

# Exploration of the Application of Chronomedicine in Insomnia Based on the Midday-Midnight Circadian Qi Flow Na Zi Method

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**Abstract:** This paper explores insomnia and chronomedicine from the perspective of the Midday-Midnight Circadian Qi Flow Na Zi Method. Chronomedicine is regarded as a “biological clock therapy”, among which the Midday-Midnight Circadian Qi Flow acupuncture method, based on the law of the ebb and flow of qi and blood at different times, opens and closes along the meridians and selects acupoints according to the time, which is an important manifestation of acupuncture chronotherapy. The Na Zi Method in the Midday-Midnight Circadian Qi Flow combines the circulation of qi and blood in the twelve meridians with the earthly branches, and conducts acupoint compatibility treatment in conjunction with the five elements’ generation and restriction, as well as the deficiency and excess of syndromes. As a common sleep disorder, insomnia is mainly characterized by the frequent inability to obtain normal sleep. Its basic pathogenesis is the malnutrition of the spirit and the imbalance of yin and yang, leading to the failure of defensive qi to enter yin normally. The treatment of insomnia mainly focuses on calming the spirit, communicating yin and yang, tonifying deficiency, and reducing excess. Clinical studies have shown that the use of Na Zi Method acupuncture, time-selected auricular point therapy, time-selected music therapy, etc., can significantly improve the sleep quality of insomnia patients, and the total effective rate is higher than that of conventional treatment methods. Chronomedical therapy provides new ideas and methods for the treatment of insomnia, which is conducive to unlocking the “time code” of insomnia and is worthy of further promotion in clinical practice.

**Keywords:** Insomnia; Midday-Midnight Circadian Qi Flow; Na Zi method; Chronomedicine

**Online publication:** March 19, 2026

## 1. Introduction

Insomnia is the second largest mental illness in the world today, and its incidence has increased significantly with the rapid social development<sup>[1]</sup>. It is called “budewo” (inability to sleep) in the Nei Jing (Yellow Emperor’s Internal Classic)<sup>[2]</sup>. It is mainly manifested as insufficient sleep time and depth; mild cases have difficulty falling

asleep, or wake up from time to time during sleep and sleep restlessly, while severe cases suffer from sleeplessness all night <sup>[3]</sup>. The etiology of insomnia is complex and diverse, among which dietary imbalance, emotional disharmony, irregular work and rest, and physical weakness due to prolonged illness are particularly common. Traditional Chinese medicine (TCM) treatment of insomnia follows the core principles of regulating the balance of yin and yang and calming the spirit <sup>[4]</sup>. The Midday-Midnight Circadian Qi Flow Na Zi Method has a unique advantage of treating according to the time in regulating the operation rhythm of defensive qi and balancing the qi movement of yin, yang, five zang-organs. This paper aims to deeply explore the etiology, pathogenesis, and treatment methods of insomnia starting from the Midday-Midnight Circadian Qi Flow Na Zi Method, so as to provide reference and ideas for clinical treatment.

## 2. Understanding of the Midday-Midnight Circadian Qi Flow theory

As the core theory of the TCM chronomedicine system, the Midday-Midnight Circadian Qi Flow theory dynamically synchronizes the twelve two-hour periods (shi chen) with the operation of qi and blood in the human meridians <sup>[5]</sup>. In the traditional timekeeping system, “zi wu” represents two crucial periods of the day: “zi” refers to midnight (the beginning of yang), and “wu” refers to midday (the beginning of yin). From zi shi to wu shi, they symbolize the flow of time and the balance of the waxing and waning of yin and yang. “Liu zhu” (flow and injection) refers to the periodic perfusion of yin, yang, qi, and blood in the human body, whose ebb and flow cycle has a fixed time like the tide <sup>[6]</sup>. The Midday-Midnight Circadian Qi Flow theory indicates that the twelve meridians of the human body correspond one-to-one with the twelve shi chen, and the qi and blood of a corresponding meridian are most abundant at a specific time. Zi shi (23:00–1:00) is governed by the Gallbladder Meridian; chou shi (1:00–3:00) is dominated by the Liver Meridian; yin shi (3:00–5:00) is when qi and blood flow into the Lung Meridian; mao shi (5:00–7:00) is governed by the Large Intestine Meridian of Hand-Taiyang <sup>[7]</sup>. In the connection of the twelve meridians, the Lung Meridian of Hand-Taiyin is the starting point. According to the law of meridian qi infusion, the meridian qi flows sequentially into the Large Intestine Meridian of Hand-Yangming, the Stomach Meridian of Foot-Yangming, up to the Liver Meridian of Foot-Jueyin, and finally returns to the Lung Meridian. The qi and blood of the twelve meridians form a closed-loop meridian qi conduction system at different shi chen of the day <sup>[8]</sup>. This theory establishes a close connection between the zang-fu organs and meridians inside the human body and the external natural time, reveals the rhythmic changes of human physiological functions in the time dimension, and provides a unique and key theoretical support for TCM in disease diagnosis, treatment, health preservation, and other aspects.

