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RESEARCH ARTICLE

Current Application of Cognitive Behavioral Therapy for Insomnia (CBT-I) Among Patients with Chronic Insomnia in Municipal Hospitals

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Current Application of Cognitive Behavioral Therapy for Insomnia (CBT-I) Among Patients with Chronic Insomnia in Municipal Hospitals

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Abstract

Objective: Analysis of the Current Application Status and Underlying Reasons of CBT-I Among Patients with Chronic Insomnia in Municipal Hospitals. **Methods**: This was a single-center cross-sectional study. Questionnaires were used to collect data. Patients with chronic insomnia were screened according to predefined inclusion and exclusion criteria, and factors associated with CBT-I were analyzed. **Results**: A total of 200 patients were included.①The CBT-I awareness rate was higher in patients with common insomnia, females, those aged 18 – 59 years, and participants with higher educatio.②Acceptance rate: Among people aged 60 – 79, the majority are retirees, and their acceptance rate is higher than that of other groups (P <0.001).③ Analysis of the reasons for the low utilization rate of CBT-I: the time cost is higher than that of other groups. **Conclusion**: The adoption rate of sleep cognitive behavioral therapy among patients with chronic insomnia in municipal hospitals remains low; The adoption rate of sleep cognitive behavioral therapy among patients with chronic insomnia in municipal hospitals remains low; this is attributed to a lack of awareness of CBTI, life stressors and disruptions, the perception that its efficacy is inferior to pharmacotherapy or that its outcomes are uncertain, particularly given its high time cost.

Key words: Chronic Insomnia, Cognitive Behavioral Therapy, Cross-sectional Study

Introduction

Insomnia is one of the most frequent sleep disorders in the world with an estimated prevalence ranging from 8~20% in adults. [1,2] The overall prevalence of poor sleep quality was 23.9%, corresponding to approximately 276 million individuals affected by compromised sleep.[3] Insomnia not only leads to daytime functional impairment but is also closely associated with comorbid conditions such as anxiety, depression, cardiovascular disease, and substance dependence[4-6].Therefore, a large financial burden is placed on healthcare and socioeconomic systems, with the direct and indirect costs of insomnia treatments estimated to be $150bn (£114bn; €130bn) each year in the United States alone.[7].

Although pharmacotherapy yields significant short-term effects, long-term use carries risks such as tolerance, dependence, and cognitive impairment[8].Cognitive Behavioral Therapy for Insomnia (CBT-I) is recommended by international guidelines as a first-line treatment for chronic insomnia. By modifying sleep-related cognitions and behavioral patterns, CBT-I improves sleep efficiency and demonstrates superior long-term efficacy compared to pharmacotherapy[9-10].

However, the actual utilization rate of CBT-I in China remains insufficient, particularly in municipal, county-level, and lower-tier hospitals. Patients exhibit limited awareness of cognitive behavioral therapy, healthcare resources are unevenly distributed, and there is a lack of systematic epidemiological data to support policy optimization. [11].Therefore, conducting epidemiological surveys on CBT-I—to clarify its current application status, identify influencing factors and barriers—would be of significant importance for enhancing treatment accessibility and optimizing resource allocation.

Materials and Methods

1.1 Case Selection

From September 2025 to June 2026, data on outpatients or inpatients with chronic insomnia were screened at Anyang People's Hospital using a questionnaire survey. Inclusion criteria: ① Outpatients in tertiary hospitals, hospital medical staff, or non-medical personnel (e.g., administrative and logistical staff). ② Age ≥18 years, meeting the diagnostic criteria for chronic insomnia as outlined in the "Chinese Guidelines for the Diagnosis and Treatment of Insomnia in Adults" (duration of symptoms ≥3 months). ③ Continuous residence in the study area for ≥6 months. ④ Voluntary participation and signing of informed consent forms. Exclusion criteria: ① Presence of severe neurological disorders, such as brain tumors, active phases of epilepsy, acute phases of cerebrovascular accidents, or severe dementia, which directly affect the sleep centers and sleep architecture. ② Severe cardiopulmonary dysfunction (e.g., acute exacerbation of chronic obstructive pulmonary disease, cardiac function class IV, etc.). ③ Undergoing major surgery or experiencing trauma within the past 3 months. ④ Diagnosis of severe psychiatric disorders, such as schizophrenia or acute episodes of bipolar disorder; current psychiatric hospitalization; or use of electroconvulsive therapy within the past month—where the treatment modality significantly impacts sleep and mental state, potentially compromising study results. ⑤ Substance abuse (e.g., alcohol or drugs), with recent abuse within the past month; substance dependence or withdrawal symptoms that may severely disrupt sleep rhythms. ⑥ Inability to complete the survey due to language barriers, limited mobility, or other reasons.

