with a variety of underlying diseases impacting the vascular systems such as heart disease, diabetes and stroke. The authors found evidence that MBIs produced small to moderate positive psychological results across the various clinical populations. There was also clear evidence that MBIs had a positive impact on general well-being and quality of life. The conclusions with respect to the positive impact on the physical state of the participants was much more equivocal and the authors concluded that “more robust studies, with longer term follow-up are required to establish full efficacy of such intervention” (p. 350).

A meta-analysis of studies reviewing the effectiveness of MBIs in addressing issues with insomnia and sleep disturbances had interesting results (Kanen, Nazir, Sedky & Pradhan, 2015). In reviewing the results of a total of 16 studies, involving 575 participants, 82% of whom were female, the authors found that there was an improvement in sleep based on self-reports through sleep logs and that these improvements lasted several months following the MBI. What was particularly interesting, however, was that these subjective improvements were not reflected in the objective measures used to

measure sleep quality, such as polysomnography. The conclusion of the authors was that although the use of MBIs to treat sleep difficulties was promising, further research is required to establish the overall efficacy of the treatment.

A meta-analysis of the impact of MBSR in dealing with the pain and quality of life for patients diagnosed with fibromyalgia syndrome (FMS) was published in 2013 (Lauche, Cramer, Dobos, Langhorst & Schmidt, 2013). In a review of six studies, both RTC and non-RTC, and involving a total of 674 participants, the efficacy of MBSR in the improving the quality of life and pain experience of patients diagnosed with FMS was reviewed. The authors concluded that although there was evidence that MBSR might be a useful approach for these patients, at this point they could only make a weak recommendation for MBSR based on a review of the studies. They found no evidence that pointed to positive secondary outcomes or long term effects of MBSR. It was acknowledged that further RCTs are required before any firm conclusions can be reached.

Improvement of Well-being in Non-Clinical Population

As discussed in previous chapters, in addition to a growing application in clinical situations, MBIs have long been used as an intervention to improve the general well-being of individuals who have not been diagnosed with a physical or psychological condition. In this context, MBSR is the most commonly studied intervention, although other interventions have been reviewed as well. A meta-analysis conducted in 2009 reviewed MBSR as a strategy for stress reduction in healthy individuals (Chiesa & Serretti, 2009). The analysis involved 10 studies which met the criteria of investigating the effect of MBSR on healthy individuals, with a control group and using valid measures for the measurement of stress. This analysis concluded that evidence supports the positive, non-specific effect of MBSR on stress reduction in healthy people. The long term effects of the MBSR following the intervention is less clear. While the positive effects were notably maintained in some of the studies following three months of practice, other studies were more equivocal. It was

noted that the longer term effects of those subjects who maintain the ongoing practice of MBSR needs further study.

Another meta-analysis that reviewed the efficacy of MBSR in reducing stress in healthy individuals was published in 2015 (Khoury, Sharma, Rush & Fournier, 2015). This analysis included 29 studies, with a total of 2668 participants that used MBSR as an intervention with healthy individuals to deal with stress and anxiety. The results demonstrated that MBSR is moderately effective in decreasing the experience of stress and anxiety in healthy individuals. Even though the MBSR interventions in the studies did not target a clinical population, “moderate effects were found on multiple clinical measures including depression, anxiety and distress, beside a large reduction in stress and an increase in quality of life” (p. 524).

A meta-analysis of a non-clinical population that did not limit its scope specifically to the review of MBSR, considered the use of MBIs in the workplace and was published in 2015 (Virgili, 2015). The analysis included 19 controlled and uncontrolled intervention studies involving a total of 1139 participants that were both RCTs and non-RCTs. The studies included participants from a working population, and used validated measurement scales for the measurement of psychological distress outcomes. Overall, the results supported the use of MBIs with working adults for the reduction of psychological distress. It also found that shorter versions than the traditional 8-week MBSR or MBCT programs were equally effective to the longer versions. What was not clear, however, was whether the MBIs were more effective than other stress management interventions such as yoga or relaxation training in reducing psychological distress in working adults. Further research using controlled RCTs was recommended before any conclusions should be drawn from these results.