## 3. Chronomedicine and insomnia

The human body is affected by various factors in the natural environment and produces corresponding “rhythmic responses.” Chronomedicine mainly explores the relationship between human physiological and pathological activities and the time rhythm of nature. As early as three or four thousand years ago, the Da Dai Li Ji (Records of Rites by Dai Sheng the Elder) described chronomedicine. The Su Wen Yi Pian·Ci Fa Lun (Supplements to the Yellow Emperor’s Internal Classic·Treatise on Acupuncture Methods) stated: “Suppose it is the Jiazi year... the time sequence is abnormal... after three years, a major epidemic will occur” <sup>[9]</sup>. Among them, “shi xu” (time sequence) refers to the law and order of time. In the Huang Di Nei Jing (Yellow Emperor’s Internal Classic), the “four seasons, five zang-organs, yin and yang” also systematically expounds the influence of the four seasons, day

and night, and twelve shi chen on the operation of human qi and blood around the concept of “following the order of time.” If the yin, yang, and zang-qi of the human body undergo pathological changes during the four seasons and day and night, insomnia will occur.

In modern chronomedicine, human beings are affected by the periodic signals generated by the Earth’s revolution and rotation, and various functions in the body respond accordingly. Human beings are coordinated and unified with the external environment, and various physiological indicators, such as daily life, body temperature, and hormones, are dominated and influenced by the time rhythm<sup>[10]</sup>. Insomnia, also known as sleep disorder in Western medicine, can be caused by various factors such as the decrease of  $\gamma$ -aminobutyric acid (GABA) secreted by the brain, pathological changes of melatonin, 5-hydroxytryptamine (5-HT), pathological changes of the hypothalamic-pituitary-adrenal (HPA) axis, secretion of a series of inflammatory factors, psychological factors of patients, and low oxygen content in the environment where patients are located. These factors leading to insomnia are closely related to the disturbance of the time rhythm<sup>[11]</sup>. The suprachiasmatic nucleus (SCN) in the anterior hypothalamus is the central clock of the brain. The expression rhythm of the PER protein in it is significantly different from that of normal people. This difference affects the regulation of circadian rhythm by the SCN, making the sleep-wake rhythm show a 24-hour periodic fluctuation<sup>[12]</sup>. Cortisol and melatonin, secreted by the pineal gland, also play an important role in sleep. Cortisol has a regular circadian variation, generally peaking one hour after people wake up, and changing with the passage of time at other times. Melatonin and cortisol have an inverse relationship: the concentration of serum melatonin is low during the day and high at night, while these two hormones undergo pathological changes in insomnia<sup>[13]</sup>.

