

Mini Review

Non-traditional Methods for the Treatment of Insomnia: A Mini Review

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Abstract

Alternative treatments for insomnia have gained attention over the past decade, with higher acceptance over the past few years as the scientific knowledge of various modalities has grown. While the treatments have varying degrees of success, many individuals have found relief from some form of alternative treatment and no longer rely on pharmacological sleep medication. These alternative treatments include acupuncture, herbal supplements and mindfulness training, to name a few. The present mini-review briefly summarizes a few of the alternatives available to those having difficulty getting to sleep or staying asleep. Although, generally speaking there is a great deal of methodological variability in the published literature on non-traditional approaches, the studies which have been properly conducted indicate alternative treatments for insomnia deserve consideration. Of the treatments summarized in this mini-review, mindfulness training may have the most promise for successful treatment of insomnia. The modalities involving Traditional Chinese Medicine – TCM – (acupuncture and herbs) show at least a mild effect when diagnosis is based on TCM principles and treatment is carried out for several weeks.

Keywords: Insomnia; Alternative therapy; Acupuncture; Herbs; Meditation; Mindfulness; Earthing

Abbreviations

TCM: Traditional Chinese Medicine; GABA: Gamma-aminobutyric Acid; CBT: Cognitive Behavioral Therapy

Introduction

The ability to sleep for some people is difficult at best, almost impossible at worst. The challenge may occur with delayed sleep onset or with difficulty returning to sleep after awakening, possibly resulting in hours of sleep loss for those who routinely suffer from insomnia. The prevalence of insomnia in industrialized countries ranges from 5% to 35%, depending on the definition and severity of the condition and the country reporting the statistic [1].

Traditional treatment for insomnia includes prescription hypnotics, or the off-label use of antidepressants prescribed for their sedating quality. While these medications are useful in treating the symptoms of insomnia, none (except possibly the antidepressants) address the underlying pathology [2]. In many cases, insomnia stems from other disorders such as anxiety or depression, or from behaviors such as poor sleep hygiene or thoughts which are incompatible with sleep. Chronic insomnia generally leads to long-term use of medication, which raises concern over possible adverse side effects, potential abuse, addiction, and tolerance [1].

Alternative treatments for insomnia have gained attention over the past decade, with higher acceptance over the past few years as the scientific knowledge of various modalities has grown [3]. People have turned to alternative treatments for various reasons, including the idea that they produce fewer residual side effects as well as the desire for “natural” approaches which involve a holistic method to healing [4-6]. Most of these treatments focus on the potential underlying

cause of the insomnia, either with a pattern-based treatment associated with Traditional Chinese Medicine (TCM), or through addressing predisposing underlying personality traits such as anxiety, or perpetuating habits [7,8]. While the treatments have varying degrees of success, many individuals have found relief with some form of alternative therapy and no longer rely on pharmacological sleep aids [5]. These alternative treatments include acupuncture, herbal supplements, and relaxation, to name a few. This review will briefly summarize a few of the alternatives available to those having difficulty getting to sleep or staying asleep.

In order to find relevant articles for this mini-review, PUBMED was used to search the term insomnia combined with each of the following terms: acupuncture; alternative treatment; alternative therapy; herb; grounding; earthing; meditation; mindfulness; relaxation; traditional Chinese Medicine; and TCM. In order to keep the review short, review articles were emphasized unless there were none or only one available. The summary of these modalities is not meant to be a comprehensive review of each modality, but a brief summary to present options to those who seek alternative therapies to address insomnia.

Acupuncture

Acupuncture is a clinical treatment modality incorporated in the TCM system developed thousands of years ago using various oriental philosophical theories [9,10]. Simply defined, acupuncture is based on the theory of meridians where qi (vital energy) and blood circulate. Stimulation of acupuncture points, or acupoints, with fine needles regulates the flow of qi and blood and thereby treats diseases. TCM treatment of insomnia can be traced back more than 2000 years; these

complex theories of TCM are very different in thought and treatment than Western medicine [7].

Several systematic reviews of the scientific literature on the use of acupuncture for insomnia have been published ([6,9-12] to name a few). Generally, each of the reviews reveals less-than-positive recommendations for the use of acupuncture to treat insomnia. However, authors of the reviews agree that a full assessment of the benefits is difficult. Much of the research was poorly designed and/or conducted; studies often relied on subjective measures; and many did not employ appropriate clinical methodology (e.g., length of treatment, selection of points, etc.).

