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RESEARCH ARTICLE

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Acupuncture Methods and Challenges in Improving Sleep Quality and Insomnia

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ABSTRACT

The role of acupuncture in insomnia has been well established and it has been proven to be one of the most popular insomnia therapies, however the analysis of the efficacy of acupuncture on insomnia and its difficulties is not well known. Within this sense, the research analyzed the processes, procedures and difficulties of acupuncture within managing insomnia and measured the effectiveness of each procedure. To order to do that, we analyzed the literature using specific search engines including Scopus, PubMed, Google Scholar, Science Online and MEDLINE. The role of acupuncture in sleep efficiency and depression has been thoroughly explored, but acupuncture 's effect on sleep initiation is not precisely established. Acupuncture has proven effective in minimizing short-term distress and depressive effects, such as cognitive behavioural treatment (CBT-I). This approach should be used in conjunction with other strategies and approaches to reduce the activation period in order to increase the consistency of the night.

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INTRODUCTION

Insomnia is a common sleep-wake condition characterized by poor sleep or quality with primarily trouble symptoms of falling asleep, sleeping or early wake despite sufficient sleeping times and opportunities (1). Globally (2), it is widespread and induces significant physical, psychological and socio-economic disorders (3). CBT-I is widely prescribed as a first-line treatment that is backed by the evidence of greater and less detrimental benefit (4). The short-term use of pharmacotherapy should also be considered if CBT-I is unsatisfactory or not eligible for insomnia (5).

Chinese medicine (CM) is used for the treatment of insomnia for a long time (6). While CM has a unique theory of insomnia pathogenesis, the key difference between conventional CM diagnosis is the degree of clinically troubling symptoms and the severity of insomnia (7, 8). The treatment of CM does not measure signs or nights of illness.

Acupuncture is one of the most common insomnia CM therapies (9). It can be combined with traditional treatments or co-administered. Its use as a form of complementary and alternative medicine (CAM) in the Western world has recently gradually increased (10). Although the mechanism of acupuncture for insomnia is not fully elucidated, several drug studies indicate that it is primarily targeted at GABA (Gamma-aminobutyric acid) neurotransmitters (11). Increasing clinical evidence also demonstrates its potential benefit in enhancing sleep measurements among insomnia patients in a safe way (12). Given its public popularity and emerging research, various governing societies have started assessing the evidence and assessing acupuncture recommendation power in clinical practice guidelines for insomnia (13). In this context, this study analyzed

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methods, techniques and obstacles for acupuncture in the treatment of insomnia and measured the efficacy of each process.

Insomnia

Insomnia is widespread and increasing and is nearly twice as prevalent among women as it is among men (13). In addition to unsatisfactory sleep consistency, insomnia is associated with disturbances dropping into night (night onset disorders), frequent and/or early awakenings more than three days a week for a span of 3 months and a regular disruption that influences core cognitive functions (14).

According to the figures on living conditions, sleep in Sweden is a public health predictor where insomnia is one of the five most important reasons for pharmaceutical prescription. Two out of three primary care hypnotic remedies are administered to mothers, with about half recommended for people 65 years old (16). Insomnia and associated daytime effects are situational and may cause severe emotional anxiety and/or affect the capacity of an individual to work (not to mention additional social costs (16).

Insomnia at a higher stage leads to an elevated likelihood of certain comorbidities such as mental problems, insomnia and psychiatric burn-out (9, 17, 18). However, insomnia raises the likelihood of cardiovascular disease, diabetes type 2, compromised immune system and obesity (4, 7, 8, 19-21). The possibility of opioid dependency could also be raised (22). Improved sick leave, lack of income, impairment insurance, and traffic and fall-accidents (23-26) constitute the greatest costs correlated with insomnia at the social level. The expense of insomnia in 2008 was measured at 3 billion Swedish crowns, including one billion primary and two billion indirect (27) crowns.

Insomnia may be assessed subjectively or critically. Once an insomnia diagnosis is made, the normal practice is to incorporate a psychiatric test and self-report questionnaires in conjunction with the diagnostic and statistical manual of mental disorders (DSM-5). A sleep journal or a sleep diary may be used to track the rhythms of sleep wake.

