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Heartfulness meditation improves sleep in chronic insomnia

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ABSTRACT

Background: Chronic insomnia is characterized by disturbed sleep that occurs despite adequate opportunity and circumstances to sleep. Many patients with chronic insomnia have comorbid mental illnesses or medical illnesses that contribute and precipitate insomnia. Hallmark of chronic insomnia treatment includes non-pharmacological measures such as Cognitive Behavioral Therapy for Insomnia (CBT-I). Pharmacologic treatment (sedative or hypnotic agents) has been disappointing because of poor efficacy and numerous undesirable side effects. Other new therapies including meditation have been proven to be effective.

Objective: This study investigates the effectiveness of Heartfulness meditation coupled with sleep hygiene to treat chronic insomnia.

Methods: In this prospective pre-post design cohort study, 32 adult patients with chronic primary insomnia engaged in Heartfulness meditation along with appropriate sleep hygiene for eight weeks. Insomnia Severity Index (ISI) scores, usage of sedative or hypnotic agents were measured at baseline and at the end of the eight-week period.

Results: There was a significant decrease in the mean ISI scores from 20.9 to 10.4 ($p < 0.001$) after eight weeks of Heartfulness meditation. Twenty four of 32 patients were initially on sedative or hypnotic medications. At week eight, 21 of 24 patients (87.5%) were off these medications or the dosage was reduced ($p < 0.001$).

Conclusion: This study demonstrated statistical improvements in the measures of ISI in patients undergoing a Heartfulness meditation program. Heartfulness meditation may facilitate the taper and eventual cessation of sedative hypnotics in patients suffering from chronic insomnia.

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1. Introduction

Chronic insomnia is characterized by disturbed sleep that occurs despite adequate opportunity and circumstances to sleep. This includes symptoms occurring at least 3 times per week and for at least 1 month and are associated with daytime impairment of some sort (fatigue, mood disturbance, memory problems, impaired work or school performance, etc.). There may also be a difficulty in falling asleep (sleep-onset insomnia), staying asleep (sleep-maintenance insomnia), and/or waking up too early in the morning [1,2]. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), the previous distinction into primary and secondary insomnia has been replaced with a unitary diagnosis of insomnia disorder irrespective of the presence of comorbid medical or psychiatric conditions. This significant change proposes for the treatment of insomnia itself in addition to the medical or psychiatric disorder [2].

Insomnia is estimated to reduce productivity in the United States workforce by 63.2 billion dollars annually [3]. About ten percent of adults have chronic insomnia with higher rates in older adults and women [4,5]. People with chronic insomnia often have comorbid anxiety and depression that do not independently cause insomnia but may precipitate insomnia in individuals predisposed to this disorder [6].

Treatment for chronic insomnia has evolved over the years. Nonpharmacologic treatment of chronic insomnia is the mainstay. Behavioral and environmental recommendations are included in sleep hygiene to promote healthy sleep for mild to moderate insomnia; however, there is lack of supportive data for sleep hygiene education as a monotherapy for insomnia [7].

The main treatment includes Cognitive Behavioral Therapy for Insomnia (CBT-I). This therapy is quite effective; however, it remains a treatment with relatively long duration and high dropout rate [8–11]. Pharmacologic treatment of chronic insomnia has been disappointing and often is associated with a high side effect profile. More recently, meditation practices

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such as mindfulness have been shown to be effective for improving insomnia [12–14].

Among adults aged 18 and over, a significant increase was seen from 2012 to 2017 in the use of meditation practices from 4.1% to 14.2% [15]. Heartfulness meditation offered by Heartfulness Institute (www.heartfulnessinstitute.org) is a simple, easy to implement, heart-based meditation practice aimed at achieving a state of inner balance. It has been shown to improve wellness in physicians and nurses [16,17]. The effect of Heartfulness meditation practice has not been studied in patients with chronic insomnia. In this study, we hypothesized that the practice of Heartfulness meditation in combination with sleep hygiene would result in improvement of insomnia symptoms.

The goal of this study is to evaluate the effects of Heartfulness meditation and sleep hygiene on chronic insomnia.

