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Clinical Efficacy of Sleep Induction Intervention in Conjunction with Lorazepam in Managing Insomnia Disorder

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ABSTRACT

Background: This study investigates the clinical efficacy of a combined treatment approach involving sleep induction intervention and lorazepam in managing insomnia disorder.
Methods: This study enrolled a sample of 150 individuals diagnosed with insomnia disorder, consecutively admitted to our clinic from June 2021 to June 2023. Following randomization, the participants were divided into 2 groups: observation and control groups. Both groups were administered lorazepam treatment, with the observation group receiving sleep induction intervention and the control group receiving routine nursing. After the 4-week treatment period, relevant observation indicators were assessed to evaluate the efficacy of sleep improvement in both patient intervention groups.
Results: Compared to the control group that received only lorazepam treatment, the observation group, who underwent sleep induction intervention, showed a better treatment effectiveness rate, sleep quality, and psychological state regarding the treatment of sleep disorders ($P < .05$).
Conclusion: Sleep induction intervention can improve the overall treatment effectiveness rate of sleep disorders, enhance sleep quality, and alleviate symptoms of anxiety and depression.

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INTRODUCTION

Sleep disorders constitute a prevalent category of health conditions that exert adverse impacts on the physical and mental well-being of individuals.[1-3] According to statistics from the World Health Organization, 27% of individuals worldwide suffer from sleep disorders, with this number rising to 38.2% in various populations in China.[4] Sleep disorders can manifest as difficulty falling asleep, interrupted sleep, early awakening, and decreased sleep quality. These problems not only impact an individual's daily life and emotional state but can also lead to serious consequences such as decreased cognitive function, lack of focus, weakened immune system, depression, and anxiety.[5-7]

Currently, treatment methods for sleep disorders include medication and non-pharmacological approaches. Lorazepam, a short-acting benzodiazepine drug, is a commonly used option for medication treatment. It possesses sedative, hypnotic, anti-anxiety, and muscle relaxant properties.[8,9] However, long-term use of lorazepam can lead to adverse reactions such as dependence and tolerance and is not suitable for specific patient groups such as the elderly and pregnant women.[10,11] Furthermore, using lorazepam alone cannot address the root cause of sleep disorders and requires combination with other adjunctive therapies to enhance efficacy. Sleep induction is a non-pharmacological treatment method that helps patients improve sleep quality and maintain good sleep by influencing aspects such as the environment, behaviors, and cognition.[12,13] This approach may involve adjusting the pre-sleep environment, relaxation techniques before bedtime, mindfulness training, and cognitive restructuring.[14] Previous studies have demonstrated the positive effects of sleep induction in improving chronic insomnia and other sleep disorders.[12,13] However, there is relatively limited research on the clinical efficacy of combining sleep induction with lorazepam in managing sleep disorders.

Thus, this research aims to assess the clinical effectiveness of integrating a sleep induction intervention with

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lorazepam in managing sleep disorders. We will employ a randomized controlled trial design to recruit participants with evident sleep disorders and divide them into groups for sleep induction intervention combined with lorazepam treatment. Through this study, we hope to explore the therapeutic effects of combining a sleep induction intervention with lorazepam in improving sleep disorders and provide more targeted treatment strategies for clinical practice.

MATERIAL AND METHODS

General Information

The study population consisted of 150 individuals diagnosed with sleep disorders who were consecutively enrolled as subjects from June 2021 to June 2023 at Lishui Second People's hospital clinic. This study was approved by the Ethics Committee of Lishui Second People's Hospital(Approval Number:2021 (176); Date: May 30, 2021) , and all patients, as well as their family members, provided signed informed consent forms. Based on the different treatment approaches documented in the data, the patients were divided into a control group of 75 cases and an observation group of 75 cases. The control group consisted of 41 males and 34 females, with an age range of 25-67 years (mean age: 44.87 ± 5.13 years) and a disease duration of 2-9 years (mean duration: 3.75 ± 1.33 years). The observation group consisted of 38 males and 37 females, with an age range of 24-65 years (mean age: 43.96 ± 5.05 years) and a disease duration of 3-10 years (mean duration: 4.03 ± 1.30 years). No notable disparity in the general information was observed between the groups, thus indicating their comparability.

