DOI: 10.53469/jcmp.2026.08(05).19

Research Progress on the Combined Use of Cognitive Behavioral Therapy and Traditional Chinese Medicine External Treatments for Insomnia Complicated by Depression

Meiyan Wu[1], Jiejun Hou[2,*]

[1]Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China
[2]Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang 712000, Shaanxi, China
**Correspondence Author*

Abstract: ***Insomnia and depression are highly prevalent comorbid conditions in clinical practice, mutually influencing each other and forming a vicious cycle that severely impairs patients' physical and mental health as well as social functioning. Conventional Western medicine treatment has many drawbacks, including dependence risks, prominent adverse reactions, and high long-term recurrence rates. Both single cognitive behavioral therapy for insomnia (CBT-I) and external Chinese medicine therapy have limitations in application. In recent years, the integrated traditional Chinese and Western medicine intervention model has been widely used in the clinical diagnosis and treatment of insomnia comorbid with depression due to its synergistic advantages of treating both body and mind and addressing both symptoms and root causes. This paper systematically reviews relevant studies, elaborates on the bidirectional interaction mechanism between insomnia and depression, and introduces the improvement of symptoms in comorbid patients by CBT-I combined with external Chinese medicine therapy. At present, the combined therapy has achieved significant efficacy in the treatment of such comorbidities. However, further large-sample, multi-center studies are needed to optimize intervention protocols and enhance its therapeutic effect and application value in this field.***

Keywords: Insomnia comorbid with depression, Cognitive behavioral therapy for insomnia, External Chinese medicine therapy.

1. Introduction

Insomnia is a common clinical sleep disorder. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), insomnia disorder is mainly manifested as difficulty falling asleep, difficulty maintaining sleep, early awakening accompanied by decreased sleep quality for at least 3 months, occurring no less than 3 times a week, and accompanied by daytime functional impairments such as fatigue, drowsiness, difficulty concentrating, and memory decline. A meta-analysis found that the risk of depression in patients with insomnia is 2.83 times that of the general population [1]. Meanwhile, insomnia is an independent risk factor for the onset or recurrence of depression and can serve as an early warning signal [2]. Currently, single Western medicine treatments such as benzodiazepines, orexin receptor antagonists, and antidepressants inevitably cause varying degrees of dependence, drowsiness, falls, confusion, and other adverse reactions. Single psychological intervention or traditional Chinese medicine (TCM) treatment also has shortcomings such as slow onset of action and limited therapeutic effect. Cognitive behavioral therapy for insomnia (CBT-I) is a structured non-pharmacological treatment recommended by guidelines of multiple professional organizations as the first-line treatment for chronic insomnia in adults [3]. Moreover, its efficacy for insomnia is not affected by patients' pre-treatment depression, anxiety, and stress levels, and it also significantly improves comorbid insomnia and depression. External Chinese medicine therapy has significant effects in improving insomnia and regulating emotions due to its advantages of holistic regulation, simple operation, and safety. In recent years, the integrated traditional Chinese and Western medicine treatment regimen of CBT-I combined with external Chinese medicine therapy has been gradually applied to the treatment of insomnia comorbid with depression due to the synergistic effect of regulating both body and mind and addressing both symptoms and root causes.

2. Understanding of Insomnia Comorbid with Depression in Traditional Chinese and Western Medicine

TCM has a long-standing understanding of insomnia and has accumulated rich theoretical and practical experience, holding that insomnia is closely related to the functions of zang-fu organs such as the heart, liver, spleen, and kidney. Huangdi Neijing states: "Qi rises with yang and rests with yin." Defensive qi exits with yang and enters with yin along with the waxing and waning of yin and yang, forming sleep. Therefore, Huangdi Neijing attributes insomnia to yin-yang imbalance and disharmony between nutrient and defensive qi. Suwen notes that "if the zang organs are injured and the essence is preserved, sleep is peaceful." Damage to the five zang organs affects the mind, leading to restless sleep or even insomnia. The heart and brain are interconnected in governing the spirit; insufficient nourishment of the heart spirit involves the brain spirit, and vice versa [4]. The clinical manifestations of depression overlap with "stagnation syndrome" in TCM. The core pathogenesis of TCM stagnation syndrome is emotional discomfort and qi stagnation, which cause dysfunction of the heart, liver, and spleen and poor qi and blood circulation due to liver qi stagnation, resulting in insufficient nourishment of the heart spirit and insomnia. Modern medicine has explored the relationship between the two from multiple aspects. In terms of personality traits,