2. Methods

2.1. Overview

This was a prospective pre-post design cohort study assessing changes in the Insomnia Severity Index over an eight-week period. The ISI is a validated test designed to assess the severity of insomnia and is further classified as severe clinical insomnia (scores 22–28), moderate clinical insomnia (scores 15–21), sub-threshold insomnia (scores 8–14), and no clinically significant insomnia (scores 0–7) [18].

The study was conducted from November 2016 to April 2018. Adults referred to a Pulmonary and Sleep Medicine office with chronic insomnia were enrolled in Heartfulness meditation program. The facility is affiliated with a 572-bed teaching hospital and the study was approved by the institutional review board prior to patient enrollment.

Interest in participation was assessed during the first visit for evaluation of chronic insomnia. All research participation was voluntary following an informed consent. Included in the study were adult patients diagnosed with chronic insomnia at the visit who showed interest in meditation, age > 18, medically stable as evaluated by the sleep specialist, and a home environment adequate for sleep behavior interventions. Patients with narcolepsy, uncontrolled sleep apnea, age <18, pregnancy, and uncontrolled medical or psychiatric disorders were excluded from the study. All patients filled out ISI forms before the first meditation session and at the end of week 8 of the study. No other intervention was added during the study period. Use of sedatives and hypnotics in these patients before and after the eight-week study period was analyzed.

2.2. Sleep hygiene

Basic sleep hygiene instructions were given to all patients. The behavioral aspects of sleep were discussed with each patient individually. A sleep provider met with each patient one on one to discuss sleep hygiene and stimulus control as per standard of care.

2.3. Heartfulness meditation practice

All patients received an overview of the study and instruction in the practice of Heartfulness meditation from the Heartfulness meditation instructor (JT). They received guided relaxation and meditation sessions along with an audio file.

2.3.1. Home practice

In the morning patients were asked to listen to an audio file consisting of the Heartfulness relaxation technique. They were asked to sit comfortably with their eyes closed and progressively relax their body from their toes to their head. This was to be followed by instructing them to gently focus their attention on the source of light within their heart. Participants were asked to simply tune into their hearts and be open to any experience they may have as opposed to trying to visualize the light. If their attention drifts, patients were advised to gently redirect toward their heart. This practice was recommended in the morning for 20 minutes and at night for 5 minutes before going to sleep.

A separate evening practice session of rejuvenation at home lasting 15 minutes was recommended. Patients were asked to imagine that stress and heaviness from the emotional impact of the day ('impurities and complexities') were leaving the body through their back in the form of smoke or vapor. These impurities and complexities were to be replaced by a flow of purity and lightness. Patients were asked not to dwell on those things that they were expunging but simply brush them off.

2.3.2. Meditation with trainer

Patients were asked to use the same morning meditation technique at least once per week in a guided meditation led by the Heartfulness trainer for 30 minutes. In total, there were ten guided meditation sessions consisting of three orientation sessions in the first week followed by one each week for the seven remaining weeks. Individuals who were unable to attend the live session were given an option to join by phone. Phone sessions consisted of the same guided instructions and meditation with the trainer.

A practice information sheet was given to each patient. Attendance was recorded for all guided meditation sessions.

2.4. Data analysis

Data was summarized using frequencies and means/medians. Changes in ISI scores were analyzed by Wilcoxon Signed Ranks test and an $\alpha < 0.05$ were considered statistically significant. Statistics were calculated using SPSS v.24 (IBM, Armonk, NY).

3. Results

Forty-five patients were enrolled. Thirty-two (71.1%) completed the entire eight-weeks of the Heartfulness meditation program. Thirteen (28.9%) patients were lost to follow up. Eight (25%) participants utilized the phone meditation sessions at least once. Demographics included in Table 1.

3.1. ISI results

At week eight, the participants in Heartfulness meditation had a significant decrease in the mean ISI scores from 20.9 to 10.4. ($p < 0.001$. Figure 1). Change in the mean ISI score per subject is shown in Figure 2. Change in the category of insomnia severity from pre to post Heartfulness meditation practice is shown in Figure 3. The subgroup analysis is provided in Table 2.

Table 1. Demographics.