Polysomnography (PSG) (27) is the golden standard for objective sleep disturbance measurements. While PSG is able to assess various periods of sleep including complete sleep, it is not primarily included in the treatment of insomnia but certain sleep disturbances such as parasomnia, narcolepsy and respiratory disturbances (27). The quantitative estimation tool in which sleep-wake cycles can be determined through movement evaluation (1) is the actigraphy, the non-invasive system for measuring rest / activity movements and can be used for calculating sleep parameters. According to a study, the relevance and efficacy of actigraphy in sleep differentiating wakes in a stable population is low to strong (1). Actigraphy was verified as a successful insomnia assessment technique in a review contrasting actigraphy with PSG and a sleep diary (29). Monitoring for a minimum of 7 days is needed to obtain accurate information in sleep parameters (30). Nevertheless, it is important to remember that quantitative and subjective assessments are not necessarily associated. Objective metrics the, for example, indicate an increased average sleep period during the procedure, but they do not actually represent outcomes (1, 27, 31, 32).

Treatments of insomnia

Insomnia treatment may be either pharmacological, non-pharmacological or both. The most popular form of care is the general guidance on sleep safety paired with sleep medicine.

Hypnotic drugs

Nonbenzodiazepines, also known as Z-drugs, are widely used for depression pharmacology. Although opioid treatment can be successful, severe adverse effects can also be found (e.g. substance withdrawal, and persistent daytime sedation). To avoid unintended adverse effects, usage can be restricted to 4–6 weeks. Nevertheless, prescription reports indicate that many patients, particularly the elderly, are seeking long-term pharmacological care (1). Data on the long-term effects of nonbenzodiazepines is still missing (33, 34).

Cognitive Behavioral therapy for insomnia (CBT-I)

Insomnia study over the last two decades indicates a propensity to expand non-pharmacological work that promotes behavioural therapy (35).

Compared to prior studies, cognitive behaviour therapy (CBT) is the most effective form of care, and the first type of medication is always prescribed (36). CBT is a psychotherapy approach that involves cognitive and behavioural treatment. The individual consciously seeks to alter the non-healthy feelings, behaviours and habits. CBT-I consists of direct sleep-oriented therapies that involve sleep management, sleep regulation, coping exercises, calming measures and sleep maintenance. CBT-I provides sleep-oriented interventions. The purpose of the therapy is to recognize and modify behavioural, psychological and physiological factors which sustain insomnia. CBT-I cannot, though, be ideal for everyone. According to a study, CBT tends to be less successful

than addressing certain psychiatric conditions for the diagnosis of insomnia (15). The following article suggests potential approaches to enhance the implementation of CBT-I. The presence of subgroups within insomnia patients was suspected, who may respond differently to man-based CBT (11). This also seems appropriate to examine the feasibility of certain non-pharmacological care methods.

Acupuncture

Acupuncture is a conventional Chinese medicine-based non-pharmacological type of treatment. In recent years the belief in acupuncture as a alternative to conventional medicine has evolved and has reached the ordinary health care environment to a certain degree (12). Acupuncture treatment has previously been documented to enhance sleep efficiency. Throughout this context, Zhang et al. (50) have shown that the acupuncture obtained by the Park sham tube with deep needle injection is successful throughout sleep efficiency. We analyzed Pittsburgh Sleep Quality Index as their key outcomes and sleep levels, the self-reported stress scale (SAS), the 'six part' scores of PSQI, and the secondary 'Deqi' score. 90 patients were included in the research. They found that the average PSQI value of acupuncture was slightly smaller. In the acupuncture party, the SAS, SDS value was considerably smaller. This also found that the average PSQI performance in the acupuncture category was comparable to the control group during the first month of the follow-up. In the acupuncture group, the SAS, SDS value was smaller than in the control group. Generally, acupuncture will greatly boost insomnia as opposed to placebo acupuncture, and therapeutic efficacy is sustained for at least 6 weeks.

Auricular acupuncture (AA) is an acupuncture division of which long, clean, stainless needles are positioned on the surface of outer ears, through several positions. The process was created by the French physicist Paul Nogier in the 1950s (14). AA has also been used in clinical treatment, especially for the use of drugs (37). AA under the NADA (National Acupuncture Detoxification Association) system is used in the area of alcohol abuse treatment. The NADA procedure was developed in the USA in the 1970's to support people with opioid dependence and relieve signs of withdrawal (38-40).

AA 's physiological processes have been systemically analyzed and the explanatory mechanical model suggests that the autonomic nervous method may be influenced by stimulation of acupuncture needles or pressure through the auricular branch of the vaguely nerve (5,7, 12, 41, 42). During a test, the activation of the Lung AA level improved parasympathic behaviour automatically (43). Different findings were recorded while stimulating the AA level Shen Men (4).