1.2 Research Methods

Questionnaire survey content includes recording patients' gender, age, occupation, and educational level; investigating the awareness rate, acceptance rate of cognitive behavioral therapy among patients with comorbidities; and conducting an analysis of the underlying reasons.

1.3 Statistical Methods

Data analysis was performed using GraphPad prism 10.4.1and SPSS 26.0 statistical software. Measurement data are described according to their distributional characteristics using$\overline{x} \pm s$ or $M(P_{25}, P_{75})$;intergroup comparisons are performed using the t test or the Mann-Whitney U test; count data are expressed as number of cases (rate) and 95% CI; rate comparisons between two groups are performed using the χ^2test or Fisher exact test; comparisons among multiple groups were performed using the χ^2 test, with Bonferroni correction applied for pairwise comparisons. Among individuals who did not accept CBT-I, the rates of agreement with various reasons for

refusal were compared using Cochran’s Q test，Pairwise comparisons were performed using the paired McNemar test, with the significance level adjusted accordingly.

2. Results

2.1 Awareness of CBT-I among patients with chronic insomnia: Among the 200 enrolled patients, 64 had ordinary insomnia (32%); 36 had insomnia accompanied by depressive or anxiety disorders (18%); 28 had insomnia accompanied by type 2 diabetes (14%); and 72 were menopausal women (36%). The awareness rate among patients with ordinary insomnia was significantly higher than that in the other groups (P <0.05)（Figure 1）; The male-to-female ratio was 1:4, and the awareness rate among female patients was significantly higher than that among male patients (P <0.05)（Figure 2）; By age distribution: 120 patients were aged 18－59 years; 56 were aged 60－79 years; and 24 were aged ≥80 years. The awareness rate among individuals aged 80 years and older was 0; the awareness rate among those aged 18－59 years was higher than that among those aged 60－79 years (P <0.001) （Figure 3）; With regard to educational attainment, the awareness rate among those with a high school diploma or higher was significantly higher than that among those with only a primary or middle school education (P <0.01)（Figure 4）.

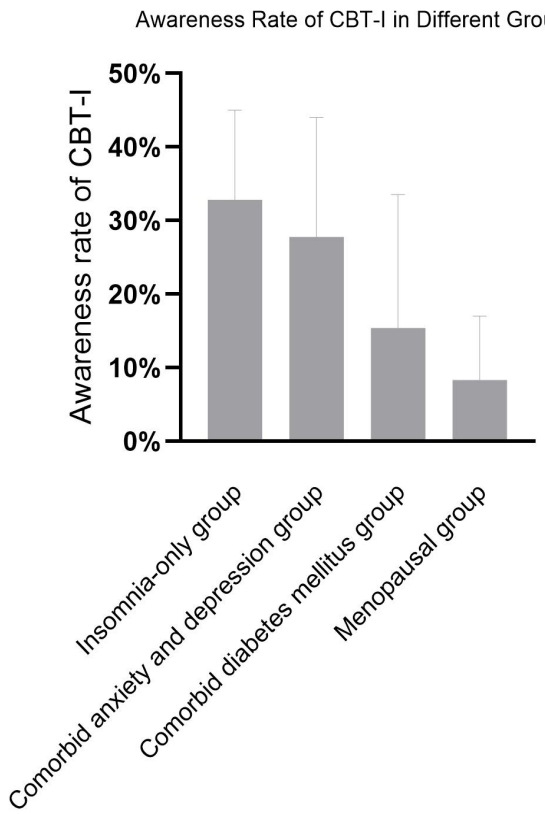


Fig1.Awareness rate of CBT-I in different groups of insomnia patients.

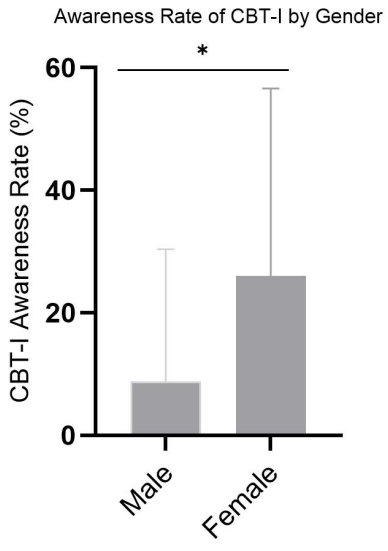


Fig2.Awareness rate of CBT-I between male and female insomnia patients.

Note：*P＜0.05.

