Published in final edited form as:
J Clin Psychol. 2010 November ; 66(11): 1175–1184. doi:10.1002/jclp.20736.

A Mindfulness-Based Approach to the Treatment of Insomnia

Jason Ong and **David Sholtes**
Rush University Medical Center

Abstract

Mindfulness meditation has emerged as a novel approach to emotion regulation and stress reduction that has several health benefits. Preliminary work has been conducted on mindfulness-based therapy for insomnia (MBT-I), a meditation-based program for individuals suffering from chronic sleep disturbance. This treatment integrates behavioral treatments for insomnia with the principles and practices of mindfulness meditation. A case illustration of a chronic insomnia sufferer demonstrates the application of mindfulness principles for developing adaptive ways of working with the nocturnal symptoms and waking consequences of chronic insomnia.

Keywords

mindfulness meditation; insomnia; sleep; emotion regulation; behavioral sleep medicine

Rooted in Eastern ideology, meditation is an activity of personal transformation and self-regulation that embodies concentration, awareness, and compassion. Historically, meditation practice has been used to regulate mental and physical health and for spiritual development that is part of a religious or philosophical system. Mindfulness meditation stems from a Buddhist practice called *vipassana*, a term which can be translated as “to see in a special way” (Chavan, 2008). Mindfulness meditation is one style of meditation that has attracted attention in Western cultures as a possible approach to healing.

Practicing this meditation technique fosters awareness of the present moment by noticing the impermanent nature of things. By seeing or awakening to impermanence, one can notice that rigid attachment to desired outcomes is a cause of stress. Therefore, adopting this level of awareness to each moment cultivates the ability to respond to stimuli in a nonjudgmental way and allows one to navigate life in a way that does not involve attachment to particular beliefs, thoughts, and emotions (Ludwig & Kabat-Zinn, 2008). This form of self-compassion serves as a mechanism for reducing negative emotional reactions and enhancing resilience.

Given the potential health benefits of mindfulness meditation, there has been a growing movement towards applying it in behavioral medicine. The first formal program was called *mindfulness-based stress reduction* (MBSR), developed by Jon Kabat-Zinn (1990). Mindfulness-based stress reduction is an 8-week program that includes an experiential component (formal mindfulness meditations), didactics (education on mental and physical stress response), and group processing and support. In addition to acute benefits, the MBSR program demonstrates how to make lifestyle changes by incorporating mindfulness techniques into day-to-day life and encourages participants to maintain a regular meditation practice. A growing body of research on MBSR has found evidence to support its benefits

Correspondence concerning this article should be addressed to: Jason Ong, Rush University Medical Center, 1653 W. Congress Parkway, Chicago, IL 60612-3833; Jason_Ong@rush.edu .

for people who suffer from a number of stress-related conditions, including disorders such as chronic low back pain (Morone, Greco, & Weiner, 2007), fibromyalgia (Grossman, Tiefenthaler-Gilmer, & Raysz, 2007), cancer (Carlson & Garland, 2005), and psoriasis (Kabat-Zinn et al., 1998).

Despite its widespread benefits on health, MBSR is not a *specific* treatment. It is typically delivered as a psychoeducational program to a heterogeneous group of patients experiencing a variety of medical and psychiatric conditions (e.g., chronic pain, cancer, anxiety) with the common denominator of relieving stress and suffering.

However, several other mindfulness-based programs have adapted the MBSR program to fit the needs of a specific population. Mindfulness-based cognitive therapy (MBCT) is a program developed to prevent the relapse of depression among individuals with recurrent major depressive disorder (Segal, Williams, & Teasdale, 2002). Mindfulness-based eating awareness therapy (MB-EAT) is a program designed to help individuals with eating disorders and weight management (Kristeller & Hallett, 1999). There is also a mindfulness-based program for preventing relapse in alcohol and substance use (Witkiewitz, Marlatt, & Walker, 2005).

In this article, we describe a recent adaptation of mindfulness meditation for the treatment of insomnia: mindfulness-based therapy for insomnia (MBT-I). We then illustrate its core principles and clinical practices in a case example of a middle-aged woman suffering from chronic insomnia.

A Mindfulness-Based Approach to Insomnia

Sleep disturbance is another area in which a mindfulness-based approach appears to be particularly suitable. Sleep disturbance is a common problem with nearly 75% of American adults reporting at least one symptom of a sleep problem a few nights a week or more during the past year (National Sleep Foundation, 2005). Approximately 10–15% of the adult population suffers from an insomnia disorder, which can have significant negative consequences if left untreated. Individuals who suffer from chronic insomnia will often describe their condition as a “vicious cycle” with increasing effort and desire put into trying to regain sleep. Ultimately, the strong desire to get more sleep and to avoid daytime fatigue leads to a state of feeling stuck between sleepiness and wakefulness. Hypnotic medications are frequently used to treat insomnia, but many patients prefer nondrug approaches to avoid dependence and tolerance (Morin, Gaulier, Barry, & Kowatch, 1992).