neuroticism is most closely associated with insomnia in depressed patients, directly affecting sleep by amplifying negative emotions and increasing physiological arousal. Individuals with neurotic traits are more sensitive to the psychological pressure of interpersonal distress often faced by depressed patients, and this sensitivity further aggravates insomnia. In addition, non-sleep-specific rumination is a more core cause of insomnia, especially prone to difficulty falling asleep [5]. From the perspective of neural networks, one potential mechanism of insomnia comorbid with depression is reward system dysfunction. Resting-state functional magnetic resonance imaging reveals abnormal functional connectivity of the nucleus accumbens in patients with insomnia disorder; the functional connectivity between the left nucleus accumbens and the right orbitofrontal cortex (part of the reward circuit) is reduced and significantly correlated with depressive symptoms [6]. Depressed patients themselves have impaired reward learning ability, and insomnia further exacerbates this defect. The more severe the insomnia, the weaker the reward learning ability. This defect leads to decreased motivation and social withdrawal, which in turn aggravate depressive symptoms [7]. Neuroimaging studies show that the two conditions are associated in neural networks, neurotransmitters, and genetic factors, such as abnormal functional connectivity within and between the salience network and default mode network, structural and functional changes in brain regions including the amygdala, prefrontal cortex, anterior cingulate cortex, and insula, and abnormalities in neurotransmitters such as 5-HT1A receptors and γ-aminobutyric acid (GABA) [8]. It can be seen that insomnia and depression interact with each other through multiple common pathological mechanisms.

3. Cognitive Behavioral Therapy for Insomnia Comorbid with Depression

3.1 Core Components of CBT-I and Its Mechanism in Treating Comorbid Conditions

CBT-I usually consists of multiple components including psychoeducation, cognitive strategies, and behavioral strategies (Table 1). A systematic analysis and meta-analysis of 241 trials involving 31, 452 participants found that the most beneficial combination of CBT-I includes cognitive restructuring, third-wave components (mindfulness, acceptance, commitment therapy), sleep restriction, and stimulus control. Among them, cognitive restructuring and third-wave components mainly improve subjective sleep quality; sleep restriction enhances sleep efficiency and reduces wake time after sleep onset; stimulus control helps improve sleep quality, increase sleep efficiency, and shorten sleep onset latency [9]. Moreover, face-to-face CBT-I conducted with therapists can further enhance therapeutic benefits. Changes in dysfunctional beliefs and attitudes about sleep (DBAS) in CBT-I fully mediate the improvement of psychological distress and partially mediate the reduction of insomnia severity [10]. Therefore, the cognitive restructuring module should be strengthened during CBT-I treatment.

CBT-I can promote the recovery of prefrontal cortex function, which plays a crucial role in emotional regulation, and improved function helps enhance patients' emotional regulation ability. Meanwhile, CBT-I normalizes the hypothalamic-pituitary-adrenal (HPA) axis and reduces the body's stress response, which is of positive significance for improving the overall condition of patients with comorbid mental disorders.

3.2 Clinical Research on CBT-I for Insomnia Comorbid with Depression

CBT-I has a good therapeutic effect on insomnia comorbid with depression. A systematic review and meta-analysis of cognitive behavioral therapy for insomnia in depression with comorbid insomnia included 19 trials involving 4, 808 participants. The results showed that CBT-I significantly improves both depressive and insomnia symptoms [11]. A comparison between 10-week digital CBT-I and sleep education in patients with depressive symptoms and insomnia found that the CBT-I group showed significant improvements in insomnia severity and depressive symptoms, but no significant change in the accuracy of recognizing happy or sad facial expressions, indicating that emotional processing bias is not the key mechanism of CBT-I's antidepressant effect [12]. A 12-week randomized double-blind controlled trial involving 126 patients with comorbid depression compared CBT-I combined with CBT and CBT combined with placebo without increasing treatment duration, and found no significant difference in the improvement of depression between the two groups. Therefore, for patients with heavy treatment burdens, CBT-I is preferred, and sequential therapy can be considered if depression does not improve. CBT-I can also effectively prevent the onset and progression of depression in patients with insomnia. The incidence of depression in patients with insomnia treated with CBT-I is 4.1%, similar to that in the general population and lower than that in the sleep health education therapy group. Michael R et al. conducted a 2-month CBT-I intervention and 36-month follow-up on 291 adults aged 60 years and older with insomnia disorder but no major depression or major health events in the past year. The results showed that the incidence of major depression in the CBT-I group was significantly lower than that in the sleep health education therapy (SET) group, with a 50% reduction in risk. The sustained remission rate of insomnia disorder in the CBT-I group was 26.3%, higher than the 19.3% in the SET group, and patients with sustained remission of insomnia in the CBT-I group had an 82.6% reduced risk of depression [13]. The preventive effect of CBT-I on depression weakens within one year, but CBT-I combined with circadian rhythm support (CRS) not only reduces the deterioration of depression in patients with clinically significant insomnia and high depression risk within one year but also maintains the efficacy of CBT-I. Although CRS does not show effective improvement in the initial stage of treatment, it can prolong the efficacy of CBT-I [14, 15].