Characteristic	Value Among Patients with Data Available
Median Age (IQR) – yr	58.0 (29.0–81.0)
Male Sex – no. (%)	11.0 (34.4)
Female Sex – no. (%)	21.0 (65.6)
Insomnia Subtype – no. (%)	
Onset Type Insomnia	14.0 (43.8)
Mixed Type Insomnia	18.0 (56.2)
Psychiatric conditions- no. (%)	
Anxiety	14.0 (43.8)
Depression	2.0 (6.3)
Mixed Anxiety & Depression	10.0 (31.3)
Pharmacotherapy – no. (%)	
Non-Benzodiazepine Hypnotics	13.0 (40.6)
Benzodiazepines	6.0 (18.8)
Combination of both	5.0 (15.6)

3.2. Use of pharmacotherapy

Twenty-four of the 32 patients (75%) were on pharmacotherapy at night. Thirteen were on non-benzodiazepine sedative hypnotics, 6 were on benzodiazepines, and 5 were on combination agents. At week eight, 18 of the 24 patients (75%) were completely off sedatives and/or hypnotics and 3 (12.5%) had their doses decreased, and 3 remained on the previous doses. In total 87.5% were either off sedatives and/or hypnotics or were able to decrease the dose. ($p < .001$)

4. Discussion

The results of this study demonstrated improvements in measures of ISI in those participating in a structured Heartfulness meditation program along with sleep hygiene. A strength of this study is that it is pragmatic and was conducted in a real-world condition in an outpatient-based sleep office. The completion of the meditation program by most of the participants may indicate the applicability of the study to those who choose Heartfulness practice for improving insomnia. The results of this study add to the body of literature supporting practices of meditation to improve sleep in patients with chronic insomnia. A previous study using Heartfulness meditation in house-staff, faculty physicians, and nurses showed an improvement in wellness [16]. However, this is the first study using Heartfulness meditation to primarily analyze the effects on chronic insomnia. Patients with insomnia disorder may have a lasting deficiency to downregulate emotional distress [19]. As such, one of the elements of Heartfulness meditation includes

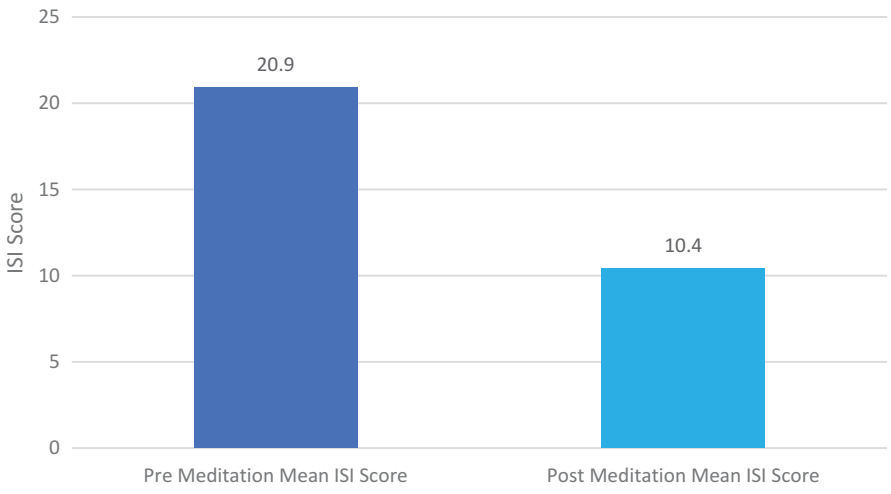

Figure 1. Eight weeks of Heartfulness practice, $p < .001$.

