

# University Students' Needs and Expectations for Coping With Insomnia: Implications for Theory and Practice

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Insomnia significantly impacts university students' health and academic performance, making it essential to incorporate their experiences with insomnia into research. This study aims to explore the needs and expectations of university students in coping with insomnia and the implications for theory and practice. The research involved a survey of 110 students, with five participating in semi-structured in-depth interviews. The results revealed that students' needs and expectations for managing insomnia fall into three categories: online services, integrated university medical services, and socially interactive and shareable service models. The study found that addressing students' insomnia requires an understanding of these needs and expectations, with a human-centered approach proving effective in identifying and addressing students' actual requirements. These findings provide a foundation for further discussions on improving the accessibility of insomnia coping strategies for university students.

*Keywords:* insomnia, human-centered, university students

## Introduction

Insomnia is more prevalent in the general population, particularly among university students who have a higher incidence of insomnia. According to the *ResMed 2023 Global Sleep Week Survey* report, among respondents of all age groups, the proportion of night owls was highest among Generation Z respondents, reaching 17%. An epidemiological study reported that 60% of surveyed college students experienced sleep disturbances (Lund, Reider, Whiting, & Prichard, 2010). Reports from both college students and graduate schools indicate insufficient sleep or decreased subjective sleep quality (Becker et al., 2018). Sleep deprivation can adversely affect cognitive function (Walker & Stickgold, 2006). Further evidence underscores the importance of longer, more regular sleep patterns in positively contributing to college students' academic achievement (Okano, Kaczmarzyk, Dave, Gabrieli, & Grossman, 2019). Therefore, insomnia among university students is not only common but also significantly impactful.

The topic of insomnia among university students is becoming increasingly prominent. Some studies contribute to raising public awareness of the importance of good sleep behavior in adolescents, while others investigate insomnia and related factors among university students. Currently, treatments and improvement

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methods for insomnia are to some extent applicable to university students, but there is still a lack of insomnia management methods tailored to their needs. The core of service design is human-centered, and employing a human-centered approach to identify the genuine needs of university students may have a positive impact on addressing insomnia issues. This study aims to explore the needs and expectations of university students in coping with insomnia, with the goal of providing insights into potential methods for managing insomnia among students.

## Theoretical Review

### Definition and Impact of Insomnia

Insomnia is a common sleep disorder. The American Psychiatric Association (APA) in the *Diagnostic and Statistical Manual of Mental Disorders* (Fifth Edition, DSM-5), has outlined diagnostic criteria for insomnia, including symptoms such as difficulty in initiating or maintaining sleep, frequent awakenings, difficulty in returning to sleep, accompanied by significant daytime distress or impairment in function, occurring at least three times per week, lasting for at least three months, and not attributed to other medical conditions, mental disorders, or substance abuse. Meeting any of these criteria may be considered symptomatic of insomnia, while meeting all criteria would require diagnosing a chronic insomnia patient. If other mental disorders or medical conditions are present, the severity of insomnia symptoms may exceed those typically caused by these conditions. The National Heart, Lung, and Blood Institute (NHLBI) and the National Institutes of Health (NIH) in the United States provide explanations regarding the causes and risk factors of insomnia. These mainly involve factors such as age, family history and genetics, environment or occupation, lifestyle, stress, gender, among others.

The impact of insomnia on individuals and society is substantial. Research indicates that insomnia increases the risk of cardiovascular diseases (Li, Zhang, Hou, & Tang, 2014), obesity and diabetes (Anothaisintawee, Reutrakul, Van Cauter, & Thakkinstian, 2016), depression (Baglioni et al., 2011; Hertenstein et al., 2019), anxiety (Hertenstein et al., 2019), suicide (Pigeon, Pinguart, & Conner, 2012), and suicide (Pigeon et al., 2012). Wickwire (2019) reported that untreated insomnia leads to increased overall healthcare utilization based on a nationally representative sample randomly selected from the United States. Data from Norway suggest that insomnia strongly predicts sick leave and disability pensions (Overland et al., 2008; Sivertsen, Øverland, Bjorvatn, Mæland, & Mykletun, 2009). French data show that insomnia treatment costs amounted to \$2 billion in 1995 (Leger, Levy, & Paillard, 1999). Data from the United States indicate that the total direct and indirect costs of insomnia amount to \$150 billion (Reynolds & Ebben, 2017). The impact of insomnia extends beyond individual health to societal and economic development.