Broad-based Meta-analysis of MBIs

Some meta-analytic reviews have taken a broad based approach to the consideration of the efficacy of MBIs. In these reviews the use of MBIs in a variety of clinical and non-clinical

applications is considered. A meta-analytic review published in 2013 considered 209 studies involving a total of 12,145 participants, and reviewed the efficacy of MBIs in a wide range of physical and psychological disorders, as well as non-clinical applications (Khoury et al., 2013). Any study examining the pre-post or controlled effects of an MBI in a clinical setting was considered in the analysis. Due to the large number of participants, diverse ages, genders and clinical profiles were said to be considered, although the results did not discuss any of these factors. There was no mention of other elements of diversity such as ethnic background and economic status. The results indicated that MBIs were moderately effective when compared with pre-study states and small to moderately effective when compared with other active treatments such as psychoeducation, supportive therapy and relaxation. The exception to this finding was that MBIs were not more effective than traditional CBT. The findings also indicated, perhaps not surprisingly, that MBIs were more effective at treating psychological disorders than in treating physical or medical conditions. It was also noted that there was no evidence in any study that there was a negative effect from an MBI. Another meta-analysis, published in 2014, considered the efficacy of MBIs in improving stress related symptoms such as anxiety, depression, stress/distress and quality of life in a variety of adult clinical populations (Goyal et al., 2014). In this review, only studies involving a clinical condition and in which there was a control group were considered. "Clinical condition" was defined broadly and included both physical and psychological diagnoses. A total of 47 trials involving a total of 3515 participants were included. The review found that there was moderate evidence that MBIs improved anxiety, depression and pain, and low evidence that MBIs improved stress and quality of life. There was little evidence to support any effect of MBIs on other aspects of improved lifestyle such as substance use, eating habits, sleep and weight and little evidence that MBIs were superior to other active interventions such as CBT, medication or exercise regimes. It is also worth noting that all types of meditation interventions were included, including some that are normally not included in studies about MBIs such as meditations

using focus on a mantra, rather than on the present moment and that this may have had an impact on some of the results.

The most recent meta-analysis reviewed was published in 2015 and considered MBIs, specifically MBCT and MBSR, being applied in a wide range of patient categories (Gotink et al., 2015). Clinical applications such as adjunct treatment of cancer, cardiovascular disease, chronic pain, depression and anxiety disorders were included. Studies reviewing the application of MBIs as a preventative measure in healthy adults were also considered. All of the studies included in the analysis, a total of 23 reviews involving a total of 8683 individuals, were RCTs. The results indicated that, compared to wait list and TAU, MBCT and MBSR significantly improved depressive symptoms, anxiety, stress and quality of life. There was also moderate evidence in support of prevention in healthy adults and children. It is interesting to note that the results found in this meta-analysis were significantly more positive than other recent meta-analyses on MBIs. It is also interesting to note that, unlike the other meta-analyses reviewed, this meta-analysis limited the studies reviewed to those specifically using a MBCT or MBSR approach, which may have impacted the results. Further studies, with clear and consistent criteria, are clearly required to resolve some of the differences in results between meta-analyses.

Conclusion

There is significant evidence that MBIs can have a positive impact on a variety of psychological and physical symptoms but little is understood about the actual brain mechanisms that cause these positive effects. In recent years, researchers have begun to theorize how mindfulness and meditation practices impact the functioning of the brain and some plausible theories have emerged. There has also been some suggestion in recent years that meditation may actually affect the brain functioning and structure in the long term. Much more research is required in this area, however, before any conclusions can be drawn.

As discussed in the previous chapter, many individual research studies have concluded that MBIs are effective in treating a variety of symptoms, such as anxiety and depression, in a variety of contexts, both psychological and physical. Meta-analyses of studies on some of the same subjects, however, are more equivocal and varied in their positive conclusions.

Although there was virtually no evidence found that MBIs were harmful in any of the studies, the degree of efficacy in addressing symptoms, especially when compared to other treatment modalities, was less clear. In some meta-analyses reviewed the results of using MBIs were quite positive, while in other cases the results were less positive or in some cases neutral. It appears that some of the major difficulties in conducting reliable meta-analyses of MBI studies is the wide variety of research models used, the lack of consistency with respect to the specific MBI or MBIs being reviewed, and discrepancies between studies of the reliability and veracity of the results. For example, some studies are RCTs, while others are not randomized or controlled. Some studies are very specific and particular about the methods and tools they are using to conduct the studies and others are much less vigorous in their approach. The strengths and limitations of these studies and their corresponding conclusions will be discussed in the next chapter, along with the writer's perspective and suggestions with respect to the appropriate clinical application of MBIs in a variety of contexts.

