

Knowledge, Attitudes, and Practices Toward Insomnia Among Insomnia Patients

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Purpose: This study aimed to investigate the knowledge, attitudes, and practices (KAP) toward insomnia among patients.

Patients and Methods: A cross-sectional survey was conducted from May 20, 2023, to March 25, 2024, in the Neurology Outpatient Department at the Affiliated Hospital of Chengdu University of Traditional Chinese Medicine. Data were collected through the distribution of questionnaires.

Results: A total of 568 valid questionnaires were analyzed. Of these respondents, 368 (64.79%) were female. Notably, 156 (27.46%) exhibited symptoms of anxiety, and 103 (18.13%) were found to be experiencing depressive symptoms. The mean knowledge, attitude, and practice scores were 5.50±2.20 (possible range: 0–9), 24.53±3.21 (possible range: 8–40), and 28.55±4.28 (possible range: 8–40), respectively. The results of pathway analysis showed that knowledge was directly associated with both attitude ($\beta=0.240$, $P=0.010$) and practice ($\beta=-0.128$, $P=0.013$), and attitude was associated with practice ($\beta=0.179$, $P=0.010$). Furthermore, an indirect association was observed between knowledge and practice through attitude ($\beta=0.043$, $P=0.010$).

Conclusion: The study found patients' insomnia knowledge and attitudes are poor, yet their practices are proactive. Since knowledge and attitudes were associated with practice, clinical programs should consider implementing educational interventions to improve understanding and foster positive attitudes toward insomnia management.

Keywords: knowledge, attitude, practice, insomnia, cross-sectional study

Introduction

Insomnia, a significant public health issue, is characterized by difficulty falling asleep (initial insomnia), maintaining sleep (middle insomnia), and premature waking (terminal insomnia). These sleep disturbances not only compromise daytime functionality but also lead to fatigue, depression, anxiety, and other adverse symptoms.^{1,2} The condition's prevalence ranges between 10–20%, with about 50% of these cases being chronic, defined as experiencing symptoms at least three nights a week for more than a month.³

In China, approximately 15% of the population suffers from insomnia.⁴ Epidemiological data indicate that insomnia rates are higher among women and increase with age.^{5,6} Additionally, sleep disturbances are closely linked to psychological disorders such as depression and anxiety.⁷ A study highlights that nearly 30% of people are affected by psychological disorders resulting from high-pressure jobs and hectic lifestyles, with many suffering from varying degrees of insomnia.^{8,9}

Cognitive Behavioral Therapy for Insomnia (CBT-I) is advocated as the primary treatment approach. However, pharmacologic interventions are frequently employed to manage this disorder.¹⁰ The pharmacological arsenal includes various drug classes such as benzodiazepines (BZD), non-benzodiazepine GABA-A modulators, dual orexin receptor



antagonists (DORAs), melatonin receptor agonists, and histamine antagonists, all of which have been approved for treating insomnia.¹¹

The Knowledge, Attitude, and Practice (KAP) model suggests that individual behaviors are shaped by one's knowledge and attitudes, which is a fundamental concept in public health.¹² This model emphasizes the importance of understanding health-related behaviors through assessments of knowledge, attitudes, and behavioral practices, often conducted via KAP surveys.¹³ By exploring these elements, researchers can identify gaps in knowledge, misconceptions, and potential resistance to treatment among patients. These insights enable the development of more effective personalized treatment plans and educational interventions that enhance self-management capabilities and, consequently, improve quality of life.

Given the close association between insomnia and various psychological and physical ailments, such as depression, anxiety, and cardiovascular diseases, a deep understanding of KAP in insomnia patients is crucial not only for managing insomnia but also for preventing these related health issues. Previous research has indicated that insomnia patients frequently experience frustration and misconceptions, which may stem from a disparity between patients' and healthcare professionals' perceptions of insomnia and its treatment. Additionally, the subjective experiences of patients with insomnia are often overlooked.¹⁴ Despite its relevance, there is a notable scarcity of research focusing on the KAP related to insomnia. Therefore, this study aimed to investigate the KAP related to insomnia among patients suffering from this condition.