Auricular acupuncture (AA) for insomnia

Table 1 lists both systematic studies and meta-analysis that determine the efficacy of AA for insomnia care. Acupuncture and to a degree AA are used to cure depression beforehand. (18, 44-38). Berman et al. (48) performed a randomized clinical trial where AA treatment was provided to inmates in two goals, both with prior alcohol usage. Participants identified subjective improved sleep efficiency as a medication side effect (48). An earlier randomized study showed significant gains in a variety of sleep metrics (with fewer awakenings in the placebo group) for females randomized to normal or fake procedure AA therapy in clinical care. Acupuncture induction based on the NADA procedure was given to two patient classes in a recent review by Ahlberg et al. (49) – one group obtaining 15 treatments and the other 10 doses. For both classes, insomnia and anxiety problems were decreased (49).

A meta-analysis of 33 trials utilizing various types of acupuncture to treat insomnia could only show that AA could boost bad sleep quality relative to placebo; i.e. strong results cannot be drawn on the weak methodical quality of the trials under review. Additional observational work using more systematic methods to test the potency of insomnia AA was suggested (44).

Acupuncture in cancer-related insomnia

Choi et al. (32) performed a comprehensive review of randomized controlled experiments examined the efficacy of acupuncture in cancer-related insomnia. This research involved a minimum of six randomized controlled trials. The related effects on PSQI have been shown in three randomized controlled experiments and two randomized controlled experiments have indicated comparable results on reaction rate to that on traditional medications at the completion of therapy. Several randomized clinical experiments found that the amount of hours that were spent each night and the amount of occasions they were woken up every night are greater than a hormone treatment. Three weeks of follow-up in two randomized clinical experiments have demonstrated improved acupuncture benefits relative to traditional treatments and a meta-analysis has reported substantial acupunctural results. Two randomized clinical experiments have associated placebo acupuncture with acupuncture studies for cancer-related insomnia. One randomized clinical study had beneficial results, although the other did not. Eriksen et al (51) also found that acupuncture is effective for

the diagnosis of insomnia to improve the evidence-informed usage of acupuncture and to help serve cancer survivors' needs.

Acupuncture in depression-related insomnia

In a meta-analysis, Dong et al. measured the efficacy of acupuncture of depression-related insomnia of 18 randomized controlled clinical trials. We observed that the acupuncture procedure increased the PSQI value substantially relative to western medicine. By tandem with Western medicine, acupuncture has a greater impact on sleep efficiency than with Western medicine alone (52). There was no significant disparity between acupuncture therapy and west medicine in raising the HAMD ranking. Acupuncture in conjunction with western medication has greater impact on the treatment of depression than Traditional medicine alone. The above described systematic review and meta-analysis indicated that acupuncture may be an effective treatment for managing insomnia due to depression.

Acupuncture in chronic pain-related insomnia

The efficacy of acupuncture of insomnia owing to persistent pain has been measured in a meta-analysis carried out by Liu et al. (30). A total of 9 trials of 944 participants have been registered. The pooled research found that the success rate of acupuncture treatment was slightly higher than that of the control group but subgroup analysis indicates that there was no statistically important gap in cure rate change between acupuncture and placebo acupuncture centered on an applied sample. In comparison, meta-analyse reveals that acupuncture group in reducing PSQI score and VAS score is superior to control group. And the unfavourable disparity between the two classes was not important. There, acupuncture therapy may be shown to be an appropriate and secure remedy for chronic pain-related insomnia, and should be prescribed for chronic pain-related patients with insomnia.

Acupuncture in peri-menopausal insomnia

Fu et al. (46) randomized controlled trails have demonstrated that acupuncture may decrease the insomnia incidence and improve the quality of sleep in peri-menopausal insomnia.

They found that all monitoring and acupuncture groups experienced a large rise. The initial shift was 11.35 in the acupuncture category and 2.87 in the placebo-acupuncture community in the Insomnia Severity Index (ISI). In PSG results, sleep quality and overall sleep period increased considerably, coupled with less sleep during sleep and a lower percentage of phase 1 during care. Throughout the abovementioned analysis, there were no major variations from baseline to post-treatment in the placebo acupuncture community. In this way, it may be inferred that acupuncture will lead to a clinically significant change in the short-term, subjective and unbiased treatment of perimenopausal insomnia.

Effectiveness other acupuncture methods on sleep quality

Although little research examined the function acupressure, reflexology, moxibustion, embedding and sujok included in acupuncture treatment, these approaches were less successful than acupuncture. Waits et al. in this respect have demonstrated that acupressure will support even the vulnerable groups such as the aged and patients with dialysis (56). He reported 3-5 kilograms of pressure per acupuncture for one to five minutes, three to seven days a week for three to four weeks with the HT7 acupoint (Shenmen) used in most procedures. At the other side, Tarrasch et al. found that, after five weeks of therapy with reflexology, exhaustion rates were substantially lower and sleep quality dramatically increased after ten weeks of radiation treatment (57). A meta-analysis by Sun et al. also found that moxibustion was more effective than western drugs for insomnia (58). Wang et al. have found out the therapeutic effectiveness and possible acupoint treatment for insomnia patients with acupoint catgut (59). Nevertheless, in the above area, a literary analysis has shown a low-quality research. Highly quality research of acupressure, reflexology, moxibustion, embedding and sujok points for treating insomnia used in acupuncture therapy and enhancing sleep quality are also required.