#### **4. The relationship between the twelve Shi Chen, Midday-Midnight Circadian Qi Flow, and insomnia in traditional Chinese medicine**

In the theoretical system of the Midday-Midnight Circadian Qi Flow, the twelve shi chen are closely connected with the circulation of qi and blood in the twelve meridians of the human body, and this corresponding relationship profoundly affects the physiological state of the human body. Yin shi (3:00–5:00) is governed by the Lung Meridian. The lung governs respiration and qi. If the lung has pathological changes such as deficient heat and phlegm-dampness, the lung qi fails to disperse and descend, which may cause cough and asthma, leading to early awakening. In addition, the lung stores the po (corporeal soul); if the po is disturbed, sleep will be lost<sup>[14]</sup>. Mao shi (5:00–7:00) is governed by the Large Intestine Meridian. The large intestine governs the transmission of waste. At mao shi, the human yang qi further ascends. If the transmission function of the large intestine is abnormal, such as diarrhea, it will affect the ascent and descent of human qi movement, thereby interfering with sleep<sup>[15]</sup>. Chen shi (7:00–9:00) is governed by the Stomach Meridian. The stomach governs the reception and digestion of food. 7:00–9:00 is the time when food in the human body begins to be digested. If the diet is improper, the spleen and stomach will be damaged, and the stomach qi will fail to harmonize and descend. At chen shi, when the qi and blood of the Stomach Meridian are abundant, the symptoms of epigastric discomfort may be aggravated, affecting the state during the day, and in the long run, affecting sleep, as the saying goes, “when the stomach is disharmonious, sleep is restless.” Si shi (9:00–11:00) is governed by the Spleen Meridian. The spleen is the source of qi and blood production. If the function of the Spleen Meridian is disturbed at si shi, nutrients cannot be fully absorbed, resulting in insufficient production of qi and blood in the human body, malnutrition of the spirit, and sleep disorders<sup>[16]</sup>. Wu shi (11:00–13:00) is governed by the Heart Meridian. The heart governs the spirit. At wu shi,

the qi and blood of the Heart Meridian are abundant. If there is heat in the Heart Meridian, the heart fire is prone to flare up and disturb the spirit, which not only affects the nap at wu shi but also aggravates insomnia at night in the long run. Wei shi (13:00–15:00) is when the qi and blood of the Small Intestine Meridian reach their peak. At wei shi, the Small Intestine Meridian inherits the qi and blood of the Heart Meridian at wu shi and continues the digestion and absorption work. If the function of the small intestine is abnormal, a series of subsequent zang-fu functions may be affected, and sleep will also be inevitably affected. Shen shi (15:00–17:00) is when the qi and blood of the Bladder Meridian are abundant. The bladder governs the storage and excretion of urine. From 15:00 to 17:00, the human yang qi begins to converge. If there is heat in the Bladder Meridian, symptoms such as frequent urination and urgent urination will occur, which will interfere with the normal physiological state of the human body, break the balance of yin and yang, and affect sleep. You shi (17:00–19:00) is when the qi and blood of the Kidney Meridian are abundant. The kidney is the congenital foundation. If the Kidney Meridian is not cared for at this time, kidney yin deficiency will occur, leading to deficient fire flaring up, which further disturbs the spirit and causes insomnia. Xu shi (19:00–21:00) is when the qi and blood of the Pericardium Meridian are abundant. The pathogenic factors of the heart are replaced by the pericardium. At xu shi, the human yang qi further converges. At this time, the Pericardium Meridian protects the heart. If the qi and blood of the Pericardium Meridian are not smooth, and the pericardium collaterals are blocked by phlegm-turbidity and blood stasis, it can affect the function of the heart governing the spirit and cause insomnia. Hai shi (21:00–23:00) is when the qi and blood of the Triple Burner Meridian are abundant. The triple burner is the passage for the movement of qi throughout the human body. At hai shi, the human yang qi gradually enters yin, and hai shi is the end of the day. If the function of the Triple Burner Meridian is disturbed, qi and blood are not smooth, and qi transformation is abnormal, it will affect the handover of yin and yang in the human body, leading to difficulty in falling asleep. Zi shi (23:00–1:00) is when the qi and blood of the Gallbladder Meridian are abundant. At this time, yang qi is just born. If people often stay up late, yang qi cannot be hidden and restrained, and gallbladder qi rises instead of descending, disturbing the spirit. The floating of yang qi will cause insomnia symptoms such as difficulty falling asleep and light sleep. Chou shi (1:00–3:00) is when the qi and blood of the Liver Meridian are abundant. The liver stores blood and has the function of dispersing and dredging. At chou shi, the liver is nourished by qi and blood. If the qi and blood of the Liver Meridian are not smooth, stagnant liver qi transforms into fire, and pathogenic heat disturbs the liver hun (ethereal soul), people are prone to sleep problems such as excessive dreaming and easy awakening. The liver stores the hun; if the hun is restless, sleep will be restless<sup>[17]</sup>. In summary, the twelve shi chen correspond to the ebb and flow of qi and blood in different meridians. Abnormal qi and blood flow or zang-fu dysfunction at any shi chen may affect human sleep through various pathways. The Midday-Midnight Circadian Qi Flow theory provides a comprehensive and unique time-dimensional perspective for in-depth exploration of the etiology of insomnia.