Materials and Methods

Study Design and Participants

This cross-sectional study was conducted between May 20, 2023, and March 25, 2024, at the Neurology Outpatient Department of the Affiliated Hospital of Chengdu University of Traditional Chinese Medicine. The participants were patients presenting with insomnia. Ethical approval for this study was granted by the Ethics Committee of the Hospital of Chengdu University of Traditional Chinese Medicine, and informed consent was obtained from all participants.

Inclusion criteria: 1) Patients primarily presenting with insomnia or sleep disorders; 2) Aged 18 years or older; 3) Meeting the diagnostic criteria for sleep disorders as outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), published by the American Psychiatric Association in 2013; 4) Willing and able to provide informed consent. Exclusion criteria: 1) Patients unable to complete the questionnaire due to severe hearing impairments, illiteracy, or similar conditions.

Questionnaire Introduction

The questionnaire design was designed with reference to the Chinese Adult Insomnia Diagnosis and Treatment Guidelines, Expert Guidance on the Management of Pandemic Stress Insomnia, the Chinese Diagnosis and Treatment Guidelines for Insomnia Disorders, and the American Academy of Sleep Medicine,^{15–17} Clinical Practice Guideline on Behavioral and Psychological Treatments for Chronic Insomnia Disorder in Adults.¹⁸ Key content from these guidelines, including insomnia symptoms, risk factors, treatment approaches (both pharmacological and non-pharmacological), and self-management strategies, were extracted and adapted into questionnaire items. Technical terminology was simplified to ensure comprehensibility for patients. Prior to formal data collection, the questionnaire was pilot-tested with 40 insomnia patients to assess understandability, completion time, and identify potential ambiguities. Based on feedback from the pilot test, minor modifications were made to improve clarity and readability.

The final questionnaire was administered in Chinese and comprised four sections: basic demographic information (such as gender, age, education level, occupation type, and self-reported anxiety and depressive symptoms); a knowledge section with nine questions; an attitudes section with eight items; and a practices section, also with eight questions; an attitudes section with eight items; and a practices section, also with eight questions. In the statistical analysis, responses were scored according to the number of options per item. For the knowledge section, correct answers received 1 point, and incorrect or unclear answers received 0 points, allowing for a total score ranging from 0 to 9. The attitudes section utilized a five-point Likert scale, from very positive (5 points) to very negative (1 point), with total scores ranging from 8

to 40 points. Similarly, the practices section employed a five-point Likert scale, with total scores ranging from 8 to 40 points. The practices section mainly assessed patients' engagement in insomnia-related self-management behaviors, including sleep hygiene habits, pre-sleep routines, and daily lifestyle practices. In this study, "proactive practice" referred to a higher level of self-reported adoption of these behaviors, which are generally recommended in clinical guidelines for insomnia management, particularly those related to sleep hygiene and behavioral interventions. Scores exceeding 70% of the maximum possible in each section were considered indicative of adequate knowledge, a positive attitude, and proactive practice.¹⁹

Construct validity of the questionnaire was examined using confirmatory factor analysis (CFA) based on the hypothesized three-factor structure (knowledge, attitude, and practice). The CFA was performed using AMOS 26.0. The model fit indices indicated an acceptable fit to the data, with a χ^2/df (CMIN/DF) of 2.183, RMSEA of 0.046, IFI of 0.883, TLI of 0.850, and CFI of 0.880. Standardized factor loadings of most items were statistically significant ($P < 0.05$), supporting the construct validity of the questionnaire. The CFA model is presented in [Supplementary Figure S1](#), and detailed factor loadings and model fit indices are shown in [Supplementary Tables 1](#) and [2](#).

The questionnaire was distributed to participants in both online and paper formats. Older participants typically completed the paper version and were provided with assistance in reading, understanding, and completing the questionnaire (See [Supplementary Questionnaire](#)).