CBT-I usually requires high patient adherence, and patients with emotional problems may struggle to complete the intervention. Moreover, single CBT-I cannot improve accompanying symptoms such as physical fatigue and insufficient qi and blood, limiting its therapeutic effect.

4. Research on External Chinese Medicine Therapy for Insomnia Comorbid with Depression

uided by TCM meridian theory and zang-fu organ syndrome differentiation, external Chinese medicine therapy achieves therapeutic goals of unblocking qi movement, regulating yin and yang, calming the nerves and relieving depression, and tonifying qi and blood through physical stimulation of body surface acupoints and meridians. Common clinical interventions include acupuncture, moxibustion, auricular point pressing, tuina bone-setting, cupping, and scraping. Chen Liumei found that acupuncture combined with umbilical application of Jiaotai Powder for 4 weeks achieved a total effective rate of 98.00%, significantly higher than the 78.00% in the Western medicine group, and better improved the Pittsburgh Sleep Quality Index (PSQI), TCM syndrome score, Self-Rating Anxiety Scale (SAS), and Self-Rating Depression Scale (SDS) scores [16]. hang Minli found that combined herbal foot bath intervention on the basis of conventional estazolam treatment can further improve sleep quality and relieve depressive symptoms [17]. Yang Jin treated 60 patients with depression and insomnia for 8 weeks. Compared with the conventional treatment group, combined TCM aromatherapy and auricular point plaster therapy effectively reduced depressive symptoms, improved sleep quality, and enhanced quality of life [18]. Chang Jie found that abdominal vibration tuina combined with Western medicine significantly reduced depression, self-hatred, insomnia, and other related scale scores compared with single Western medicine treatment in patients with insomnia comorbid with depression after 4 weeks [19]. Based on the holistic view of body and spirit, Guo Keying et al. believe that insomnia with depression is a disease involving both body and spirit. Head and abdominal combined acupuncture regulates the spirit through the head and the body through the abdomen, achieving simultaneous regulation of body and spirit. After 1 week of treatment, it significantly shortens sleep onset latency and improves mood [20]. Despite the significant clinical advantages of external Chinese medicine therapy, the single intervention model still has shortcomings such as inconsistent clinical syndrome differentiation, lack of behavioral correction, inability to construct correct psychological cognition, and slow onset of action that fails to meet the needs of acute-stage diagnosis and treatment.

5. CBT-I Combined with External Chinese Medicine Therapy for Insomnia Comorbid with Depression

5.1 Mechanism of Combined Therapy

CBT-I reduces central psychological arousal and corrects sleep rhythm disorders through cognitive behavioral intervention. External Chinese medicine therapy regulates the secretion of neurotransmitters such as 5-HT and dopamine through meridian stimulation, inhibits excessive hyperactivity of the HPA axis, and reduces abnormal cortisol levels. The two synergistically repair neuro-endocrine disorders. CBT-I constructs correct cognition and living habits to reduce external behavioral and cognitive factors, while external Chinese medicine therapy harmonizes qi and blood, soothes liver qi and relieves depression, and balances internal zang-fu organs. The two complement the shortcomings of single treatment by addressing both internal and external factors. Meanwhile, external Chinese medicine therapy is comfortable to operate, can alleviate patients' resistance to treatment, and improve adherence to the whole intervention process.