## **5. Application of the Midday-Midnight Circadian Qi Flow Na Zi method**

The Na Zi Method (also known as the Hourly Method) is the core diagnostic and therapeutic theory of the Midday-Midnight Circadian Qi Flow theory. Based on the time sequence of the twelve earthly branches, this theory constructs a dynamic model of shi chen—meridian—five-shu points. Gao Wu, a medical scientist in the Ming Dynasty, first systematically expounded the corresponding relationship between the time sequence of the earthly branches and the flow of meridian qi in the *Zhen Jiu Ju Ying·Juan San* (Compilation of Acupuncture and Moxibustion·Volume Three), and founded the treatment system of “regulating meridians according to time.”

The Na Zi Method consists of two parts: time-selected meridian-following acupoint selection and mother-child tonification and reduction method<sup>[18]</sup>.

Time-selected meridian-following means that according to the twelve shi chen of the day, each shi chen corresponds to one meridian, and any acupoint from the jing-well point to the he-sea point of that meridian can be selected during that shi chen. The mother-child tonification and reduction method of the Na Zi Method combines the meridian branches of time flow with the five-shu points, mainly based on the principle of “reducing the child point for excess syndrome and tonifying the mother point for deficiency syndrome”, including the same-meridian mother-child tonification and reduction method and the different-meridian mother-child tonification and reduction method. Same-meridian acupoint selection: when qi and blood flow into the affected meridian, for excess syndrome, reduce the child point of the five elements in that meridian; for deficiency syndrome, tonify the mother point of the five elements belonging to that meridian. For example, for lung meridian disorders, lung-heat cough is an excess syndrome, so reduce Chize (LU5) at yin shi when the qi and blood of the Lung Meridian are abundant. Chize is the he-sea point of the Lung Meridian, belonging to water in the five elements; the lung belongs to metal, and metal generates water, so water is the child of metal. Therefore, reducing Chize can clear heat and relieve cough. Lung deficiency with asthma is a deficiency syndrome, so tonify Taiyuan (LU9) at mao shi. Taiyuan is the shu-stream point of the Lung Meridian, belonging to earth in the five elements; earth generates metal, so earth is the mother of metal. Tonifying Taiyuan can tonify lung qi. Different-meridian acupoint selection: according to the five elements theory, select the five-shu points of other meridians that have a generating relationship with the affected meridian. For example, for lung meridian excess syndrome, use the reducing method to puncture Yingu (KI10) of the Kidney Meridian and Yongquan (KI1) (the child point of the Kidney Meridian) at you shi. Because the lung belongs to metal, the kidney belongs to water, and metal generates water, the Kidney Meridian is the child meridian of the Lung Meridian. According to the principle of “reducing the child point for excess syndrome”, puncturing the acupoints of the Kidney Meridian can reduce the excess of the Lung Meridian. For lung meridian deficiency syndrome, use the tonifying method to puncture Taibai (SP3) of the Spleen Meridian and Dadu (SP2) (the mother point of the Spleen Meridian) at wu shi. The spleen belongs to earth in the five elements, the lung belongs to metal, and earth generates metal. The lung is the child meridian of the Spleen Meridian. According to the principle of “tonifying the mother point for deficiency syndrome”, puncturing the acupoints of the Spleen Meridian can tonify lung deficiency<sup>[19]</sup>.