Statistical Analysis

Statistical analyses were conducted using SPSS 27.0 (IBM, Armonk, NY, USA) and AMOS 26.0 (IBM, Armonk, NY, USA). Continuous variables underwent a normality test, with the *t*-test for normally distributed data and the Wilcoxon Mann–Whitney test for non-normally distributed data when comparing two groups. For three or more groups with normally distributed continuous variables and uniform variance, ANOVA was used for comparisons, while the Kruskal–Wallis test was employed for non-normally distributed data. Univariate and multivariate logistic regression analyses were performed to explore the risk factors associated with proactive practice, with a threshold set at 70% of the maximum possible score. Path analysis was employed to explore the relationships between the KAP. A two-sided *P*-value of less than 0.05 was considered statistically significant.

Results

Initially, a total of 600 samples were collected for this study. The following cases were excluded: 1) 8 participants were under 18 years of age; 2) 4 participants had abnormal height values; 3) 6 participants selected both "no other underlying diseases" and other underlying diseases in the basic disease variable simultaneously; 4) 14 participants selected "unclear" for all questions in the knowledge section. In the end, 568 valid questionnaires were obtained. The mean age of the 568 insomnia patients was 40.84 ± 15.93 years. Among them, 368 (64.79%) were female, 322 (56.69%) had a BMI in the normal range, 405 (71.30%) lived in urban areas, 188 (33.10%) had a monthly per capita household income of 2000–5000 Yuan, 156 (27.46%) self-reported anxiety symptoms, and 103 (18.13%) self-reported depressive symptoms. The mean scores for knowledge, attitude, and practice were 5.50 ± 2.20 , 24.53 ± 3.21 , and 28.55 ± 4.28 , respectively.

Analyses of demographic characteristics found significant variations in knowledge scores among patients with different residences ($P < 0.001$), education levels ($P < 0.001$), occupations ($P < 0.001$), monthly per capita household incomes ($P = 0.003$), marital statuses ($P < 0.001$), diabetes statuses ($P < 0.001$), hypertension statuses ($P < 0.001$), and anxiety statuses ($P = 0.013$). For attitude scores, differences were noted among patients with different residences ($P = 0.012$), anxiety statuses ($P = 0.014$), and depression statuses ($P = 0.009$). Differences in practice scores were found among patients with different genders ($P = 0.008$), BMIs ($P = 0.002$), education levels ($P < 0.001$), occupations ($P = 0.021$), marital statuses ($P < 0.001$), hypertension statuses ($P = 0.001$), and anxiety statuses ($P = 0.007$) ([Table 1](#)).

The distribution of responses in the knowledge dimension revealed that the three items with the lowest correctness rates were: "Melatonin can be used as a hypnotic agent" (K9) with 29.05%, "Chronic insomnia patients who have already received drug therapy do not need additional psychological treatment" (K7) with 38.38%, and "For patients with chronic insomnia, cognitive-behavioral therapy should be the preferred treatment in addition to establishing good sleep hygiene habits" (K6) with 47.54% ([Supplementary Table 3](#)).