For example, a study using auricular therapy (acupoints located on the ear) to aid sleep in an elderly sample used objective measures of sleep (actigraphy) and continued treatment for 3 weeks [13]. Three groups were included in the design – a control group treated with Junci Medulla (the dried stem of perennial plant *Juncus effusus* L and does not induce any acupressure to the acupoint); a reference group treated with Semen Vaccariae (a small round seed commonly used for auricular taping); and the experimental group treated with magnetic pearls, each pearl containing an average of -6.58 mT magnetic flux densities. Using seven auricular points thought to correspond with sleep promotion, the study found that magnetic pearls improved sleep quality and quantity in this sample of elderly individuals compared to both control conditions. Similar results were found in a study by Hachul and colleagues [14]. Postmenopausal women diagnosed with insomnia were treated with either acupuncture or sham acupuncture (needles placed in different acupoints not known to affect sleep) for 10 sessions over a 5-week period. The group receiving acupuncture showed improvement in subjective sleep quality as well as a higher percentage of slow wave sleep as measured by polysomnography compared to the sham group, indicating that acupuncture was effective in improving sleep quality in this group of patients.

Another study indicated that acupuncture was not effective for the treatment of insomnia [15]. This evaluation involved 28 women diagnosed with insomnia based on the DSM-IV-TR criteria. Two groups of 14 women were administered either auricular acupuncture to five sites related to treatment of insomnia or to inactive sham points (control group). Subjective assessments of sleep were obtained using the Karolinska Sleep Diary 5 days prior to treatment (baseline) and then again a day after each treatment session. Treatment was administered 3 times per week for 3 weeks, then 2 times per week for 3 weeks, resulting in 15 treatments over a 6-week period. The results indicated that both groups showed improvement in most measures of sleep. Only ease of awakening was different between the active and sham groups, with the treatment group reporting improved ease of awakening. The authors concluded that auricular acupuncture had modest effects, but the sham treatment actually may have influenced subjective ratings of sleep as well.

Generally, all reviews of the scientific studies investigating the efficacy of acupuncture for insomnia conclude that the studies have numerous flaws which should be addressed in future research [7,9,11-12]. However, the better studies consistently show at least a mild effect when diagnosis is based on TCM principles and treatment is carried out for several weeks. In a review by Zhao [11], studies in which the selection of acupoints was based on Chinese medicine and

acupuncture theories showed improvement in insomnia symptoms.

Herbal Supplement

As with acupuncture, herbal medicine is a major modality of TCM, with over 6,000 different medicinal substances listed in the Chinese pharmacopoeia, including approximately 600 herbs commonly used today [16]. Herbs are classified according to their specific characteristics--generally temperature and taste properties. Based on the specific condition addressed, herbs are prescribed either singularly or more commonly combined into formulas consisting of 4 to 20 herbs [16]. There are approximately 100 different Chinese herbal formulas developed for the treatment of insomnia [17].

Along the same lines as the scientific evidence for acupuncture, several reviews concerning the effectiveness of various herbal treatments for insomnia have been published and vary in their conclusions [7,17,10]. Generally, the reviews and meta-analyses indicate that most of the studies are of poor quality, either in design, diagnosis of patients enrolled in the study, quality of herbal formulas used as treatment, and/or sample size [18]. While most studies concluded Chinese herbal medicine was more effective than placebo or Western medication for short-term treatment of insomnia, the low quality of the research suggests cautious interpretation. Nevertheless, a meta-analysis of the high quality studies (studies in which the Jadad score was at least 3) showed similar benefits of herbal medications in comparison to Western medication [17]. A review of the herbal medications that target the gamma-aminobutyric acid (GABA) receptors indicates these herbs show the most promise in effectively treating insomnia [19-20]. This is logical since GABA is known to promote sleep, and is why GABA modulation is targeted by many pharmacological sleep aids [19]. While the exact mechanism of action is unknown for most of the herbal formulas, many possess anxiolytic and sedative properties. Examples of such herbs are *Valeriana officinalis* L. (valerian) and *Scutellaria baicalensis* Georgi (skullcap) which both act on the GABA receptors. These herbs as well as other formulas are extensively reviewed by Shi and colleagues [19].

Generally, as with acupuncture, the key to the success of effective treatment of insomnia with Chinese herbal medication depends on numerous clinical factors. An accurate TCM diagnosis, appropriate selection of herbal formulas, as well as the use of high quality herbs, are all key factors to consider when herbs are used for the treatment of insomnia [7].

Meditation/Mindfulness

One theory concerning the nature of insomnia is that sleep is disrupted by high arousal levels which counter a physiological state conducive to sleep [21]. Cognitive arousal, especially where intrusive thoughts and maladaptive beliefs concerning sleep occur, inhibits sleep onset or sleep maintenance after spontaneous nighttime awakenings [22]. One approach to treating insomnia rooted in cognitive arousal is mindfulness training. The root of mindfulness comes from a Buddhist practice called *vipassana* ("to see in a special way") [23]. The practice allows individuals to focus on the present and let go of thoughts, beliefs, and emotions that create stress. By reducing stress, and therefore arousal, insomnia should be reduced [22]. In practice, mindfulness meditation consists of a training program which lasts several weeks and teaches an individual to

reduce sleep-related arousal, or anxiety, by focusing on mental and physical states that lead to a positive response to sleep rather than reacting in a negative way to sleep disturbances [23].