Nutrient qi and defensive qi run inside and outside the vessels, respectively. The two qi circulate throughout the body along the vessels. When nutrient qi and defensive qi are harmonious, people are energetic during the day and sleep well at night. The middle jiao promotes the flow of qi and blood, enabling nutrient qi and defensive qi to operate repeatedly inside and outside the twelve meridians. The twelve zang-fu organs and twelve shi chen corresponding to the twelve meridians in the Na Zi Method are inseparable from nutrient qi and defensive qi. Under the action of the earthly branches, the yin-associated nutrient qi and the yang-associated defensive qi coordinate with each other, ensuring the normal operation of human physiological functions.

## **6. TCM etiology and pathogenesis of insomnia**

### **6.1. Five zang-organs and insomnia**

The Su Wen·Ke Lun Pian (Plain Questions·Treatise on Cough) stated: “Each of the five zang-organs is affected by diseases according to their corresponding times.” The prosperity and decline of zang-qi in the five zang-

organs are closely related to the time rhythm of each season, and the four seasons of the year are also inseparable from sleep. People often get up early and go to bed late in spring and summer, go to bed early and get up early in autumn, and go to bed early and get up late in winter. If one violates the time rhythm of the four seasons, zang-qi will undergo pathological changes, and insomnia will occur accordingly. The main location of insomnia is in the heart. In summer, the corresponding zang-organ is the heart. The heart governs the storage of spirit; if the spirit is malnourished, a series of mental diseases, such as forgetfulness and insomnia, often occur in summer. The *Jing Yue Quan Shu* (Complete Works of Zhang Jingyue) stated: “When the spirit is peaceful, one sleeps; when the spirit is restless, one cannot sleep.” At the same time, the heart governs blood vessels; if the yin and blood of the heart are insufficient, deficient fire due to heart yin deficiency will cause insomnia. The lung governs qi and stores the po; it corresponds to autumn in the four seasons. If the lung function is abnormal, the unsmooth operation of qi and blood or the dysfunction of the lung storing the po will lead to patients’ insomnia at night in autumn. The *Ling Shu* (Spiritual Pivot) recorded: “The hun and po are floating, making people sleep restless.” The spleen and stomach are the acquired foundation of the human body and the hub of qi ascent and descent; they correspond to the late summer in the four seasons. If the function of the spleen and stomach is abnormal, people are prone to insomnia in late summer, as the saying goes, “when the stomach is disharmonious, sleep is restless.” If the ascent and descent function of the spleen and stomach is abnormal, the food waste turns into phlegm-heat, which also disturbs the spirit and causes insomnia. The liver is the “residence of the hun”; it corresponds to spring in the four seasons. The liver stores blood, and blood houses the hun. The hun is transformed and nourished by liver blood. If liver blood is insufficient, blood cannot nourish the hun, and the loss of the hun will make people prone to insomnia in spring. The liver also regulates mental emotions; if liver fire is hyperactive, the hun cannot stay in its residence, and insomnia will also occur. The kidney stores essence and governs water; it corresponds to winter in the four seasons. Insufficient kidney qi can lead to yang failing to enter yin and disharmony between the heart and kidney. When kidney yang is insufficient, people are prone to insomnia in winter<sup>[20]</sup>.

## 6.2. Nutrient-Qi and Defensive-Qi theory

Nutrient qi and defensive qi are two very important kinds of qi in the human body. “Defensive qi is the vigorous qi of water and grain”, and “nutrient qi is the refined qi of water and grain.” Both kinds of qi originate from food and water. Nutrient qi runs in the vessels, nourishes the whole body, and is the source of blood production. Defensive qi runs outside the vessels, defends the skin and muscles, regulates the opening and closing of the interstitial spaces and the excretion of sweat, runs in the yang part during the day, and runs in the yin part at night. The *Ling Shu·Ying Wei Sheng Hui* (Spiritual Pivot·Meeting of Nutrient and Defensive Qi) recorded: “Defensive qi runs 25 times in the yin part and 25 times in the yang part, dividing day and night...” Nutrient qi and defensive qi circulate 50 times a day, and meet in the yin part at night. When nutrient qi and defensive qi meet, people begin to sleep. The normal operation of nutrient qi and defensive qi is inseparable from the time rhythm. Insufficient nutrient qi may lead to malnutrition, which in turn leads to insufficient blood production, and ultimately results in malnutrition of the spirit and insomnia. If defensive qi is hyperactive, it will cause insomnia symptoms such as restlessness due to excessive yang qi, as well as insomnia caused by the loss of control over the opening and closing of the interstitial spaces. Nutrient qi and defensive qi are interdependent and coordinate to maintain human health. If the two qi are disharmonious and imbalanced, defensive qi cannot enter yin at night, leading to diseases such as lack of energy during the day and insomnia at night<sup>[21]</sup>.