CHAPTER 5: DISCUSSION

Introduction

To this point, this thesis has been largely comprised of a literature review discussing the origins of mindfulness practice, the evolution of the therapeutic use of mindfulness meditation practices, research with respect to the clinical application of mindfulness-based interventions (MBIs) to specific psychological and medical conditions and research with respect to how MBIs work and the physiological effects of mindfulness meditation on the brain. There is no doubt that over the past several years MBIs are increasingly a topic of discussion and research, and there is no sign of this phenomenon slowing down. The results of studies with respect to the efficacy of MBIs in a variety of settings vary somewhat, but are generally promising or at least neutral.

It is important that research results are read with caution and a healthy skepticism based on some of the factors that can affect the outcome of studies, both negatively and positively. It is also important that future research not simply repeat what has already been done, but instead refine and improve the study designs, as well as confirm or refute, the results of earlier studies. In this chapter, the findings from the research into MBIs will be discussed with a particular focus on possible weaknesses and concerns about the quality of the research into various aspects of MBIs, as well as potential concerns about the conclusions of these studies. Suggestions for further research and the author's conclusions about the effectiveness of MBIs will conclude this chapter.

Potential Concerns About Research into MBIs

Several concerns with respect to the quality of the research into MBIs have been raised as limitations in many of the studies reviewed. While it is worth reviewing and considering these concerns when analyzing clinical results, it should be noted that many of the limitations discussed are not unique to the study of MBIs and are, in fact, commonly found in many studies

in the field of psychotherapy, due to the subjective nature of the results (Gotink et al, 2015).

These factors are always worthy of consideration when interpreting research but are particularly of concern when the results of a study or studies are equivocal, and of somewhat less concern when the results are robust (Hofmann, Sawyer, Witt & Oh, 2010).

Potential for Bias

As can be said for most research into psychotherapeutic techniques and non-pharmacological mind/body interventions, there is significant potential for bias in research into MBIs due to the very nature of the intervention (Lauche, Cramer, Dobos, Langhorst & Schmidt, 2013). It is virtually impossible to construct and apply a double blinded study because it is very evident whether a person is in the control group or the active group. Specifically, the subject must actively take part in the intervention to study its effectiveness, and the person leading the intervention must know what intervention is being delivered. Even creating a single blind study is virtually impossible in that it is difficult to hide the nature of the intervention being delivered from the participants. This, coupled with the fact that samples are largely self-selected, leads to the potential that the results of these studies are directly applicable only to those who are interested in, and able to participate in, the intervention (Gotink et al., 2015).

There have been concerns expressed about the potential for the positive expectations of the researchers conducting the studies to bias the reported outcomes. Many of the studies were conducted by practitioners of the intervention and there is a potential motivation to obtain positive results. The potential for this effect is made more significant due to the fact that the tools used to measure the effectiveness of the intervention are most often self-reported and subjective in nature (Hofmann, Sawyer, Witt & Oh, 2010). It has also been suggested that there is a potential for bias in that generally only individuals willing to make the time commitment to attend courses and practice at home will agree to take part in the study. In one study with respect

to MBCT it was found that the most common reason for declining to take part in the intervention and therefore the study was the time commitment involved (Kuyken et al, 2008).

Self-Assessment

In many cases the only viable method of assessment is self-assessment by the participants. Although there are standardized self-assessment tools available, the results still depend on the individual's ability to self-assess, something that is known to be difficult to do accurately (Goldberg, Del Re, Hoyt & Davis, 2014). Another factor that may be at play when self-assessment is utilized is a phenomenon referred to in the literature as "social desirability bias". Social desirability bias has been described as the difference between an individual's own perspective and that person's perception of what might be expected (Chung & Munroe, 2003). This phenomenon leads to the concern that a person will give responses that are expected of them, rather than what they truly believe, and can lead to inaccurate study results.

Research Sample

One of the most obvious issues with the research samples in many of the studies reviewed is the small sample size. There may be many reasons for this, including the level of commitment required by both the therapist and the participant for each intervention and the limited number of participants recommended for most MBI interventions (Shennan, Payne & Fenlon, 2011). It is also difficult to include any kind of randomization process in selecting participants and in many cases the participants are often almost entirely self-selected (Chiesa & Serretti, 2009). Another issue with many of the samples is the lack of ethnic, cultural and gender diversity. Subjects are often noted to be predominantly female and Caucasian, which limits the generalizability to other groups (Goldberg, Del Re, Hoyt & Davis, 2014). This is compounded by the fact that most of the studies reviewed deliver the MBI in English only, which naturally excludes non-English speaking participants from the group (Shennan, Payne & Fenlon, 2011).