Table 1 Patient Baseline Characteristics and KAP Scores

Variables	N (%)	Knowledge, Mean ± SD	P	Attitude, Mean ± SD	P	Practice, Mean ± SD	P
Total Score	N=568	5.50±2.20		24.53±3.21		28.55±4.28	
Gender			0.552		0.267		0.008
Male	200 (35.21)	5.57±2.20		24.35±3.39		27.90±4.28	
Female	368 (64.79)	5.46±2.20		24.63±3.11		28.90±4.24	
Age	40.84±15.93						
BMI			0.499		0.166		0.002
Underweight (<18.5)	41 (7.22)	5.68±2.03		23.86±3.24		26.17±4.36	
Normal (18.5–24.0)	322 (56.69)	5.56±2.24		24.52±3.31		28.84±4.11	
Overweight/Obese (>24.0)	205 (36.09)	5.37±2.17		24.72±3.03		28.57±4.39	
Residence			<0.001		0.012		0.469
Rural	71 (12.50)	5.20±2.49		23.59±3.05		28.00±4.44	
Urban	405 (71.30)	5.73±2.10		24.77±3.22		28.65±4.24	
Suburban	92 (16.20)	4.71±2.18		24.23±3.16		28.52±4.33	
Education			<0.001		0.085		<0.001
Junior high school and below	110 (19.37)	4.09±1.83		24.00±2.97		29.94±4.68	
High school/Technical school	114 (20.07)	4.93±2.10		24.74±2.96		29.23±4.33	
College/Undergraduate	243 (42.78)	5.97±2.15		24.84±3.27		28.00±3.97	
Master's and above	101 (17.78)	6.55±1.84		24.15±3.52		27.59±4.04	
Occupation			<0.001		0.353		0.021
Leaders of state organs, parties, and enterprises and institutions	31 (5.46)	5.90±1.42		25.03±3.08		30.19±4.57	
Professional and technical personnel (teachers, doctors, engineers, writers, etc.)	173 (30.46)	6.37±2.04		24.98±3.81		28.21±3.81	
General staff and related personnel	105 (18.49)	5.26±2.14		24.36±2.62		27.92±4.13	
Commercial and service personnel	51 (8.98)	5.27±1.88		23.84±2.41		27.47±5.01	
Agricultural, forestry, animal husbandry, fishery, and water conservancy production personnel	40 (7.04)	4.00±1.71		24.03±3.15		29.78±4.23	
Production, transportation equipment operators, and related personnel	11 (1.94)	4.45±1.75		24.64±2.29		28.64±3.67	
Military personnel	2 (0.35)	5.50±0.71		24.00±0.01		27.50±2.12	
Others	155 (27.29)	5.15±2.42		24.41±3.16		29.07±4.47	
Monthly per capita household income, yuan			0.003		0.063		0.335
<2000	92 (16.20)	4.86±2.29		23.63±3.39		28.74±4.71	
2000–5000	188 (33.10)	5.36±2.19		24.77±3.18		28.81±4.04	
5000–10,000	168 (29.58)	5.72±2.19		24.55±3.17		28.20±4.15	
10,000–20,000	70 (12.32)	6.00±2.00		24.69±3.08		27.93±4.42	
>20,000	50 (8.80)	5.78±2.12		25.06±3.12		29.30±4.51	
Marital status			<0.001		0.124		<0.001
Unmarried	185 (32.57)	6.07±2.28		24.31±3.44		26.86±3.91	
Married	339 (59.68)	5.31±2.05		24.73±3.04		29.22±4.16	
Divorced or widowed	44 (7.75)	4.59±2.40		23.95±3.40		30.52±4.44	
Medical insurance type			0.277		0.694		0.701
Only social medical insurance	449 (79.05)	5.46±2.16		24.52±3.25		28.48±4.27	
Only commercial medical insurance	9 (1.58)	5.67±2.40		24.00±2.18		27.56±3.84	
Both social and commercial medical insurance	96 (16.90)	5.79±2.34		24.76±3.11		29.07±4.32	
No insurance	14 (2.46)	4.71±2.23		23.71±3.17		27.86±4.50	
Ethnicity			0.775		0.408		0.591
Han	545 (95.95)	5.50±2.18		24.55±3.20		28.57±4.30	
Non-Han	23 (4.05)	5.52±2.57		24.04±3.50		28.09±3.87	
Diabetes status			<0.001		0.441		0.169
Yes	47 (8.27)	4.15±1.56		24.11±2.89		29.17±5.18	
No	521 (91.73)	5.62±2.21		24.57±3.24		28.50±4.19	

(Continued)

Table 1 (Continued).