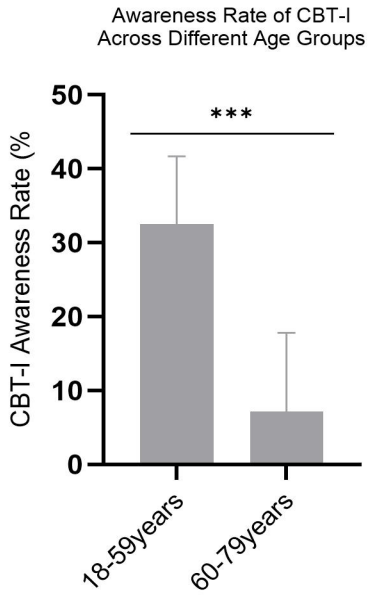


Fig3.Awareness rate of CBT-I among insomnia patients in different age groups.
Note：***P＜0.001.

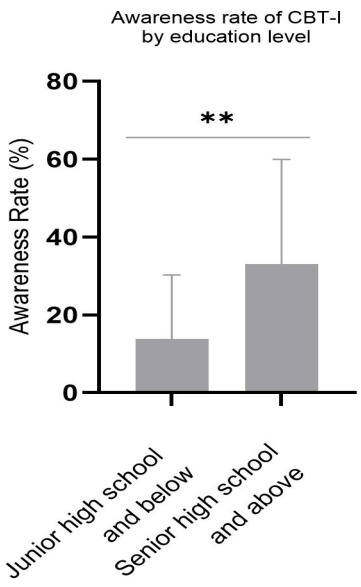


Fig4.Awareness rate of CBT-I among insomnia patients with different educational levels.
Note: ** P<0.01.

2.2 Regarding the acceptance rate of CBT-I among patients with chronic insomnia, there were no statistically significant differences in acceptance rates among patients with chronic insomnia alone, those with comorbid anxiety and depression, those with comorbid diabetes, and those who had experienced menopause(Figure 5). Among individuals aged 60 – 79 years, the majority were retirees, and their acceptance rate was higher than that of the other groups (P <0.001)(Figure 6).

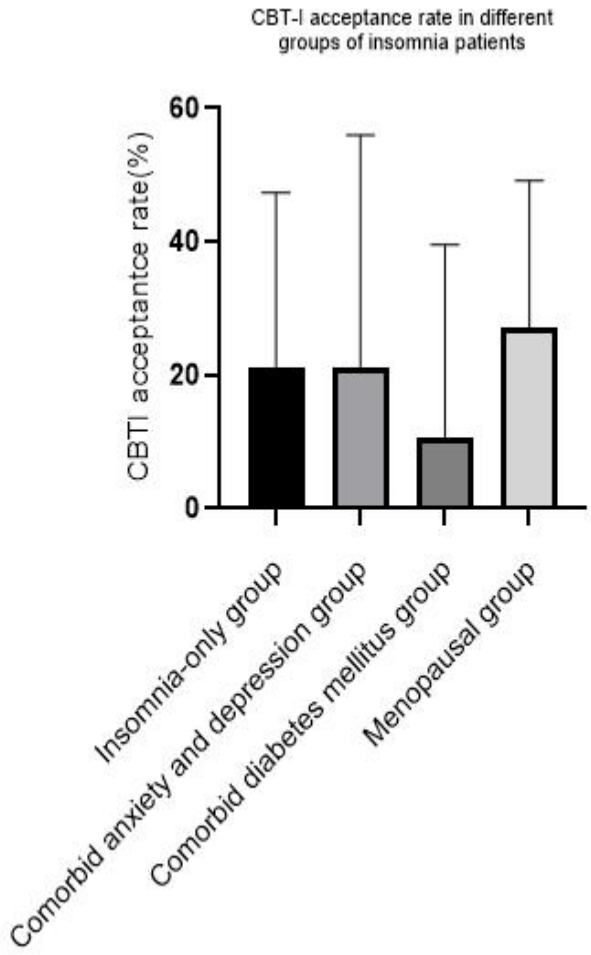


Fig5. Acceptancerate of CBT-I in different groups of insomnia patients.