Previous research has examined the effects of MBSR on insomnia patients or the addition of mindfulness as a component in a multicomponent approach. In contrast, our program of research has focused on the development of a mindfulness-based therapy for insomnia (MBT-I), a treatment using a mindfulness-based approach combined with behavior therapy for insomnia. Mindfulness-based therapy for insomnia integrates the science of sleep medicine, behavior therapy, and meditation practices stemming from the Buddhist tradition.

The goal of MBT-I is to help individuals increase awareness of the mental and physical states that develop with chronic insomnia and to develop adaptive ways of working with these undesirable states. The meditation exercises, discussion, and daily monitoring of sleep and wakeful activities serve to develop this awareness. In particular, attention is brought to the mental and physical states of sleepiness and fatigue as participants are taught to discern these two states. Mindfulness-based therapy for insomnia includes reducing unwanted wakefulness at night and effectively managing the emotional reactions to sleep disturbance and daytime fatigue. As the program progresses, participants are taught to use mindfulness principles and behavioral strategies to work with these undesirable states. Using awareness

as a platform, participants are taught to *respond* to sleep disturbance with mindfulness skills rather than *react automatically* by increasing effort to rest. For example, awareness of internal cues (sleepiness rather than fatigue) along with a recognition of reactive tendencies (avoid fatigue by going to bed) is used to make changes in both the relationship to sleep and behaviors that are likely to promote sleep.

Specific behavioral changes are implemented through sleep restriction and stimulus control, two empirically supported treatments for insomnia that complement the mindfulness principles. Sleep restriction (Spielman, Sasky, & Thorpy, 1987) involves regulating sleep by setting a limited time in bed (e.g., 12:00 a.m. to 6:00 a.m.). By restricting the amount of time in bed, the individual avoids compensatory behaviors for sleep loss (e.g., taking naps, staying in bed to catch more sleep), which can lead to reduced homeostatic drive for sleep, thus perpetuating the sleep problem. Stimulus control (Bootzin, Epstein, & Wood, 1991) consists of an instruction set designed to maximize the opportunity to fall asleep in the bedroom by reestablishing the bed and bedroom as stimuli to feel sleepy so that sleep is most likely to occur. These instructions include not going to bed until sleepy and getting out of bed if unable to sleep for a period of time. By combining these sleep-related behavioral changes with mindfulness meditation, participants are taught to make significant changes in the way they approach both sleeping and waking stress, woven together with a greater ability to bring mindfulness into their daily lives.

Preliminary work on MBT-I has yielded promising results. A pilot study (Ong, Shapiro, & Manber, 2008) evaluated a 6-week version of MBT-I on 30 participants with primary insomnia. Half of the participants experienced a 50% or greater reduction in total wake time, and all but two participants scored below the cutoff for clinically significant insomnia on the Insomnia Severity Index at the end of treatment. In addition, the treatment resulted in significant reductions in presleep arousal, sleep effort, and dysfunctional sleep-related cognitions. Also, a significant negative correlation was found between total number of meditation sessions during the MBT-I program and change in trait hyperarousal, suggesting that more meditation practice was related to greater decrease in arousal. Follow-up data revealed that 61% of participants had no relapse of insomnia during the 12 months following treatment, supporting the long-term benefits of this treatment (Ong, Shapiro, & Manber, 2009).

Following the initial pilot study, we revised MBT-I by extending the number of sessions to eight and including an all-day retreat. These changes were in response to feedback from participants and reevaluation of the treatment goals to reinforce the meditation components. Table 1 summarizes the key themes and core activities of each session. A second round of pilot testing was conducted on this new 8-week format. The following case illustration describes the course of one patient who participated in the 8-week MBT-I.

Case Illustration

Presenting Problem and Client Description

“Maria” was a 48-year-old, White, Hispanic woman who expressed interest in a treatment study on mindfulness-based approaches to chronic insomnia. She was divorced with no children and completed the 10th grade and later received her general equivalency diploma (GED). At the intake screening evaluation, she reported no regular exercise pattern and had tried to take zolpidem in the past but otherwise was not taking any sleep medication. As part of the intake, Maria completed the Structured Clinical Interview for the DSM-IV (SCID) (First, Spitzer, Gibbon, & Williams, 2002), which revealed that she met criteria for generalized anxiety disorder (GAD). She denied having any other psychiatric or medical conditions and was not taking any medications.