Variables	N (%)	Knowledge, Mean ± SD	P	Attitude, Mean ± SD	P	Practice, Mean ± SD	P
Hypertension status							
Yes	80 (14.08)	4.28±1.77	<0.001	23.88±2.65	0.053	29.89±4.36	0.001
No	488 (85.92)	5.70±2.20		24.64±3.28		28.33±4.23	
Anxiety status							
Yes	156 (27.46)	5.19±1.97	0.013	25.02±3.23	0.014	29.24±4.40	0.007
No	412 (72.54)	5.62±2.27		24.35±3.19		28.29±4.21	
Depression status							
Yes	103 (18.13)	5.21±2.20	0.173	25.30±3.24	0.009	28.72±4.51	0.525
No	465 (81.87)	5.56±2.19		24.36±3.18		28.51±4.23	

In the attitude dimension, 20.6% of participants were bothered by insomnia but were not ready to take significant measures (A1), and 36.97% were fearful of insomnia, often feeling nervous near bedtime and worrying about not sleeping well (A2). Regarding factors related to insomnia, 34.86% and 36.97% of participants believed that life stress (A8.1) and psychological state (A8.2) were very highly correlated with insomnia, respectively ([Supplementary Table 4](#)).

When it comes to related practices, 24.82% reported that they often engaging in mentally stimulating activities or watching stimulating books, magazines, or TV programs within 1 hour before bedtime. (P2), 17.43% occasionally keep a regular schedule (P3), and 44.01% never drink warm milk before bedtime (P6) ([Supplementary Table 5](#)).

Multivariate logistic regression showed that knowledge score (OR = 0.898, 95% CI: [0.819–0.985], P = 0.022), attitude score (OR = 1.114, 95% CI: [1.050–1.182], P < 0.001), age (OR = 1.035, 95% CI: [1.015–1.056], P < 0.001) were independently associated with proactive practice ([Table 2](#)).

Table 2 Factors Influencing Proactive Practice

	Univariate Logistic Regression		Multivariate Logistic Regression			
	OR (95% CI)	P	OR (95% CI)	P		
Knowledge score	0.865 (0.801–0.934)	<0.001	0.898 (0.819–0.985)	0.022		
Attitude score	1.090 (1.034–1.148)	0.001	1.114 (1.050–1.182)	<0.001		
Gender						
Male	0.721 (0.510–1.020)	0.064				
Female	Ref					
Age	1.044 (1.032–1.056)	<0.001	1.035 (1.015–1.056)	<0.001		
BMI						
Underweight (<18.5)	0.419 (0.207–0.850)	0.016	0.631 (0.295–1.351)	0.236		
Normal (18.5–24.0)	Ref		Ref			
Overweight/Obese (>24.0)	1.063 (0.749–1.509)		0.732		0.862 (0.588–1.263)	0.447
Residence						
Rural	Ref	0.073				
Urban	1.606 (0.957–2.693)					
Suburban	1.857 (0.989–3.488)				0.054	
Education						
Junior high school and below	Ref	0.637	Ref	0.486		
High school/Technical school	0.878 (0.513–1.504)		1.234 (0.683–2.228)			
College/Undergraduate	0.430 (0.271–0.683)		<0.001		1.126 (0.623–2.035)	0.694
Master's and above	0.358 (0.205–0.626)		<0.001		1.431 (0.683–2.996)	0.342

(Continued)

Table 2 (Continued).

	Univariate Logistic Regression		Multivariate Logistic Regression	
	OR (95% CI)	P	OR (95% CI)	P
Monthly per capita household income				
<2000	Ref			
2000–5000	1.090 (0.662–1.795)	0.735		
5000–10,000	0.905 (0.544–1.506)	0.701		
10,000–20,000	0.830 (0.445–1.550)	0.559		
>20,000	1.226 (0.615–2.445)	0.563		
Marital status				
Unmarried	Ref		Ref	
Married	2.533 (1.741–3.684)	<0.001	1.147 (0.683–1.927)	0.603
Divorced or widowed	4.968 (2.425–10.176)	<0.001	1.747 (0.715–4.270)	0.221
Medical insurance type				
Only social medical insurance	1.225 (0.418–3.588)	0.711		
Only commercial medical insurance	1.667 (0.308–9.014)	0.553		
Both social and commercial medical insurance	1.511 (0.487–4.687)	0.475		
No insurance	Ref			
Ethnicity				
Han	1.040 (0.451–2.398)	0.927		
Non-Han	Ref			
Diabetes status				
Yes	1.610 (0.877–2.955)	0.124		
No	Ref			
Hypertension status				
Yes	2.468 (1.496–4.072)	<0.001	1.134 (0.627–2.051)	0.677
No	Ref		Ref	
Anxiety status				
Yes	1.583 (1.092–2.295)	0.015	1.086 (0.719–1.641)	0.696
No	Ref		Ref	
Depression status				
Yes	1.196 (0.780–1.834)	0.412		
No	Ref			