Clearly, the treatment and improvement of insomnia are of importance to both individuals and society, garnering widespread social attention. It aids in enhancing quality of life, reducing health risks, boosting work efficiency, lowering accident risks, improving mental health, avoiding medication abuse, improving interpersonal relationships, and enhancing immune system function.

### Treatment Methods for Insomnia

According to ICSD-3, insomnia is classified into acute insomnia, chronic insomnia, and other types of insomnia. Acute insomnia can be resolved by eliminating precipitating factors, leading to recovery in some patients, but some may transition to chronic insomnia. Chronic insomnia can be diagnosed and treated through medication, psychological therapy, and comprehensive interventions. Cognitive Behavioral Therapy for Insomnia (CBT-I) is considered the optimal treatment method. The classification and treatment methods of insomnia are illustrated in Figure 1.

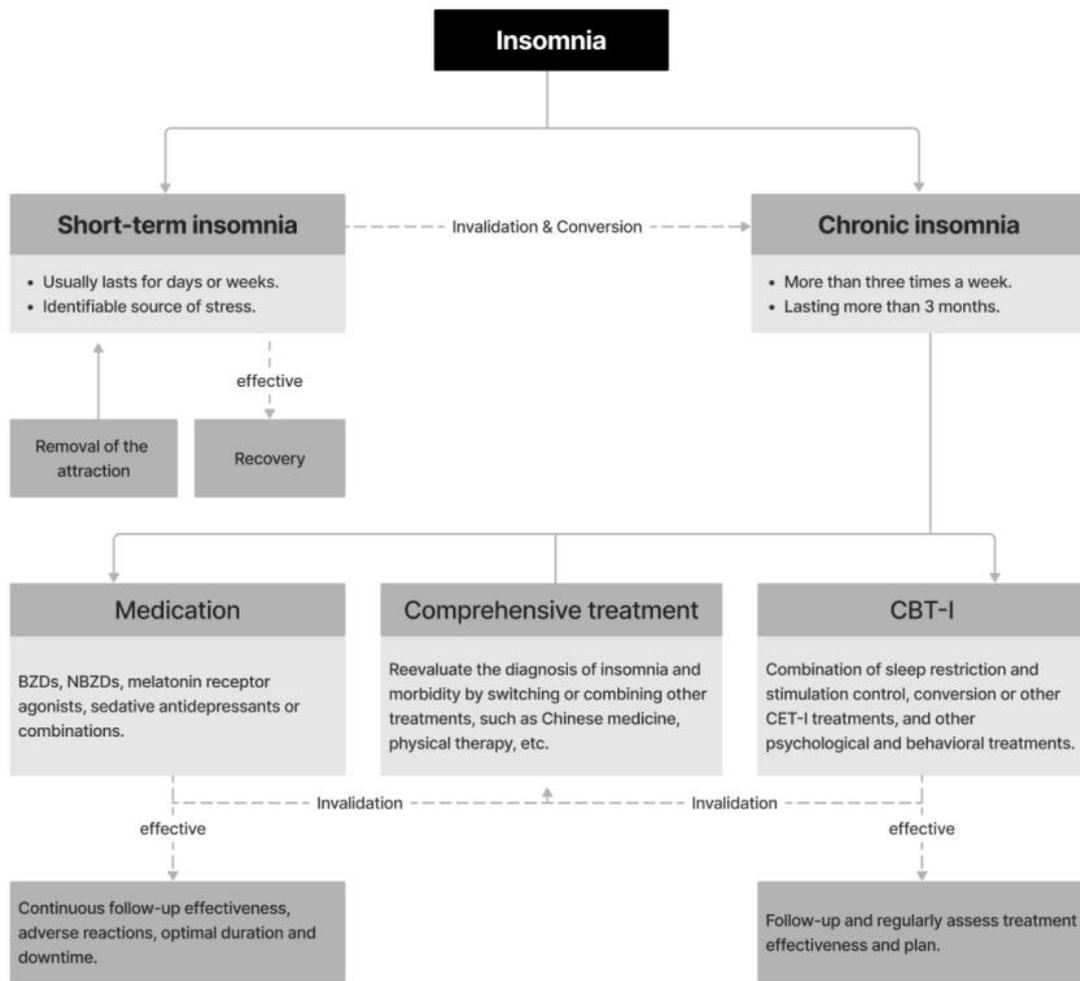


Figure 1. The classification and treatment methods of insomnia (drawn by the authors).

### Human-Centered

Service design is a rapidly emerging field that emphasizes the creation and experience of carefully thought-out and invisible media combinations. It refers to the design of services for convenient and comfortable use, establishing service touchpoints, and determining methods of interaction with users (Vaz & Venkatesh, 2022). It is employed to create user-centered services (Antons & Breidbach, 2018).

Human-Centered is the core concept of service design methodology, emphasizing the arrangement of user requirements, expectations, and experiences at the heart of the design and development process of products, services, or solutions. It focuses on ensuring that services meet users' expectations, needs, and preferences, thus providing a better user experience. It is typically used in conjunction with other methods and tools for implementing service design projects.

In exploring the needs and expectations of university students in coping with insomnia, the adoption of a human-centered service design approach is of significant importance. This method is user-centric and aims to gain a deep understanding of the individual backgrounds and specific needs of students regarding their insomnia issues, effectively identifying the multiple factors influencing their sleep difficulties. Moreover, the human-centered approach supports personalized and flexible service design, allowing for a diverse range of solutions