### **6.3. Yin-Yang theory**

The balance of yin and yang is the basic condition for human health. People are in a waking state with abundant yang qi during the day, and in a resting state with abundant yin qi at night. If this balance is broken, people will experience yin-yang imbalance and then insomnia. Insomnia caused by yin deficiency and yang hyperactivity is mainly related to hyperactive yang qi and insufficient yin fluid. Yin deficiency leads to yin failing to restrain yang, and hyperactive yang qi will disturb the spirit, and even deficient fire flaring up makes it difficult to fall asleep. Insomnia caused by yang deficiency and yin excess is related to insufficient yang qi and excessive yin qi. Yang deficiency leads to insufficient yang qi, which cannot warm and promote yin qi, and excessive yin qi will cause insomnia. When yin and yang are imbalanced, yang qi cannot smoothly enter the yin part at night, thereby affecting sleep <sup>[22]</sup>.

## **7. Treatment of insomnia**

### **7.1. Na Zi Method acupuncture for regulating the five zang-organs**

The Midday-Midnight Circadian Qi Flow Na Zi Method is a classic theory of chronomedicine. It is a method of opening acupoints according to the time, based on the twelve earthly branches, the deficiency and excess of diseases and syndromes, and the generation and restriction of the five-shu points. Clinical studies have shown that using the Na Zi Method to select Shaochong (HT9) of the Heart Meridian at wu shi (11:00–13:00) when the qi and blood of the Heart Meridian are abundant, Fuliu (KI7) of the Kidney Meridian at you shi (17:00–19:00) when the qi and blood of the Kidney Meridian are most abundant, or perform acupuncture intervention at si shi (9:00–11:00) when the qi and blood of the Spleen Meridian are most abundant, the therapeutic effect on insomnia is significantly better than that of acupuncture with Shenmen (HT7), Zhaohai (KI6), Shenmai (BL62) as the main acupoints <sup>[23]</sup>. A series of clinical results have found that the use of the Na Zi Method for acupuncture in the treatment of insomnia can improve the sleep quality of patients, and the Pittsburgh Sleep Quality Index (PSQI) score also begins to decrease. The Na Zi Method selects the time when the qi and blood of the Heart Meridian, Kidney Meridian or Spleen Meridian are abundant for acupuncture, which more accurately regulates the balance of yin and yang of the heart, kidney, spleen and other zang-organs, improves the insomnia state of disharmony between the heart and kidney and deficiency of both the heart and spleen, and regulates the flow of qi and blood in the three zang-organs of the heart, kidney and spleen. In contrast, conventional acupoint selection for acupuncture lacks time targeting and has a relatively weak effect in regulating the yin and yang of zang-organs without time sequence regulation. This indicates that the Na Zi Method has a good therapeutic effect on insomnia and is worthy of clinical promotion <sup>[24]</sup>.

### **7.2. Time-selected music therapy for regulating zang-organs**

The five zang-organs of the human body correspond to the five notes (jiao, zhi, gong, shang, yu). Based on the “five-note therapy” theory in the Huang Di Nei Jing, music therapy can improve people’s physiological rhythm and regulate their zang-organs. Clinical experimental results by Gao Jing et al. show that the therapeutic effect of time-selected five-element music therapy based on the Midday-Midnight Circadian Qi Flow is significantly better than that of simple five-element music therapy in the treatment of insomnia <sup>[25]</sup>. Zhou Chen et al. used the “cardiopulmonary coupling (CPC) sleep monitoring system” to study the “syndrome-music” relationship in music therapy for insomnia, and the results showed that music can increase the intensity of the parasympathetic nerve <sup>[26]</sup>. Selecting different music at different times not only balances the yin and yang of zang-organs but also regulates the neuroendocrine-immune multi-target network. This operation is safe and stable with few adverse reactions.