Issues with Control Group

Several issues have been noted in the literature with respect to difficulties with control groups in MBI studies. The most obvious concern is that there is often no control group at all. Many studies of MBIs are categorized as pilot studies, which are typically studies of shorter duration with a small sample size and no control group, designed to examine the feasibility of an approach that will ideally ultimately be tested in a larger scale study (Leon, Davis & Kraemer, 2011). Other studies without control groups are considered to be single group studies, which traditionally rely on before and after comparisons of the group being studied rather than a comparison to a control group (Paulus et al, 2014).

While many of the studies reviewed do have a control group, some concerns have been expressed with respect to the quality of those groups. Some control groups receive a different type of treatment, with the results of the two different treatments being compared. This can be valuable in testing the efficacy of each modality but does not consider what results might be obtained from no treatment at all. In other cases, the control group is meant to have the same characteristics as the study group with one receiving the treatment being studied and the other on a waitlist maintaining treatment as usual. One problem with this approach is that the “treatment as usual” can vary widely amongst the control group making the comparison less consistent. Another problem with this approach is that many studies do not control for other factors that may be impacting those on the waitlist, such as different types of treatment being pursued while on the waitlist. Another factor impacting the validity of a waitlist control group has been referred to as “frustrebo” effects (Power & Hopayian, 2011). On the one hand, those on the waiting list can become impatient and begin to explore and embrace the intervention, in this case mindfulness, while waiting for the group to begin. This can falsely diminish the positive results in the active group. On the other hand, it has been suggested that those on the waiting list can become

discouraged at not receiving treatment and become more symptomatic, thereby potentially falsely increasing the appearance of positive effects of the intervention.

It is important, however, not to discount studies that do not have control groups or are qualitative in nature. It has been suggested that there is sometimes too much focus on quantitative data in areas of study that are difficult to quantify, such as human emotions and subjective experience (Johnson & Waterfield, 2004). Qualitative methods, on the other hand, are “able to explore the complexity of human behaviour and generate deeper understanding of illness behaviours and therapeutic interactions” (p. 121). It is often the combination of these approaches, either through using a mixed method in an individual study or compiling many studies into a meta-analysis, that can result in the most compelling results overall (Gelo, Brackman & Benetka, 2008).

Limitations of Meta-analyses

Although there are many advantages to reviewing the results of multiple studies through meta-analysis, there are some drawbacks to this approach as well. The obvious advantage of using meta-analysis techniques to study a subject is that it “offers the opportunity to critically evaluate and statistically combine results of comparable studies” with a purpose to “increase the numbers of observations and statistical power by improving the effect size of an intervention or an association” (Fagard & Staessen, 1996, p. S9). This allows the collective review of many small studies to determine whether the results are consistent across studies. This is particularly valuable to validate trends found in studies that are more subjective or quantitative in nature and that may be less reliable or statistically significant on their own. Taken with other qualitative studies that have similar findings, the results become more compelling.

The difficulty with this approach is that the veracity of the results is dependent on the study selection criteria, the quality of the studies included and the statistical assumptions made in those

studies. Often these factors vary widely amongst the studies being analyzed, leading to less reliable results overall. Although careful methodology is important to the validity and reliability of meta-analytic research, even the trends that emerge from research that may be less rigorous in its criteria for inclusion, can still be important to validate the findings in individual studies and to inform areas for further research and study (Whiston & Li, 2011).

Potential Concerns About MBIs as a Treatment Modality

Although the results from studies into the efficacy of MBIs in a variety of clinical applications are generally promising, there are some concerns that are worth noting when considering those results. Many of these concerns could be addressed through further research, which will be discussed in a subsequent section of this chapter, while others may be addressed through careful consideration of whether an MBI is an appropriate intervention in a specific circumstance.