The results of pathway analysis showed that knowledge was significantly associated with attitude ($\beta = 0.240$, $P = 0.010$) and practice ($\beta = -0.128$, $P = 0.013$), and attitude was significantly associated with practice ($\beta = 0.179$, $P = 0.010$). In addition, an indirect association was observed between knowledge and practice through attitude ($\beta = 0.043$, $P = 0.010$) (Table 3). The overall model demonstrated an acceptable fit to the data, with χ^2/df (CMIN/DF) = 2.183, RMSEA = 0.046, IFI = 0.883, TLI = 0.850, and CFI = 0.880, indicating adequate goodness-of-fit of the pathway model.

Table 3 Results of Pathway Analysis

Model Paths	Standardized Total Effects		Standardized Direct Effects		Standardized Indirect Effects	
	β (95% CI)	P	β (95% CI)	P	β (95% CI)	P
K→A	0.240 (0.163–0.309)	0.010	0.240 (0.163–0.309)	0.010		
K→P	-0.086 (-0.171–0.006)	0.067	-0.128 (-0.228–0.034)	0.013		
A→P	0.179 (0.101–0.271)	0.010	0.179 (0.101–0.271)	0.010		
K→P					0.043 (0.021–0.071)	0.010

Discussion

The study revealed that patients generally possess inadequate knowledge and hold negative attitudes towards insomnia, yet they tend to engage in proactive practices. Here, proactive practices mainly referred to patients' self-reported engagement in behaviors commonly emphasized in evidence-based insomnia management, such as maintaining sleep hygiene and adopting behavioral strategies. Clinical interventions in similar clinical settings should prioritize enhancing patient education to improve knowledge about insomnia, as better understanding is positively associated with attitudes and practices. Tailoring educational programs to address specific misconceptions and foster positive attitudes may help enhance the effectiveness of patient self-management strategies for insomnia.

This study highlights several important findings regarding the knowledge, attitudes, and practices of insomnia patients. Notably, significant differences in KAP scores were observed across various demographic and socio-economic variables. For instance, educational level significantly influenced knowledge scores, with higher education correlating with better knowledge about insomnia. This trend is consistent with literature indicating that higher education levels can enhance health literacy, thereby improving both understanding and attitudes towards health issues.^{20,21} Furthermore, marital status significantly influenced practice scores, with married individuals demonstrating more proactive practices, potentially due to increased social support, which has been shown to enhance engagement in health-promoting behaviors.^{22,23}

Interestingly, while gender did not significantly affect knowledge or attitude scores, practice scores differed significantly between males and females, with females showing more proactive practices. This could be attributed to gender differences in health consciousness, as women experience higher rates of insomnia compared to men.⁶ Moreover, the multivariate logistic regression supports these findings, indicating an association between gender and practice scores, reinforcing the need for targeted interventions that consider gender-specific preferences and challenges in insomnia management.

The relationship between KAP was further elucidated through multivariate logistic regression and SEM, revealing that higher knowledge scores were associated with more positive attitudes and better practices. This association suggests that interventions aimed at improving knowledge may be associated with enhanced practical engagement through improved attitudes, as indicated by pathway analysis results showing both direct and indirect associations between knowledge and practice through attitude.^{24,25} These findings highlight the potential importance of comprehensive educational strategies in insomnia management.