Combining music, medicine, and psychology, it achieves the synergistic effect of “music and medicine sharing the same origin” and is an effective remedy for the treatment of insomnia.

### **7.3. Time-selected traditional Chinese medicine foot bath for harmonizing nutrient and defensive qi**

The feet of the human body are the roots of meridian qi and the starting and ending points of the twelve yin and yang meridians. At the same time, the Yin Heel Vessel and Yang Heel Vessel are closely related to sleep. As an external treatment method of TCM, the traditional Chinese medicine foot bath can make drugs penetrate the skin to acupoints through thermal effect, achieve guiding yang into yin, and thus improve sleep quality. Studies by Lu Yanmin et al. show that foot bath with traditional Chinese medicine made of Guizhi Decoction at mao shi (5:00–7:00) or you shi (17:00–19:00) when nutrient qi and defensive qi alternate can significantly reduce the PSQI score of patients, and the sleep quality and efficiency of patients are significantly improved<sup>[27]</sup>. The traditional Chinese medicine made of Guizhi Decoction treats physical weakness and disorder of yin, yang, nutrient qi, and defensive qi, can harmonize nutrient and defensive qi, and directly reach the whole body through the foot meridians. Time-selected intervention treatment is also very in line with the law of the circadian operation of nutrient and defensive qi. Mao shi and you shi are the key moments of the operation of nutrient and defensive qi. Under the dual effects, it promotes defensive qi to “enter yin from yang”, and insomnia disorders are improved. It can be seen that the traditional Chinese medicine foot bath is simple to operate, has few adverse reactions, can quickly promote the operation of meridian qi and blood, and is an effective auxiliary method for the treatment of insomnia.

### **7.4. Time-selected auricular point therapy for dredging meridians**

The ears of the human body are the parts through which the twelve meridians pass. Pressing on auricular points can produce a meridian resonance effect, regulate the whole body’s meridians and zang-organs, and improve people’s pathological state. Clinical studies by Wang Jingmei et al. show that pressing acupoints such as Xin (Heart), Shenmen, and Pizhixia (Subcortex) at 9:00–11:00, 11:00–13:00, and 19:00–21:00 every day has a significant therapeutic effect on insomnia<sup>[28]</sup>. Time-selected pressing of auricular points can significantly improve the symptoms of sleep disorders, significantly improve the sleep efficiency of patients, and significantly reduce the PSQI score. The Ling Shu·Kou Wen (Spiritual Pivot·Oral Questions) stated: “The ear is the convergence of the main meridians”<sup>[29]</sup>. Pressing on auricular points can stimulate the hypothalamic-pituitary-adrenal axis, regulated by the auricular vagus nerve. Time-selected pressing can better stimulate the flow of meridian qi and blood, increase the therapeutic effect, and better apply the principle of “biological clock-meridian” synchronization in clinical practice.

## **8. Conclusion**

Insomnia is mainly caused by the imbalance of yin and yang day and night. The key to treatment lies in balancing qi, blood, yin, and yang, focusing on regulating the time-zang-organ rhythm of sleep. With the core concept of “correspondence between heaven and man” in the Huang Di Nei Jing, we should adhere to the key role of time rhythm in disease prevention and treatment<sup>[30]</sup>. By exploring the application of the Midday-Midnight Circadian Qi Flow Na Zi Method in insomnia, this paper deeply analyzes the important role of chronomedicine in the sleep cycle and provides a broader idea for the treatment of insomnia. However, there are still some deficiencies in the current research on the treatment of insomnia with the Midday-Midnight Circadian Qi Flow Na Zi Method, such as

a small sample size, large limitations of research objects, and short observation time. In the future, it is necessary to further carry out large-sample, multi-center, and long-term follow-up studies to deeply explore the optimal plan of the Midday-Midnight Circadian Qi Flow Na Zi Method in the treatment of insomnia, clarify its mechanism of action, and strengthen the combination with modern medical technology, so as to better apply it in clinical practice and bring a warm spring to insomnia patients.

## Disclosure statement

The authors declare no conflict of interest.

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