5.2 Research on Combined Therapy

The combined application of the two therapies constructs a bidirectional synergistic intervention model for treating both body and mind, effectively making up for the shortcomings of single therapy. Acupuncture combined with CBT-I is currently the most mature and widely used combined intervention scheme in clinical research. Zhang Lintao et al. found that heart-regulating and spirit-calming acupuncture combined with cognitive behavioral therapy significantly reduced insomnia and depression scale scores, increased the contents of GABA and glutamate neurotransmitters, effectively relieved insomnia symptoms, optimized sleep quality, and alleviated negative emotions compared with single therapy [21]. Wu Zeting found that governor vessel and conception vessel-regulating acupuncture combined with internet-based cognitive behavioral therapy for insomnia (CCBT-I) achieved significant therapeutic effects on insomnia, comprehensively improved sleep quality, reduced difficulty falling asleep, improved daytime function, effectively relieved anxiety and depressive emotions, and enhanced quality of life, while single CCBT-I only improved partial sleep indicators and emotions [22]. Zeng Peicheng et al. adopted comprehensive intervention of cognitive behavioral therapy, auricular point intradermal needling combined with sleep nursing for patients with depression and insomnia, which significantly reduced PSQI, SAS, and SDS scores, effectively improved sleep quality, relieved anxiety, depression and other negative emotions, and enhanced patient nursing satisfaction [23]. Clinically, various external Chinese medicine therapies such as acupuncture, tuina, cupping, and five-element music therapy are often combined with CBT-I to carry out multi-dimensional comprehensive physical and mental intervention. Tuina unblocks meridians throughout the body and relieves physical muscle tension and psychological stress; cupping regulates qi and resolves blood stasis and unblocks qi and blood circulation; five-element music therapy soothes emotions and relieves liver qi stagnation. Multiple external therapies synergistically regulate zang-fu organ and qi-blood imbalance, combined with cognitive restructuring and behavioral correction of CBT-I, exert ideal therapeutic effects on severe and intractable insomnia comorbid with depression, quickly break the vicious cycle of body and mind, and comprehensively improve patients' sleep, mood, and physical accompanying symptoms.

6. Conclusion

Insomnia comorbid with depression has a complex pathogenesis and is intractable. Single Western medicine, psychological, or TCM intervention models have obvious shortcomings. CBT-I corrects external inducements of sleep and emotional disorders from the root, while external Chinese medicine therapy focuses on regulating zang-fu organs and meridians to improve the internal pathological basis of qi-blood and yin-yang imbalance. The combination of the two has advantages such as stable curative effect, high safety, low recurrence rate, and wide applicability, making it a promising intervention scheme in the field of diagnosis and treatment of insomnia comorbid with depression. At present, research in this field still has problems such as insufficient

standardization, unclear mechanism, and imperfect evaluation system. In the future, it is necessary to rely on high-quality evidence-based research and modern scientific research technology to deepen mechanism exploration, improve standardized protocols, optimize intervention models, promote the standardized and popularized application of this integrated traditional Chinese and Western medicine therapy, and provide new ideas and methods for the clinical treatment of insomnia comorbid with depression.

References

[1] HERTENSTEIN E, FEIGE B, GMEINER T, et al. Insomnia as a predictor of mental disorders: A systematic review and meta-analysis [J]. Sleep Medicine Reviews, 2019, 43: 96-105.

[2] MOHAMMED SALIH A M, MADALLAH Z T, IBRAHIM R H, et al. Exploring the relationship between insomnia and depression: a cross-sectional prospective study [J]. Ann Med Surg (Lond), 2023, 85(6): 2573-2578.

[3] SOONG C, BURRY L, GRECO M, et al. Advise non-pharmacological therapy as first line treatment for chronic insomnia [J]. BMJ, 2021: n680.

[4] ZHANG Yuting, QIN Shan, WANG Xiaoqiu, et al. The Scientific Connotation of "Heart and Brain Co-Dominating the Mind" and Its Application in the Treatment of Insomnia by Acupuncture [J]. Journal of Nanjing University of Traditional Chinese Medicine, 2025, 41(02): 181-188.

[5] LI S H, CORKISH B, RICHARDSON C, et al. The role of rumination in the relationship between symptoms of insomnia and depression in adolescents [J]. J Sleep Res, 2024, 33(2): e13932.

[6] GONG L, YU S, XU R, et al. The abnormal reward network associated with insomnia severity and depression in chronic insomnia disorder [J]. Brain Imaging and Behavior, 2021, 15(2): 1033-1042.

[7] LIVERANT G I, ARDITTE HALL K A, WIEMAN S T, et al. Associations between insomnia and reward learning in clinical depression [J]. Psychological Medicine, 2022, 52(15): 3540-3549.