Cultural Concerns

As referred to above, one of the significant concerns expressed about the research into MBIs to date is that most of the studies have involved Caucasian, English speaking participants, who are disproportionately female. This limits the generalizability of the results to other cultures, ethnicities and genders. It is not clear whether the general approach of MBIs may be more or less palatable to Caucasians and/or females, and therefore whether the results can reliably be extrapolated to other groups (Goldberg, Del Re, Hoyt & Davis, 2014). It is quite possible that other groups may find the general approach taken in MBIs to be less comfortable or appropriate due to cultural or other influences. There is also the possibility that MBIs are not a viable option for poor, illiterate or non-English speakers simply due to practical concerns such as cost, time commitment and lack of access due to language issues.

The other obvious consideration for generalizability of results is the cultural context of mindfulness practice itself. It is possible, for example, that the assumptions in which the benefits from recognizing one's contextual demands and emotions and increasing moment-to moment awareness may be culturally limited. For example, it has been suggested that in some cultural groups, psychological denial and avoidance are considered to be healthy (Cheng & Sue, 2014). Conversely, it was also suggested that some cultural groups may find MBI principles especially congruent with their cultural beliefs and practices. In some cultures, mindfulness is very much a part of a greater spiritual practice, while in other cultures the connection of mindfulness practice to spirituality or religion might be a deterrent to taking part in the practice. It should be noted that studies have begun to review the cultural applicability of MBIs and the success of actually making some cultural adaptations (Longoria, 2014; Ivers et al., 2016). Multicultural competence as an important issue to be considered and addressed in all psychotherapeutic interventions, including MBIs, is increasingly being acknowledged and discussed in the literature (Masuda, 2014; Ivers et al., 2016).

Practical Considerations

Several practical considerations have been discussed in the context of the efficacy and consistency of MBIs. One of these considerations is the fact that taking part in most MBIs takes a significant time commitment, both in attending the sessions and practicing the skills learned in the sessions at home, making it untenable for some individuals with significant time constraints. MBIs tend to be delivered in large centres and the practical fact that a participant in a program must be able to attend the program where it is offered on a regular basis can make access to MBIs more difficult in more remote areas. These factors can also lead to cost implications, which could be a deterrent for some potential participants in the program (Kuyken et al., 2008).

Another practical consideration, particularly when conducting studies into the comparative effectiveness of MBIs, is the inconsistency of both the programs offered and the qualifications and requirements for the leaders of those programs. Some MBIs, such as MBCT and MBSR, have fairly strict requirements for both becoming and continuing as an instructor, including having an ongoing mindfulness practice of their own. Other MBIs are much less specific about the necessary qualifications of the leaders. These differences can lead to inconsistencies in the quality of the MBI programs offered. It has also been noted that the length of courses often varies widely (Dobkin, Irving & Amar, 2011). While it is unclear what impact these factors may have on the efficacy of the intervention, it is important to recognize that all MBIs are not necessarily equal.

Contraindications

Most studies into the efficacy of MBIs demonstrate a positive or neutral response to the intervention and adverse effects to the intervention are almost never reported. This may be in part due to the fact that MBI studies tend to focus on a limited number of psychopathologies such as anxiety and depression (Shonin, Gordon & Griffiths, 2014a). It may also be influenced by the tendency to publish studies that support earlier studies more readily than studies where the results refute, or at least don't support, the earlier results (de Bruin & Sala, 2016). As MBIs are being applied to increasingly broader audiences with increasingly diverse medical and psychological conditions, however, some important discussions about what might constitute a contraindication taking part in an MBI have begun to take place. The most common concern is that mindfulness meditation will trigger increased anxiety and even psychosis. There are many theories about why this may be a risk but it is generally proposed that the individual taking part in the MBI needs to have sufficient tolerance for "unpleasant material" in that the practice of mindfulness tends to decrease the avoidance of unpleasant emotions and personal problems

(Dobkin, Irving & Amar, 2011). A recent review of the literature identified several situations in which psychotic episodes were precipitated by participation in a meditative practice. It is important to note that the meditative practice referred to was not necessarily an MBI and in several cases was a TM based approach to meditation (Shonin, Gordon & Griffiths, 2014b). It is also important to note that in most of the cases the individual experiencing the psychosis had a previous history of psychotic episodes, which suggests the need for adequate and effective screening practices.

The logical result of these reports of adverse effects of meditation-based interventions is to recommend the exclusion of anyone with a history of psychosis from any MBI. It should also be noted, however, that there is emerging evidence that MBIs can be effective with individuals who have experienced psychosis when adapted for that population (Chadwick, 2014). There are currently no empirically based guidelines to guide which individuals may be contra-indicated to be included in an MBI. It is likely advisable, however, to exercise caution and careful screening for potential participants with significant psychiatric issues and posttraumatic stress disorder to determine whether these issues may interfere with safe participation in the MBI being offered (Dobkin, Irving & Amar, 2011).