The patient presented with profound complaints of difficulty maintaining sleep and of daytime dysfunction. She completed several measures on her sleep and waking functioning, which are shown in Table 2 (pretreatment). Maria reported an average total sleep time of 142 minutes with low sleep quality ratings over the one-week baseline period. She also reported high levels of presleep arousal and negative affect along with elevated daytime sleepiness and fatigue. Maria reported that her sleep problems first began 15 years ago during a period of intense marital conflict when she began waking up in the middle of the night ruminating about arguments with her husband. Her sleep problems began to subside several months later when she sought counseling with a marriage and family therapist. Since that time, she reported between three to five episodes of insomnia, each lasting at least one month. She had never been evaluated at a sleep disorders center or received any formal treatment for insomnia.

Maria's current episode of insomnia began about one year earlier. She reported prolonged nocturnal awakenings of at least 30 minutes nearly every night over the past year. Occasionally, she also had difficulty falling asleep but noted that this was less common. She tried taking zolpidem on three occasions, but did not find it helpful and expressed a fear of becoming addicted to sleep medication. Maria also characterized herself as a "worrier" and found that she spent much of her time in bed worrying about financial concerns. During the daytime, she reported feeling fatigued, but denied excessive daytime sleepiness. She rarely napped and stated that she "finds it annoying" to lie down during the day, as her mind "just keeps racing." During the few months before seeking help, she felt that the lack of sleep at night had added an additional layer of worrying about her sleep problems. She worked for a small cleaning service company and occasionally worked part-time as a nanny. She described feeling pressure to support herself and considered finding a "more stable job with a big company." She complained of being constantly exhausted. When asked why she decided to seek help at this time, she stated, "I am just desperate for some sleep so I will try anything!"

Case Formulation

Maria met criteria for psychophysiological insomnia, a subtype of insomnia disorder characterized by heightened arousal and conditioned response to sleep stimuli, such as her bed (American Academy of Sleep Medicine, 2005). In addition, she met criteria for GAD, including excessive worrying. The course of her insomnia appeared to be independent of the GAD, therefore it was not merely a symptom of GAD. Moreover, the increased focus on sleep-related thoughts over the past several months suggested that her condition merited treatment for a primary insomnia disorder. In addition, she expressed interest in learning about meditation and relaxation skills and exhibited an openness to novel nonpharmacological approaches to help her sleep and daytime functioning. She agreed to participate in the study and was enrolled in the 8-week group treatment.

Course of Treatment

The MBT-I is delivered in a group format (approximately 6–8 participants), with eight weekly sessions plus one all-day retreat. Each session lasts approximately 120 minutes with specific themes and activities for each session, as shown in Table 1. Similar to the format for MBSR, the sessions consist of three main components. First, most sessions begin with an experiential activity in the form of formal mindfulness meditations that include one quiet and one movement meditation. Second, a period of discussion is led by the MBT-I leader as participants are asked about discoveries during their meditations and the application to insomnia. The third component is a didactic period that involves education about sleep/wake physiology and instructions for stimulus control and sleep restriction. Participants are also instructed to maintain a personal practice between the sessions. Materials (CD with guided

meditations, Jon Kabat-Zinn's (1990) book "*Full Catastrophe Living*," and handouts) are provided to aid in their personal practice.

Participants are asked *not* to practice meditations at night to try and fall asleep. Instead, the meditations are used as a practice of cultivating awareness and mindfulness principles, not to be used as a relaxation strategy for falling asleep.

Maria was enrolled in a MBT-I group with seven other individuals who were suffering from insomnia. The group was led by two instructors—a licensed clinical psychologist trained in cognitive–behavioral therapy (CBT) for insomnia and mindfulness meditation, and an MBSR instructor with 11-years experience teaching MBSR who has also taught a variety of mind–body courses for health and wellness.

The patient attended all eight sessions. Initially, Maria was enthusiastic about MBT-I and was engaged during discussions and didactics. She shared her own challenges in implementing a meditation practice and developed rapport with other group members. However, as the program progressed into the third and fourth weeks, she began to express frustration at not seeing any immediate changes in her sleep. This appeared to be related to her attachment to the desired outcome of wanting to sleep better. During one session, she asked, "Why is it that I am doing the meditations right but still not seeing any changes in my sleep?" During session 3, the patient was able to recognize the differences between fatigue and sleepiness but the following week, she expressed disappointment that her sleep did not immediately improve by going to bed only when sleepy. Also, when sleep restriction instructions were introduced, Maria was hesitant about spending less time in bed, for fear that she would not sleep at all with the added stress.