Research over the past decade has shown that insomnia can be successfully treated with mindfulness meditation. A study by Britton and colleagues [24] tested 23 people on antidepressant medication with sleep complaints. One group received 8 weeks of mindfulness meditation training while those in another group were placed on a waiting list, but completed the assessments. Following the training, people in the mindfulness meditation group spent less time awake and had better sleep efficiency than those in the control group as measured by both objective (polysomnography) and subjective (sleep diary) measures. The improvements in sleep also were associated with improvements in depression scores, suggesting that mindfulness training may also help improve depression symptoms. A similar study compared mindfulness-based stress reduction (MBSR), mindfulness-based therapy for insomnia (MBTI), and self-monitoring (SM) to improve sleep in people diagnosed with insomnia [25]. Following 8 weeks of mindfulness training (focused on stress or sleep), both objective and subjective measures of sleep indicated that MBTI improved insomnia symptoms better than either of the other treatments.

In summary, studies indicate mindfulness meditation training can improve the sleep of people diagnosed with insomnia. Generally, people who develop skills in mindfulness meditation sleep better, have less stress associated with sleep, and experience benefits beyond those associated with better sleep, including less pain, a general calm, and ease in general daily functioning [26]. While mindfulness training is only one type of behavioral therapy offered to help reduce the insomnia symptoms, only two controlled studies have been conducted [21], so further investigation into this technique will improve the confidence practitioners will have when recommending this training.

Earthing (Grounding)

A technique which has not received much attention, but offers potential relief for insomnia, is earthing, or grounding, which refers to establishing physical contact with the ground and gaining access to the earth's surface electrons [27]. The idea of the benefits provided by grounding occurred in the late 19th century and was investigated in the 1920s by a physician who reported better sleep by grounding himself with copper wires. Interest surfaced again in the USA and Poland when investigations revealed that grounding produced a variety of physiological changes [27]. For example, Ghaly and Teplitz [28] measured cortisol secretion levels in 12 subjects with sleep complaints, pain, and stress. Baseline cortisol levels were measured every 4 hours for 24 hours and again after 6 weeks of grounding to earth during sleep. Subjective sleep as measured by a daily sleep survey was given for a week prior to grounding and throughout the 8-week grounding period. A weekly pain survey also was administered prior to and during the grounding period; and a general health survey was administered prior to and after the grounding period. Results revealed decreased levels of pain, stress, and sleep dysfunctions in most subjects as a result of grounding. Cortisol secretion profiles exhibited a more consistent profile following grounding in comparison to baseline. The authors concluded that grounding the body to the earth synchronizes

hormone secretion to the 24-hour circadian day, improves sleep, and reduces pain.

Other studies have shown earthing changes physiologic processes [29,30], improves heart rate variability and autonomic tone [31], reduces blood viscosity [32], alters immune system activity, and speeds recovery from muscle soreness [33]. While the trend in the use of earthing mats is growing, only one study revealed empirical evidence of improved sleep due to earthing [32]. Thus, more objective evidence concerning the potential utility of this technique is needed before it can be routinely relied upon to offer relief from insomnia.

Summary/Conclusions

The emerging popularity of alternative treatments for sleep disorders, particularly insomnia, prompts questions about the established effectiveness of such treatments. Unfortunately, the scientific quality of many of the articles investigating the usefulness of alternative approaches suffers from inadequate control conditions, improper procedures and/or diagnoses, and/or poor experimental designs. However, high-quality scientific studies do exist, and several of these show advantages to alternative treatments for insomnia. TCM, including acupuncture and Chinese herbs, has been shown to consistently and positively affect insomnia in people who were properly diagnosed using the complex methods associated with TCM and then treated via selection of acupoints and/or herbal formulas which correctly coincide with the diagnosis. In addition, mindfulness training has been successful in improving sleep quality, particularly when used on a long-term basis. While the evidence for efficacy of earthing or grounding remains sparse, there are indications that this procedure may offer sleep improvements by way of easy-to-use, low-cost, and safe devices. Future studies assessing the effectiveness of alternative therapies on insomnia should include placebo controls, polysomnography, blinding to the treatment as much as possible, proper diagnosis of treated patients, and long-term assessment of treatment.

In conclusion, although scientific rigor is lacking in many of the investigations into alternative insomnia treatment modalities, there is a growing body of evidence that supports the beneficial effects of these strategies which makes them difficult to dismiss. More traditional pharmacological alternatives offer a quick response to poor sleep, but the long term use of these medications is not considered safe or necessarily effective by many professionals nor by members of the general public. Thus, it worth considering that those suffering from long-term insomnia may benefit from other modalities which often offer slower onset of relief, but may produce benefits in the long term.

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