The survey results on knowledge about insomnia reveal mixed levels of understanding among patients. A significant number of patients are aware of the basic symptoms and classification of insomnia, but there are gaps, particularly regarding the progression of short-term to chronic insomnia and the use of melatonin as a hypnotic agent. Notably, less than half correctly identified cognitive-behavioral therapy as a preferred treatment for chronic insomnia. To address these gaps, targeted educational programs could be developed, focusing on the importance and effectiveness of cognitive-behavioral therapy as a front-line treatment option. Moreover, incorporating detailed sessions on the safe use of melatonin and transitioning from short-term to chronic insomnia into routine patient education could help improve understanding significantly.^{26,27}

Attitudes toward insomnia management present a complex picture. While a majority recognize the seriousness of insomnia and trust their doctors, there is a notable reluctance to engage with certain treatments, particularly concerning the use of sleeping pills and traditional Chinese medicine. This reluctance is often based on fears of side effects or doubts about effectiveness, aligning with findings from other contexts where patients expressed similar concerns.^{28,29} To improve attitudes, it would be beneficial to enhance doctor-patient communication, allowing for more personalized discussions that address specific fears and misconceptions. Additionally, creating patient-centered informational campaigns that clearly outline the benefits and risks of various treatment options, including empirical evidence of their safety and efficacy, could help mitigate these concerns.^{30,31}

Practices regarding the management of insomnia show that while some good habits are well-adopted, such as maintaining a comfortable and quiet sleep environment, other beneficial practices are less frequently observed. Given that this study was conducted in a hospital of traditional Chinese medicine, the findings also have implications for culturally relevant educational and behavioral interventions. Practical education programs could integrate sleep hygiene

guidance with traditional Chinese medicine–based approaches commonly accepted by patients, such as lifestyle regulation, emotional management, and non-pharmacological therapies. For example, structured sleep hygiene programs, combined with education on appropriate use of traditional Chinese medicine modalities, may help patients better understand insomnia management and encourage more consistent engagement in healthy sleep-related behaviors. Such culturally adapted interventions may be particularly suitable for clinical settings similar to ours. Particularly, the low frequency of engagement in pre-sleep rituals such as drinking warm milk or soaking feet in hot water suggests a lack of routine in bedtime practices, which is crucial for managing insomnia effectively. To encourage better practices, it might be useful to introduce structured behavioral therapy programs that include sleep hygiene training and establish regular follow-ups to reinforce these practices. Educational materials that provide practical tips on establishing a bedtime routine could also be distributed during clinic visits. Programs that offer demonstrations on relaxation techniques, such as guided imagery or progressive muscle relaxation, could further support individuals in adopting more effective sleep practices.^{32–34}

This study has several limitations that should be considered when interpreting the results. First, the cross-sectional design restricts our ability to establish causal relationships between knowledge, attitudes, and practices regarding insomnia. Second, the sample was drawn exclusively from patients attending a single center in Chengdu, which may limit the generalizability of the findings to other regions and broader populations. Finally, the reliance on self-reported data could introduce response bias, potentially affecting the accuracy of the reported attitudes and practices. Anxiety and depressive symptoms were not assessed using validated instruments.

Conclusion

In conclusion, in this single-center sample, patients demonstrated inadequate knowledge, negative attitudes, and proactive practices towards insomnia. These findings underscore the need for targeted educational interventions in similar clinical populations aimed at improving knowledge about insomnia. Enhancing patient understanding of insomnia may be associated with more positive attitudes and proactive self-management practices.

Data Sharing Statement

All data generated or analyzed during this study are included in this article and supplementary information files.

Ethics Approval and Informed Consent

This work has been carried out in accordance with the Declaration of Helsinki (2000) of the World Medical Association. This study was approved by the Ethic Committee of the Hospital of Chengdu University of Traditional Chinese Medicine (2023KL-031), and all participants provided written informed consent.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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