Concerns about Psychological Implications of Mindfulness

There have been some recent, somewhat contentious, criticisms of mindfulness for having too much of a focus on detachment and reduced anxiety, thereby potentially minimizing functionally negative feelings that may be healthy in some instances. David (2014) contends that “the outcome of a general reduction in the intensity of affect, hypothetically produced by detachment, regardless of its positive or negative valence, may not be a universally desired clinical outcome” (p. 315). David goes on to give the example of a person preparing for an important exam where a functional negative feeling of anticipatory anxiety can motivate proper

preparation for the examination and produce an optimal level of arousal to optimize performance during the exam. He contends that the detachment from negative feelings and thoughts and relaxation that occurs as a result of mindfulness may mean that “the motivational and cognitive resources might not be mobilized sufficiently to achieve the desired outcome.” (p. 316). David’s paper received an immediate response from Gardner, Moore and Marks (2014) stating that it “suffers as a result of its reductive presentation of mindfulness” and “the empirical support for mindfulness-based interventions and the presumed mechanisms of change and clinical utility of those interventions” (p. 325).

Although I tend to agree with Gardner, Moore and Marks’ interpretation of David’s perspective, the discussion and challenge of perspectives that his perspective has brought forward can only be seen as positive for a quickly emerging intervention such as MBIs. As David further points out, it is very easy for the clinical world to “jump on the bandwagon” of emerging interventions without fully reviewing and critiquing their efficacy and suitability for all situations and applying mindfulness interventions judiciously (p. 321). This is particularly true as the application of MBIs moves away from the original applications of addressing stress, anxiety and depression and into other areas of application, such as serious psychiatric disorders (Shonin, Gordon & Griffiths, 2014a). It is important, however, to ensure that the intervention being critiqued is being described accurately, something it appears that David does not do.

Areas for Future Research

In that MBIs are relatively new when compared to many other psychological interventions, there is a great deal that still needs to be studied, and many aspects of MBIs that have already been studied that need to be refined and confirmed. This is particularly true as new and innovative applications of MBIs emerge and are applied to increasingly divergent situations. In addition to further research into the different applications of the various versions of MBIs to a

wide variety of situations and diagnoses to confirm or refute the results of research to date, some specific areas where further research would be particularly beneficial are outlined below.

Cultural Diversity

The effects and mechanisms of mindfulness and acceptance-based interventions are not yet fully investigated across diverse settings, populations, and clinical issues (Woidneck, Pratt, Gundy, Nelson, & Twohig, 2012). As discussed in an earlier section, there is no doubt that it would be extremely useful to conduct trials of MBIs with a focus on the efficacy of the intervention in ethnic and cultural populations that are different from the largely Caucasian groups that are most often the subjects in current research. These groups could include people of different ethnic backgrounds, religions, gender and sexuality, as well as many other cultural differences that could impact the efficacy of MBIs.

Not only would research studying the effectiveness of current MBIs with other populations be valuable, it would also be extremely valuable to explore adaptations to MBIs that could make them more culturally sensitive to specific populations. There has also been a suggestion that the MBIs themselves could bring mindfulness to issues of diversity as a mechanism to apply for better understandings” (Longoria, 2014, p. 200). Longoria also suggests that research into these adaptations could include a “post intervention qualitative exploration of perceived cultural relevance and effectiveness of the interventions.

Control Groups

A subject that comes up in many discussions of the results of studies into the efficacy of MBIs is the need for further studies using more robust controls. In some cases, this means using a control group of any sort, but in many cases there is an identified need for control groups that are more specific and targeted than has often been the case in research to date. Although it is important to note that not all methodologies lend themselves to using a control group, when it is

appropriate, the use of a control group can be extremely helpful in making the results of a study more robust.

There are several different aspects of the control group that are worthy of consideration. While pilot studies and other studies without control groups are usually interesting, the results would often benefit from a control group to determine whether the intervention in question was the reason for improvement or whether it could be simply the passage of time or other elements not directly attributable to the MBI.