The patient experienced a breakthrough during session 6. After the formal meditation period, the group discussion focused on the principles of acceptance and letting go. The patient again made several comments about how she had been trying very hard to clear her mind at night but that her thoughts kept coming back and that "letting go" was not working. The dialogue below captures how the therapist worked with the patient's distress using mindfulness principles.

Maria: I still don't get how letting go works. During my meditations, I have been trying to clear my mind and sometimes I can keep it blank for a while but it always seems to come back.

Other group member: Yes, I have that same problem. No matter how hard I try to let go, it keeps coming back. Then I feel like I am doing something wrong.

Therapist: So it sounds like there is effort to make the thoughts go away.

Maria: Yes, and if my mind keeps running around, then it is difficult to just say to myself, "accept this." It's like I can't control anything and then just saying forget it!

Therapist: I wonder what it might be like to work with these thoughts in another way. Rather than using effort to force these thoughts out, what if you just allowed them to be.

Maria: Then they certainly won't go anywhere, and I'll be in the same place.

Therapist: Perhaps, or you might find that the same thoughts that keep coming back will sometimes go away on their own. They might eventually find their way back too! In other words, thoughts will come and go, but forcing it to go in one direction is like trying to reverse the flow of a powerful river.

Maria: So you are asking me not to try to clear my mind of these thoughts?

Therapist: I am asking you to see what happens when you just let your thoughts run their course. Rather than trying to block or reverse the flow of a river, try standing on the bank of the river. It is not the thoughts you are trying to control, but instead it is letting go of the effort of forcing these thoughts to go in a certain direction.

Maria: Hmmmy… that is different than what I have been doing.

Other group member: I never quite saw it that way either, but I am starting to see what you are talking about.

Therapist: See what happens when you practice letting go of your *desire* to clear your thoughts in this way during your meditations this week. Every time the thoughts come back is another opportunity to practice letting go!

Rather than identifying specific thoughts or challenging Maria's approach, the therapist asked her to consider another approach, one grounded in changing her *relationship* with these thoughts rather than changing the thoughts themselves. During the exchange, the therapist also maintained a position of nonjudgment. Rather than correcting her approach, the therapist gently suggested other alternatives without identifying a right or wrong response. Finally, the dialogue illustrates how these principles are tied to the meditation practice. The therapist concludes the dialogue by asking the patient to practice the principle of letting go during her meditation over the next week.

Following this session, Maria displayed a noticeable shift in her anxiety level. As can be seen in Figure 1, she reported a dramatic decrease in her presleep arousal score (Nicassio, Mendlowitz, Fussell, & Petras, 1985) following session 6. In the last two sessions, she appeared more relaxed and other group members commented on her change during the discussions. During the final session, each group member had an opportunity to share his or her experience with the group. During her turn, Maria commented on how she had developed a more positive attitude: "For a long time I thought I had to get rid of my thoughts to sleep better. It's funny that once I stopped trying to make that happen, my sleep seemed to get better."

Outcome and Prognosis

Maria reported pre- to-posttreatment changes in several areas related to her sleep, emotional functioning, and daytime functioning. These are summarized in Table 2. From her sleep diaries, Maria reported a 200-minute decrease in the amount of time she was awake at night, and her total sleep time nearly doubled. She also reported a higher sleep quality and fewer awakenings during the night. Maria also reported less presleep arousal (nearly 50% decrease), fewer maladaptive beliefs and attitudes about sleep, and lower scores on a hyperarousal scale. In addition, she reported increased mindfulness skills, suggesting that she acquired these skills during treatment. Interestingly, her scores on the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Telegen, 1988), a measure of affective state over the past week, indicated a reduction in negative affect along with stable positive affect. Maria also reported less daytime sleepiness and fatigue.

Although Maria reported improvements in her sleep, her sleep parameters are still elevated compared to normal sleepers. However, she learned several important emotion-regulation skills during MBT-I that lead to less reactivity of sleep disturbance. In other words, her sleep is still not ideal, but she is now able to cope with her emotional and behavioral reactivity to

sleep disturbance. Given her new approach to sleep, she is likely to experience continued improvements in her sleep if she continues to apply the skills learned.

Clinical Practices and Summary

Individuals with chronic insomnia often feel that they have no control over their sleep and present with a rigid attachment to the desire for more sleep. Mindfulness-based therapy for insomnia was developed to help these individuals by using mindfulness meditation to manage the emotional reactions to sleep disturbance and daytime fatigue that commonly arise during the course of chronic insomnia. These are goals that hypnotic medications do not target and that current multicomponent treatments for insomnia rarely address. As Maria discovered in the MBT-I program, the principles and practices of mindfulness meditation allow for sleep to unfold rather than increasing efforts to clear the mind or try harder to make sleep happen. This approach might be more acceptable to patients who are looking for nonpharmacological treatments for insomnia and are willing to make lifestyle changes.