MAIN POINTS

- Combination therapy for insomnia: The study investigates the effectiveness of combining sleep induction interventions with lorazepam in treating insomnia disorder. The results demonstrate that this combined approach improves treatment outcomes compared to lorazepam alone.
- Improvement in sleep quality: Patients who received both sleep induction interventions and lorazepam showed significantly improved sleep quality, including longer sleep duration and fewer interruptions, compared to the control group that received only lorazepam.
- Reduction in anxiety and depression: The combination of sleep induction and lorazepam not only improved sleep but also significantly reduced symptoms of anxiety and depression, suggesting psychological benefits beyond just sleep quality.
- Non-pharmacological enhancement: Sleep induction interventions, which include environmental, behavioral, and cognitive adjustments, were found to enhance the efficacy of lorazepam. These interventions provide a non-pharmacological complement to traditional medication and have the potential to reduce dependence on drugs like lorazepam.

Inclusion and Exclusion Criteria

The study included participants who met the diagnostic criteria for adult insomnia according to the “Chinese Adult Insomnia Diagnosis and Treatment Guidelines (2017 edition).” They experienced symptoms such as fatigue and lethargy, had not recently used hypnotic medications, and possessed complete medical records and related information. Participants and their families were informed about the study and provided consent to participate.

Participants were excluded from the study if they had insomnia caused by systemic diseases, mental disorders, or other factors. They were also excluded if they had severe dysfunction in organs such as the heart, liver, lungs, or kidneys, or if they had poor compliance. Additionally, individuals with blood system diseases, malignant tumors, or hyperthyroidism were excluded, as well as those who were allergic to lorazepam. Individuals with a history of alcoholism, psychiatric disorders, or who were pregnant or lactating were also excluded.

Treatment Methods

Both groups received lorazepam treatment (Hunan Dongting Pharmaceutical Co., LTD) with an oral dose of 1 mg before bedtime once a day for a total of 4 weeks. The control group received routine nursing intervention, including cooperation and targeted nursing based on the treatment measures, as well as specific health education and answering patient questions. Targeted nursing was provided based on the symptoms and signs, and negative emotions were assessed and alleviated. The observation group received sleep induction nursing intervention in addition to the interventions provided to the control group. Specifically, sleep preparation was conducted by providing warm water or hot milk according to the patient’s habits and needs, accompanied by soothing music to relax tense emotions. Additionally, the patient’s bed unit was kept clean and tidy, with appropriate environmental temperature, humidity, and lighting conditions. Patients were guided to adopt a comfortable position, practice deep and slow breathing with closed eyes, and receive moderate massages if necessary, to induce sleepiness. Detailed assessments of negative emotions, particularly anxiety and depression, were conducted, and targeted interventions were provided to achieve a state of effective relaxation and alleviate any difficulties in falling asleep caused by negative emotions. Quiet and comfortable stories were shared, and patients were guided to imagine a calm and comfortable state to help relax their muscles, control the state of sympathetic nervous excitation, and gradually achieve sleep. The intervention was conducted for 4 weeks in both groups. After 4 weeks, relevant observation indicators were measured to evaluate the sleep improvement in both groups.

Observation Indicators and Evaluation Criteria

(1) Treatment efficacy: significant improvement was defined as a significant improvement in sleep quality and an increase in sleep duration by more than 2 hours compared to before medication; effectiveness was defined as a basic improvement in sleep quality and an increase in sleep duration by less than 2 hours compared to before medication; ineffective was defined as no improvement in sleep quality after medication. The total effective rate was calculated as (significant improvement + effectiveness)/total number of cases × 100%.
(2) Sleep disorder score: patients' sleep quality was evaluated using a sleep quality assessment scale before and after treatment, with a total score of 40. The severity of sleep disorders increased with higher scores.
(3) Anxiety score: The anxiety status of patients was assessed using a self-rating anxiety scale before and after treatment, with a cutoff score of 50. The severity of anxiety increased with higher scores.
(4) Depression score: The depression status of patients was assessed using a self-rating depression scale before and after treatment, with a cutoff score of 53. The severity of depression increased with higher scores.

Statistical Analysis

Statistical Package for the Social Sciences (SPSS) 25.0 (IBM SPSS Corp.; Armonk, NY, USA) will be utilized to perform the statistical analysis in this research. Continuous variables will be reported as means and standard deviations ($x \pm s$) and analyzed using *t*-tests. Categorical variables will be presented as frequencies and percentages [n (%)] and analyzed using chi-square tests. A significance level of $P < .05$ will be employed to establish statistical significance.

RESULTS

Comparison of Treatment Efficacy

Based on the findings in Table 1, it can be concluded that the treatment group displayed a statistically significant superiority in terms of overall effectiveness compared to the control group ($P < .05$).