Challenges in acupuncture trials

While preparing a therapeutic acupuncture trial, a variety of issues must be tackled. The design of the control group is one such obstacle. Must we use undefined acupuncture points, shallow needles or "sham needles" to make the user think there is a real needle in the skin or does one actually push the points manually? Since the aim of the control group is to distinguish the real treatment result from the false treatment, selecting the correct control group structure is incredibly critical. The difficulties of selecting effective research methods for acupuncture trials were addressed by Dincer and Linde (2003) (53), who emphasized the need to consider thoroughly which problem the procedure would address. Of example, the usage at points with non-acupuncture of non-penetration (placebo) needles can be used to address the issue of how skin permeation and position shift, but it may not answer

questions related to the effectiveness of medication. One of the issues with bogus acupuncture is that the stimulation that occurs partly stimulates the sensory receptors, and may result in a physiological reaction. When no attention is given to the physiological reaction triggered by placebo needling, the intention of the test group is lost and it is difficult to determine with confidence what the real and non-specific treatment result is (54). Bosch (2014) (55) and Huang et al. (2017) (44) addressed these technological issues and the difficulties of developing a physiologically inactive yet mentally comfortable shambles acupuncture treatment. If the option of control is fake acupuncture, the researcher will understand the metameric composition of the body in order to establish a trustworthy placebo community.

In the randomized controlled trial (RCT) of this study, we agreed to use an entirely specific treatment approach as the control group to tackle this issue. In fact, they selected CBT-I as the best non-pharmacological insomnia tool. The creation of a robust acupuncture procedure is a task and the established effectiveness of CBT-I was the key justification it would be used as regulation.

Expectations (both patient and caregiver) are an aspect in all therapies and can in turn influence the outcomes. We recognize that the psychological contact between patient and clinician impacts care (47) and acupuncture is no exception (47). Placebo reactions can be caused by social stimuli (e.g. care, habits and actions and gestures of the therapist). The occurrence that actually is used in a study / intervention thus reflects a strong parameter. This is often recognized that people who are scrupulously handled with open label placebo will produce substantial effects in studies.

Table 1: The characteristic of study evaluated the effectiveness of auricular acupuncture on sleep quality.

First Author	Type of Study	Total No. of Patients	Acupuncture Method	Control Group	Outcome	Ref
D.S. Li	Meta-analysis	459	Auricular acupuncture	conventional medication	AA can reduce the PSQI score and improve the sleep of patients with insomnia.	11
Y. Y. Yang	Meta-analysis	939		conventional medication	AA has a certain effect on insomnia and improves patients' sleep quality.	17
H. J. Tan	Systematic Review	894		conventional medication; placebo	AA can effectively improve sleep quality, but due to the low evidence quality, cautious attitude should be taken on this conclusion.	60
Y. Lan	Meta-analysis	1381		conventional medication; placebo	Statistical analyses of the outcomes reveal a positive effect of AA for insomnia.	22
W. F. Yeung	Systematic Review	4115		conventional medication; placebo	Owing to the methodological limitations of the studies and equivocal results, the current evidence does not allow a clear conclusion on the benefits of AA for insomnia.	23
M. S. Lee	Systematic Review	1540		conventional medication; placebo	Because of the paucity and of the poor quality of the data, the evidence for the effectiveness of AA for the symptomatic treatment of insomnia is limited.	24
H. Y. Chen	Systematic	673		conventional medica	AA appears to be effective in treating insomnia. Further clinical trials with higher	25

Review	tion; placebo	design quality, longer duration of treatment, and longer follow-up should be conducted.

CONCLUSION

Although the impact of acupuncture on the quality of sleep and insomnia was well reported, the role of acupuncture in each sleep condition, such as sleep onset condition, accidental and/or early awakes and sleep maintenance insomnia has not been well established. Throughout this sense, the efficacy of acupuncture procedures is yet to be identified throughout sleep onset condition, with more research to assess this issue, as most patients have insomnia and sleep onset issue (sleep starting condition). Acupuncture has been effective like many other therapies, such as CBT-I, based on past studies, as well as the symptoms of anxiety and depression in the short term, but, on the basis of the above issue, it can be used alongside other medications to decrease sleep periods and increase sleep efficiency.

CONFLICT OF INTEREST

None

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