This case study along with previous studies (Ong et al., 2008,2009) add to the growing body of evidence supporting the use of a mindfulness-based approach for the treatment of insomnia. Limitations such as lack of a control group and lack of specificity of treatment mechanisms need to be addressed in research studies before MBT-I can be routinely recommended as an efficacious treatment. A randomized controlled trial is currently underway that seeks to provide more rigorous evidence for a mindfulness-based approach to insomnia. In the meantime, mindfulness meditation has been successfully applied to many chronic conditions and, as demonstrated in the case of Maria, holds promise for the treatment of chronic insomnia.

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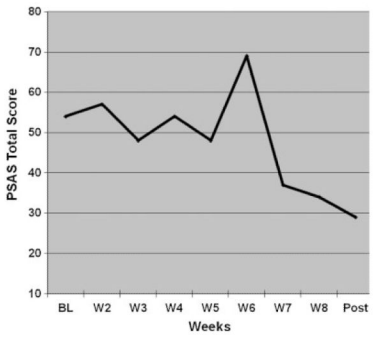

Figure 1.
Weekly scores from the Pre-Sleep Arousal Scale from baseline through posttreatment.

Table 1

Mindfulness-Based Therapy for Insomnia: Themes and Key Activities by Session

Session	Theme	Key activities
1	Introduction and overview of program	Provide overview of the program and participant expectations; introduce the concept of mindfulness and model of insomnia; lead participants through first formal mindful practice
2	Stepping out of automatic pilot	Begin with formal meditation and inquiry; discuss relevance of meditation for insomnia; discuss instructions for sleep hygiene
3	Paying attention to sleepiness and wakefulness	Begin with formal meditation and inquiry; discuss sleepiness, fatigue, and wakefulness; provide instructions for sleep restriction
4	Working with sleeplessness at night	Begin with formal meditation and inquiry; discuss questions about sleep restriction and make adjustments to program; provide instructions for stimulus control
5	The territory of insomnia	Begin with formal meditation and inquiry; introduce the territory of insomnia (both daytime and nighttime symptoms) and discuss this model
6	Acceptance and letting go	Begin with formal meditation and inquiry; explain the relevance of acceptance and letting go for working with thoughts and feelings in the territory of insomnia
7	Sleeping with the enemy: Revisiting the relationship with sleep	Begin with formal meditation and inquiry; discuss participants' relationship with sleep (reactions to good and bad nights); discuss informal meditations during everyday life
8	Eating, breathing, and sleeping mindfulness: Living the full catastrophe	Begin with formal meditation and inquiry; set up an action plan for future episodes of insomnia; discuss ways to continue mindfulness meditation beyond this program

Table 2

Sleep and Waking Measures at Pretreatment and Posttreatment

Measures	Pretreatment	Posttreatment
SLEEP PARAMETERS AND NOCTURNAL SYMPTOMS		
Total wake time (min)	320.00	120.00
Sleep-onset latency	41.43	10.00
Wake time after sleep onset	278.57	110.00
Total sleep time (min)	142.89	280.71
Time in bed (min)	462.86	400.71
Sleep efficiency (%)	30.87	69.87
Number of awakenings at night	2.57	1.71
Sleep quality	1.14	4.57
Insomnia Severity Index (Bastien, Vallieres, & Morin, 2001)	22.00	12.00
Dysfunctional beliefs and attitudes about sleep (Morin, Stone, Trinkle, Mercer, & Remsberg, 1993)	135.00	112.00
Glasgow Sleep Effort Scale (Broomfield & Espie, 2005)	15.00	10.00
EMOTIONAL FUNCTIONING AND DAYTIME MEASURES		
Pre-Sleep Arousal Scale (Total)	54.00	29.00
Cognitive subscale	33.00	16.00
Somatic subscale	21.00	13.00
Hyperarousal Scale (Pavlova et al., 2001)	62.00	54.00
Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004)	110.00	124.00
Positive and Negative Affect Schedule (Positive)	20.00	21.00
Positive and Negative Affect Schedule (Negative)	32.00	20.00
Daytime sleepiness	6.57	4.71
Daytime fatigue	8.29	6.57

Note. Sleep quality ranges from 1 (*very poor*) to 10 (*excellent*). Daytime sleepiness and fatigue are rated from 1 to 10 with higher numbers reflecting higher levels of sleepiness/fatigue, respectively.