Comparison of Sleep Disorder Scores

After a 4-week treatment period, the treatment group displayed significantly decreased sleep disorder scores compared to the control group ($P < .05$) (Table 2).

Comparison of Anxiety Scores

Following a 4-week treatment period, the treatment group demonstrated significantly reduced anxiety scores compared to the control group ($P < .05$) (Table 3).

Comparison of Depression Scores

After 4 weeks of treatment, the depression scores in the treatment group were lower than those in the control group ($P < .05$), as shown in Table 4.

DISCUSSION

This study aimed to observe the clinical efficacy of sleep induction intervention in conjunction with lorazepam in treating sleep disorders. The study results showed that compared to the control group receiving only lorazepam treatment, the observation group receiving sleep induction intervention demonstrated significant improvements in treatment efficacy, sleep quality, and psychological status related to sleep disorders. Firstly, the results of this study indicated that a sleep induction intervention combined with lorazepam treatment had a higher overall treatment efficacy in improving sleep disorders compared to lorazepam treatment alone. This suggests that as a non-pharmacological treatment approach, a sleep induction intervention can assist medication therapy in enhancing the treatment outcomes for patients with sleep disorders. This may be attributed to the fact that a sleep induction intervention adjusts environmental, behavioral, and cognitive factors, helping patients establish good sleep habits and patterns, thus improving sleep quality. Secondly, patients in the observation group had significantly lower sleep disorder scores, anxiety scores, and depression scores compared to the control group. This suggests that a sleep induction intervention combined with lorazepam treatment has significant effects in reducing the severity of sleep disorders, anxiety levels, and depressive symptoms in patients. A sleep induction intervention can assist patients in reducing difficulties in falling asleep, sleep interruptions, and early awakenings, thereby improving sleep quality. Additionally, through a sleep induction intervention, patients also learn relaxation techniques to cope with and manage anxiety and depression, thereby improving their mental health status.

However, this study also has some limitations. Firstly, although a randomized controlled trial design was used, the small sample size may introduce certain biases in the

Table 1. Comparison of Curative Effect

Group	n	Significant	Effective	Invalid	Overall Effective Rate
Observation	75	59 (78.67)	14 (18.67)	2 (2.67)	73 (97.33)
Control	75	39 (52.00)	18 (24.00)	18 (24.00)	57 (76.00)
χ^2					14.769
P					.000

Table 2. Comparison of Sleep Disorder Scores ($x \pm s$)

Group	n	Sleep Disorder Score	
		Before	After
Observation	40	23.28 ± 1.47	11.74 ± 3.67*
Control	40	23.46 ± 1.52	6.56 ± 1.45*
t		0.847	2.633
P		.442	.001

Compared with before treatment. *P < .05.

Table 3. Comparison of SAS Scores ($x \pm s$)

Group	n	SAS Score	
		Before	After
Observation	40	51.28 ± 2.47	15.74 ± 3.67*
Control	40	50.86 ± 2.32	10.56 ± 3.05*
t		0.847	2.633
P		.442	.001

Compared with before treatment. *P < .05.
SAS, self-rating anxiety scale.

Table 4. Comparison of SDS Scores ($x \pm s$)

Group	n	SDS Score	
		Before	After
Observation	40	56.28 ± 5.47	21.74 ± 3.87*
Control	40	55.86 ± 5.32	14.56 ± 3.15*
t		0.847	2.633
P		.442	.001

Compared with before treatment. *P < .05.
SDS, self-rating depression scale.

study results. Future research can increase the sample size to validate the conclusions of this study further. Secondly, this study only observed short-term efficacy, and further research is needed to investigate the long-term effects. Additionally, this study did not comprehensively investigate and analyze factors such as patients' lifestyle, sleep environment, and mental health, which may have some influence on treatment outcomes.

In conclusion, this study's results support the clinical efficacy of sleep induction intervention in conjunction with lorazepam treatment for improving sleep disorders. Sleep induction intervention can improve the overall treatment efficacy of sleep disorders, enhance sleep quality, and alleviate symptoms of anxiety and depression. However, further research is needed to validate the conclusions of this study and explore long-term effects and other factors that may influence treatment outcomes. These findings provide insights for guiding clinical practice and optimizing treatment strategies for sleep disorders.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics Committee Approval: This study was approved by the Ethics Committee of Lishui Second People's Hospital (Approval Number:2021 (176); Date: May 30, 2021).

Informed Consent: Written informed consent was obtained from all participants and their parents who agreed to take part in the study.

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Declaration of Interests: The authors have no conflict of interest to declare.

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