[8] BAGHERZADEH-AZBARI S, KHAZAIE H, ZAREI M, et al. Neuroimaging insights into the link between depression and Insomnia: A systematic review [J]. Journal of Affective Disorders, 2019, 258: 133-143.

[9] FURUKAWA Y, SAKATA M, YAMAMOTO R, et al. Components and Delivery Formats of Cognitive Behavioral Therapy for Chronic Insomnia in Adults [J]. JAMA Psychiatry, 2024, 81(4): 357.

[10] FAALAND P, VEDAA Ø, LANGSRUD K, et al. Dysfunctional beliefs and attitudes about sleep (DBAS) mediate outcomes in dCBT-I on psychological distress, fatigue, and insomnia severity [J]. Sleep Medicine, 2023, 110: 1-6.

[11] FURUKAWA Y, NAGAOKA D, SATO S, et al. Cognitive behavioral therapy for insomnia to treat major depressive disorder with comorbid insomnia: A systematic review and meta-analysis [J]. Journal of Affective Disorders, 2024, 367: 359-366.

[12] TAMM S, TSE K Y K, HELLIER J, et al. Emotional Processing Following Digital Cognitive Behavioral Therapy for Insomnia in People With Depressive Symptoms [J]. JAMA Network Open, 2025, 8(2): e2461502.

[13] IRWIN M R, CARRILLO C, SADEGHI N, et al. Prevention of Incident and Recurrent Major Depression in Older Adults With Insomnia [J]. JAMA Psychiatry, 2022, 79(1): 33.

[14] LEERSSEN J, AGHAJANI M, BRESSER T, et al. Cognitive, Behavioral, and Circadian Rhythm Interventions for Insomnia Alter Emotional Brain Responses [J]. Biol Psychiatry Cogn Neurosci Neuroimaging, 2024, 9(1): 60-69.

[15] LEERSSEN J, LAKBILA-KAMAL O, DEKKERS L M S, et al. Treating Insomnia with High Risk of Depression Using Therapist-Guided Digital Cognitive, Behavioral, and Circadian Rhythm Support Interventions to Prevent Worsening of Depressive Symptoms: A Randomized Controlled Trial [J]. Psychotherapy and Psychosomatics, 2022, 91(3): 168-179.

[16] Chen LM, Wang QF, Dong C, et al. Effect of acupuncture combined with umbilical application of Jiaotai Powder on sleep quality and negative emotions in patients with insomnia. [J]. Chinese Journal of Clinical Rational Drug Use, 2026, 19(11): 150-153.

[17] Zhang ML, Yu HS, Qiu XX. Thirty-five cases of liver qi stagnation type insomnia treated with sleep-promoting foot bath pack combined with estazolam tablets. [J]. Zhejiang Journal of Traditional Chinese Medicine, 2025(1): 20-21.

[18] YANG Jin, CHEN Xiaohong, RAO Ting. Effect of traditional Chinese medicine aromatherapy combined with ear acupoint pressing on depression symptoms and sleep quality in patients with depression and insomnia [J]. China Modern Medicine, 2024, 31(32): 48-51.

[19] CHANG Jie, ZHANG Qing, YU Tao, et al. Evaluation of vibratory abdominal massage and emotional regulation intervention in patients with depression and comorbid insomnia [J]. Hebei Journal of Traditional Chinese Medicine, 2026, 48(4): 619-623.

[20] Guo KY, Ma TM. Acupuncture ideas for insomnia with depression based on the "holistic view of body and spirit" from the perspective of the spleen. [J]. Clinical Journal of Traditional Chinese Medicine, 2026, 38(04): 643-646.

[21] Zhang Lintao, Wang Jin, Chen Effect, et al. of heart regulating and mind calming acupuncture combined with cognitive behavioraltherapy on patients with chronic insomnia [J]. International Medicine and Health Guidance News, 2024, 30(13): 2225-2229.

[22] Wu ZT. Efficacy observation of governor vessel and conception vessel-regulating acupuncture combined with internet-based cognitive behavioral therapy for chronic insomnia [D]. Guangzhou University of Chinese Medicine, 2023.

[23] ZENG Peicheng, JIANG Wenhua, JIANG Zhihua, et al. Analysis of the eff ects of cognitive behavioral therapy, auricular intradermal needle combined with sleep care on sleep quality of patients with depression and insomnia [J]. Nursing Practice and Research, 2025, 22(04): 480-484.