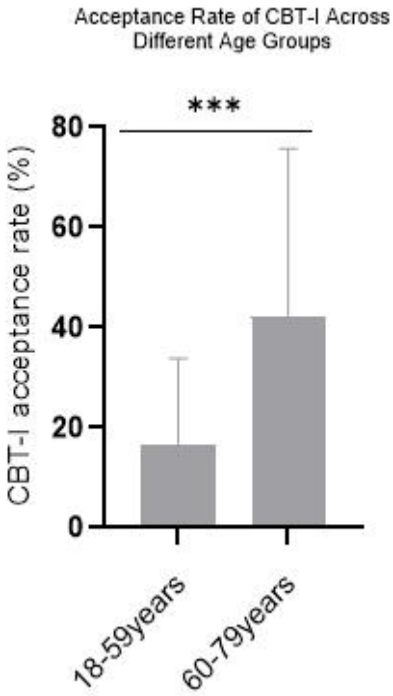


Fig6.Acceptancerate of CBT-I between male and female insomnia patients.

Note：*P＜0.05.

2.3 A total of 158 insomnia patients who declined CBT-I were enrolled, and the reasons for refusal were assessed using a multiple-choice questionnaire. The reasons associated with high time costs were reported by 111 patients (70.25%; 95% CI: 62.50%－77.10%); concerns about poor efficacy by 59 patients (37.34%; 95% CI: 29.78%－45.37%); lack of awareness by 32 patients (20.25%; 95% CI: 14.28%－27.34%); and high life stress by 34 patients (21.52%; 95% CI: 15.36%－28.79%). The proportion of patients attributing refusal to high time costs was significantly higher than that for the other three reasons, making it the primary barrier to patients' refusal of CBT-I. See Figure 7.

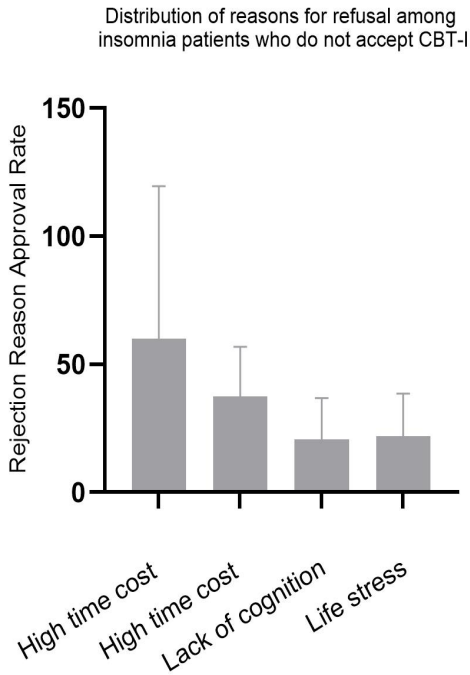


Fig7.Distribution of reasons for refusal of CBT-I among insomnia patients who declined treatment.

3.Discussion:

Insomnia refers to difficulty initiating, maintaining, or experiencing early awakening during sleep, which in turn impairs daytime functioning. It is a significant public health concern, and its prevalence has been steadily increasing; current data indicate that 5% – 50% of the global population is currently affected by insomnia.[12].The prevalence of insomnia in China has been increasing year by year and The condition represents a substantial burden for both patients and society[13,14]. Insomnia is an independent risk factor for other mental disorders and physical diseases4–6 , including depression, anxiety disorders and cardiovascular disease, raising the possibility that adequate treatment of insomnia could help to prevent the onset of such conditions[15].Currently, the treatment regimen for ID remains primarily drug-based; however, patients undergoing long-term medication therapy may develop drug resistance and experience drug-related adverse reactions, which can increase their burden [16].Most available hypnotic agents are recommended solely for short-term use, owing to their limited efficacy and potential adverse effect[17].The first line treatment for chronic insomnia owing to its excellent treatment efficacy and minimal side Effects[18].However, accessibility to CBT-I is often limited because of the associated high costs and the low availability of trained therapists, preventing its wider implementation in the community[19] .Particularly in municipal hospitals, there is a scarcity of relevant research data on the application of CBT-I among patients with chronic insomnia. In this study, we conducted a cross-sectional survey in municipal hospitals to analyze the current status of CBT implementation—including patient demographics, awareness rates of CBT, treatment

acceptance rates, and adherence rates from multiple perspectives, thereby exploring strategies to facilitate its widespread adoption.