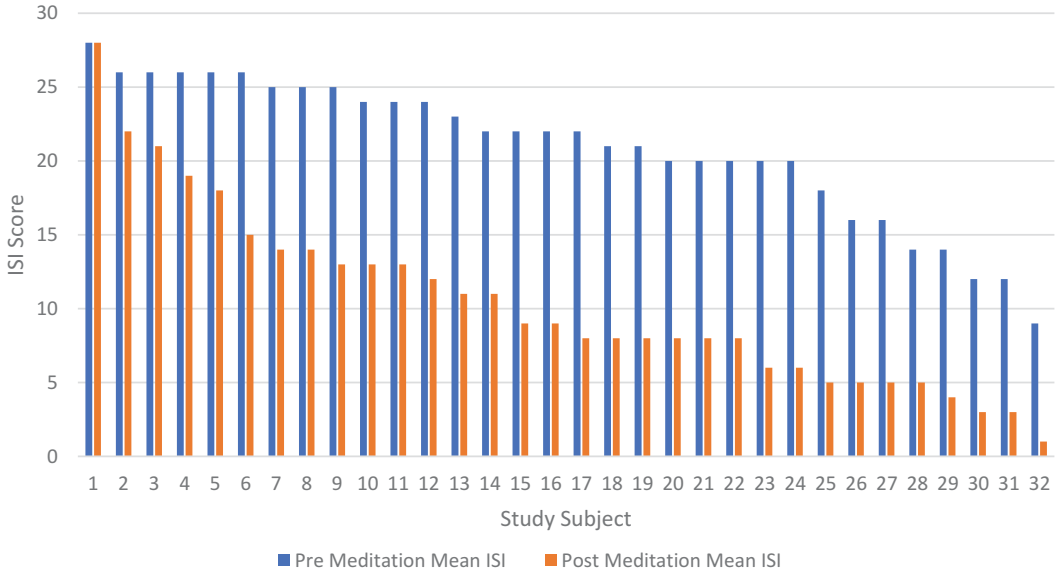

Figure 2. Change in ISI scores by subject, arranged from highest to lowest.

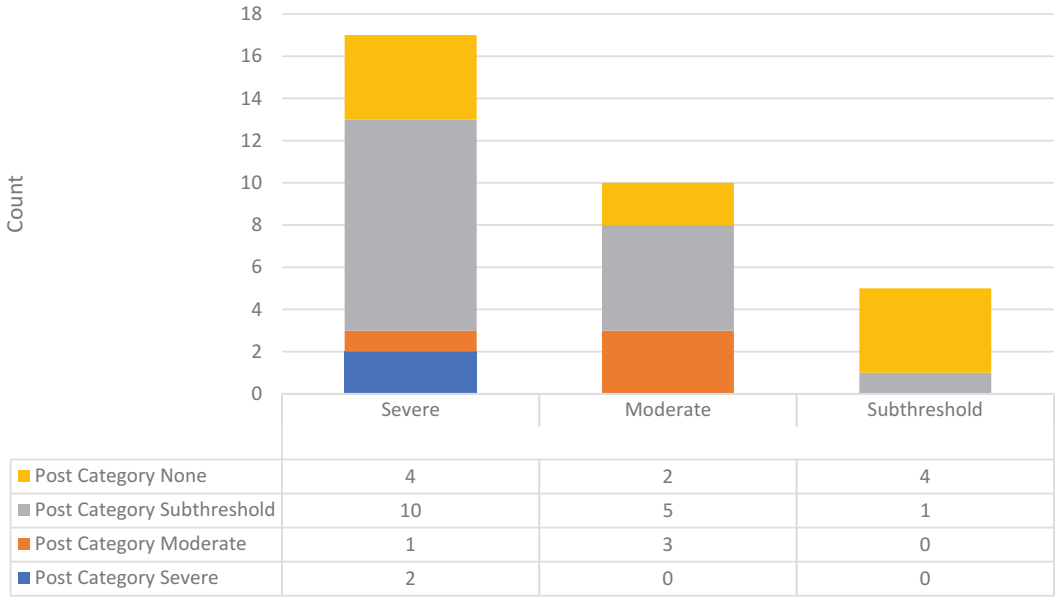

Figure 3. Change in the category of insomnia severity from pre to post Heartfulness meditation practice.

Table 2. Pre and Post (8-week) ISI scores by characteristic. All compared using the Wilcoxon Signed Ranks Test.

			Pre ISI						Post ISI				
		Count	Mean	Standard Deviation	Percentile 25	Median	Percentile 75	Mean	Standard Deviation	Percentile 25	Median	Percentile 75	p-value
Total		32	20.9	4.8	19	22	25	10.4	6.2	5.5	8.5	13.5	< .001
Sex	F	21	21.5	4	20	22	24	9.3	4.9	5	9	13	< .001
	M	11	19.7	6.2	14	21	25	12.5	8	6	8	19	0.005
Age	< 60	18	20.5	5.5	16	22	25	11.1	7.4	5	9.5	15	< .001
	≥ 60	14	21.4	4	20	21.5	25	9.5	4.2	8	8.5	13	0.001

a practice of letting go of the emotional impact of the day. While the exact mechanism is not well studied, the practice of Heartfulness rejuvenation may help with self-acceptance, and Heartfulness meditation in self-confidence and relaxation in de-tensioning in a gentle manner resulting in a calmer state of mind that facilitates better sleep.