Just having a control group only goes so far in establishing the difference in results between the study group and the control group. The nature of the control group is also critical, particularly as more specific aspects of MBI's are being studied (Siddaway & Wood, 2013). For example, comparison between different modalities of MBIs, such as a comparison between MBCT and MBSR in similar populations, could examine the different elements or approach of the MBI that are most impactful in a given circumstance. If the results were equal, perhaps it is the element of mindfulness that is most critical for effectiveness. If the MBCT group shows greater improvement, it might be suggested that it is the CBT element of the intervention is of particular importance. These types of comparisons have the potential to test the particular contribution of specific elements in the therapies being studied (Webb, Miles & Sheeran, 2012). Similar comparisons could be made by comparing an MBI to a relaxation group or other types of interventions such as exercise or medication.

A final suggestion for refining the results of research into the efficacy of MBIs involves utilizing control groups to specifically test the purported active ingredients of mindfulness in the MBI. This would require random allocation to an active control that is structurally equivalent and similar across all conditions but which does not contain mindfulness as the purported active ingredient to the modality (MacCoon et al, 2012). Such factors might include the number, length

and duration of the sessions, the amount of contact time with therapists and other group members, the level of training and expertise of the therapists, the format of the group and the opportunity to discuss problems. Findings of studies using these types of controls have the potential to be compelling, and would certainly be a positive addition to the body of research to date (Siddaway & Wood, 2013).

Other Areas for Future Research

In addition to the need for further research using methodologically sound techniques as discussed above, one aspect of the research into MBIs that also requires attention is the tendency towards small sample sizes in the composition of the cited studies. As with research into any other subject, studies using larger sample sizes are needed to validate the findings to date using smaller sample sizes. Another aspect of the research that is not currently available is longitudinal studies that research the long-term effects of MBIs over time, including when the mindfulness practice of the intervention is continued, as well as when it is not (Goyal et al., 2014). Further research into the effect of MBIs on brain function, both short term and long term, would also be of benefit for further understanding of both MBIs and other psychological therapies (Siddaway & Wood, 2013).

Conclusion

Overall, the evidence to date is promising that mindfulness and MBIs are a modality that can be helpful in a variety of situations, both clinical and non-clinical. The evidence does, however, support some applications of mindfulness and MBIs more than others. There is compelling evidence that MBCT is effective in preventing relapse in patients with recurrent depression (Kuyken et al, 2015) and moderately robust evidence that it is effective in treating current depressive symptoms (Eisendrath et al., 2015). In fact, it was found to be at least equal to

antidepressant medication in all of the studies reviewed. This could make MBCT a viable alternative therapy for individuals who would prefer not to take medications.

There is also promising evidence that MBIs are effective in treating symptoms of anxiety in patients diagnosed with both depression and anxiety disorders, particularly when used as an adjunct to other treatments such as CBT. Evidence was less compelling as a treatment on its own for anxiety disorders (Norton, Abbott, Norberg & Hunt, 2015). Evidence has also been somewhat mixed with respect to the efficacy of MBIs in the treatment of other psychiatric disorders and MBIs should probably be used only as adjunct therapies for most serious psychiatric illnesses until further research has been undertaken.

Caution should be exercised when interpreting any research to date that suggests that MBIs are a viable treatment on their own for physical ailments. Further research is definitely required before any conclusions can be reached in this area. There is, however, promising evidence that MBIs can be helpful in the context of physical ailments in that MBIs have been shown to alleviate some of the stress and anxiety that accompanies these physical illnesses, which can be extremely valuable in itself.

One of the areas in which MBIs have been shown to consistently be helpful is in the area of stress and anxiety reduction in healthy people without a clinical diagnosis. Recent studies on this subject, including a recent meta-analysis, supported the theory that MBIs, such as MBSR, are effective in decreasing stress and anxiety and increasing the quality of life in healthy individuals (Khoury, Sharma, Rush, & Fournier, 2015). Another recent study supported a positive impact on the use of MBIs with adults in the working population in reducing stress and psychological distress (Virgili, 2015).

When all of the evidence is taken into account, the research supporting the thesis that mindfulness and MBIs can have a positive impact in a variety of situations, both clinical and

non-clinical, is very promising. This is particularly true when treating recurrent depression and symptoms of stress and anxiety, and when MBIs are used as an adjunct to other treatments for other conditions. What is also clear, however, is that further research using robust methodologies and involving longer periods of time are warranted before specific conclusions can be reached and positive early indications confirmed, particularly in the case of the application of MBIs to specific physical and psychiatric ailments.

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