Firstly,Our study found that the awareness rate of CBT-I among patients with chronic insomnia seeking care at municipal hospitals was very low; From the patient's baseline characteristics:The awareness rate among patients with insomnia-only were higher than that in other groups ; This has also been noted in other studies: compared with peers who have chronic insomnia accompanied by comorbid mental disorders, individuals without mental disorders may benefit more from computerized CBT-I treatment; this may be because they can concentrate and stay focused more effectively and have greater energy available for improving their sleep [20] .The awareness rate among female patients was significantly higher than that among male patients. Meanwhile, one study also found that female and white participants had a more comprehensive understanding of insomnia treatment than male participants and participants from other racial groups [21] .The awareness rate among individuals aged 18 – 59 is higher than that among those aged 60 – 79.The awareness rate among those with a high school education or higher was also higher than that among those with only primary or secondary school education. This is consistent with findings in the literature indicating that elderly patients with insomnia who have limited educational attainment, limited technical experience, and older age may face certain limitations in their understanding of and adherence to treatment [22] .Although all insomnia-related guidelines published in the last 5 years agree that CBT-I should be the first-line treatment for insomnia, based on the accumulated scientific evidence from the literature [23] ,Data from 12 European countries indicate that only 4-10% of patients are prescribed nonpharmacological insomnia treatments such as CBT-I [24] . Limited access in primary care settings and insufficient education on the therapeutic potential of CBT-I have been recognised as key factors hindering the use of CBT-I in the community [25, 26] .

Secondly,Our study found that there were no statistically significant differences in the acceptance rates of CBT-I among patients with chronic insomnia-only, those with comorbid anxiety and depression, those with comorbid diabetes, and those with chronic insomnia who have also experienced menopause.That is, Because the acceptance rate of CBT-I was low, the differences were not able to be detected in the present sample. Future research should examine whether differences emerge as CBT-I awareness and acceptance increases at the population level.Among people aged 60 – 79, the majority are retirees, and their acceptance rate is higher than that of other groups.In contrast, the acceptance rate among patients aged 80 years or older with chronic insomnia was 0%.For some elderly patients, due to their limited educational attainment, both online and offline CBTI implementation and adherence can be challenging [27].We know that the prevalence rates of insomnia symptoms are high and range up to 40%to 66%in adolescents, whereas prevalence rates for the full insomnia disorder diagnosis vary between w 9% and 23% [28].This is also consistent with the low rate of adolescent visits in our actual sleep clinic; consequently, adolescents were not included in this study. However， there are barriers in the implementation of CBT-I among youth, such as the low level of help-seeking and limited accessibility to healthcare system [29,30]. Using Internet-based CBT-i was shown to be more cost-effective than group therapy,63 has the advantage to increase availability and access to treatment, and may also be characterized by high acceptability in adolescent populations

[31].However, our study has several limitations. One of them is that the number of participants was relatively small and the gender ratio was imbalanced. Consequently, our findings are primarily based on their assessments.

Thirdly，Our study found that only 21% of patients with chronic insomnia received CBT-I treatment.Among the reasons for the low acceptance rate of CBT-I: the time cost is higher than that of other groups.The guidelines for management of chronic insomnia recommend that all patients receive cognitive behavioral therapy for ininsomnia (CBT-I) as the initial treatment, yet patients are rarely referred to this treatment[32, 33, 34]Second, primary care providers are not adequately screening for sleep issues and referring appropriately due to a lack of knowledge, treatment beliefs, and a lack of motivation to assess and treat insomnia. Finally, patient barriers, including a lack of knowledge, treatment beliefs, and limited access, prevent patients from engaging in CBT-I [35]. This issue is particularly pronounced in municipal primary-level hospitals.One survey study in the UK reported that patients identifytimes constraints as a significant barrier to seeking insomnia treatment (35%)，which is consistent with our research findings [36].Consequently, with the rapid proliferation of the Internet, network-based CBT-I has gradually emerged; it transcends the constraints of time and space, offering greater convenience, flexibility, and standardized uniformity.

In summary,this study, based on a cross-sectional survey conducted in municipal hospitals, found that the awareness and acceptance rate of sleep cognitive behavioral therapy among patients with chronic insomnia in such hospitals is very low. The primary barrier to its adoption is the high time cost, compounded by factors such as limited awareness of CBT-I, life stress and disruptions, the perception that its efficacy is inferior to pharmacotherapy or that its outcomes are uncertain. These findings underscore the importance of enhancing treatment accessibility and optimizing resource allocation.Furthermore,the digitalization, personalization and grassroots-scale deployment of CBT-I hold significant clinical importance for the treatment of chronic insomnia.

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Authors' contributions
Yuejiao Fu: Contributed to collection and assembly of data; wrote the manuscript; perform the critical revision of article. Sanyong Cao Contributed to project administration,manuscript review and supervision.

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Ethics approval and consent to participate

This study has been approved by the Medical Ethics Committee of Anyang People's Hospital (Approval No:KS-2026-10.29). All participants in the survey have signed the informed consent form, indicating their voluntary participation in this study.

Competing interests

The authors declare no conflict of interest.

Consent for publication

We, the undersigned, give our consent for the publication of identifiable details, which can include figures and data details within the text ("Material") to be published by Translational Neurology and Neurosurgery.

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