In the past decade, prescription of hypnotic medications has increased significantly and consequently, may lead to an increase in the adverse side effects [20,21]. Therefore, non-pharmacological measures that can safely improve sleep are prudent. The results of the current study show a significant success in weaning patients from sedative and hypnotic agents.

The specific reason for the use of benzodiazepines whether for anxiety and/or insomnia was not within the scope of this paper as these were initiated by other providers prior to the study. However, a significant number of patients were able to come off these medications. The Heartfulness meditation was proven to be effective for chronic insomnia patients with onset and mixed form of insomnia.

To our knowledge, this is the first study on insomnia using Heartfulness meditation in the office setting. Previous studies using mindfulness-based stress reduction (MBSR) have demonstrated favorable outcomes for insomnia. The practice involved a standard format of 8 weeks. This included 2.5-hour classes each week, hatha yoga, and a day-long retreat at the end of eight weeks. It also involved a daily home practice consisting of up to 45 minutes [13,22].

The practice of Heartfulness in this study involved 30 minutes of weekly guided meditation sessions along with a daily home practice of up to 40 minutes. The guided relaxation audio for sleep and meditation might be a potential tool to aid in home meditation practice. The evening practice of rejuvenation that helps in clearing up of the daily impressions of stresses and strains is unique to the practice of Heartfulness. This practice has also been recently reported to improve heart rate variability in adults and emotional wellbeing in school age children [23,24].

Previous analyses to assess the treatment response in a clinical sample revealed that a reduction greater than 7 points on the ISI was optimal to identify patients with moderate improvements (60% sensitivity, 70% specificity), while an ISI reduction greater than 8 points was optimal to identify patients with marked improvements (64% sensitivity, 80% specificity) [18]. The current study showed a reduction in the mean ISI scores by 10.5 points indicating a marked improvement of insomnia.

A recent meta-analysis studying the effects of mindfulness meditation interventions such as MBSR and MBCT (Mindfulness Based Cognitive Therapy) compared non-specific active controls (for example, time/attention-matched interventions, such as education) to specific active controls (for example, evidence-based sleep treatments). It had moderate strength of evidence showing improved sleep quality at post-intervention and follow-up in the former (ES = .33 and .54, respectively). There was low effect on sleep quality at post-intervention and follow-up in the latter (ES = .03 and −.14, respectively) [25]. As this current study lacked a control group, it is recommended to incorporate either specific or non-specific active controls in future studies. Further studies should also evaluate the mode and timing of meditation and the influence of other treatments.

The Heartfulness meditation program used in the study demonstrates the potential to improve sleep and wean off hypnotic pharmacotherapy agents in chronic insomnia. Instituting similar programs more widely might benefit health care organizations managing patients with chronic insomnia.

5. Limitations

As this was a pre-posttest design, there was lack of a control group. Patients in the study self-selected meditation suggesting the possibility of selection bias. The study was done at a single institution. We also cannot exclude the possibility of unknown sources of bias, and personal life factors of patients that could have played a role in the changes noticed. The sample size was relatively small. Long-term data about the sustained improvement of insomnia and the follow up of use of pharmacotherapy beyond the study period is lacking.

6. Conclusion

Heartfulness meditation significantly improved insomnia scores in patients with chronic insomnia. It appears to be easily incorporated into the patient's lifestyle, is cost effective, and requires no special equipment. The results seem to be promising in patients who self-select Heartfulness meditation. Clinicians should be aware of it as a non-pharmacological intervention for insomnia and for patients with chronic insomnia who are unable to do CBT. In addition, a significant number of patients who were on sedatives and hypnotics were weaned off. We recommend a larger randomized study to measure the effectiveness of Heartfulness meditation for patients with chronic insomnia.

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Disclosure statement

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