tailored to the preferences of different students. By incorporating user feedback, it facilitates continuous improvement, ensuring the effectiveness and adaptability of intervention measures in practical applications. Therefore, employing this approach not only enhances the depth of theoretical research but also provides practical and feasible optimization pathways for insomnia intervention services.

### Methods and Materials

#### Questionnaire Survey

To understand insomnia issues and perspectives among university students in their daily lives, a questionnaire survey was conducted randomly from November 11th to 14th, 2023. The survey questionnaire covers aspects such as attitudes and behaviors towards life, insomnia status and coping methods, and the level of acceptance of online interventions primarily based on sleep aid apps, as shown in Table 1.

Table 1

*Questionnaire Survey*

Classification	Questions
Life attitude and habits	What time do you usually go to bed each night?
	What do you consider to be a healthy bedtime?
	How many hours of sleep do you typically get per day?
	How long do you think a healthy amount of sleep should be?
	What bedtime routines do you have before going to sleep each night?
	Do you have a habit of exercising regularly? How often?
	Is your diet usually regular?
The current status of insomnia and coping methods	Do you have a habit of smoking or drinking alcohol?
	Have you ever experienced symptoms of insomnia?
	If you have had sleep disturbances before, please select which of the following symptoms apply to you.
	What methods have you tried to improve your sleep?
Acceptance of sleep aid applications	Which method was most effective?
	Which method do you prefer to improve your sleep?
	Have you ever used sleep tracking or sleep aid apps?
	If yes, which apps have you used? What do you like about them?
	In sleep aid apps, what features or coping methods do you prefer?
	If you haven't used any, would you be willing to try sleep aid software to help cope with insomnia?

The respondents include 110 university students, with 82 females and 28 males, ranging in age from 10 to 40 years old, but the majority are between 18 and 25 years old. The details are shown in Table 2.

Table 2

*Sample Statistics*

Sample	Age				Gender		Occupation
	Under 18	18~25	26~30	31 and above	Female	Male	University Student
110	2	64	38	6	82	28	110

The survey results indicate that 85.45% of university students have experienced insomnia. They generally believe it's best to go to sleep before midnight, but nearly 80% of college students fail to do so. Over 90% of university students believe that healthy sleep should exceed seven hours, yet almost 50% of university students sleep for less than seven hours. The results are shown in Figure 2 and Figure 3.

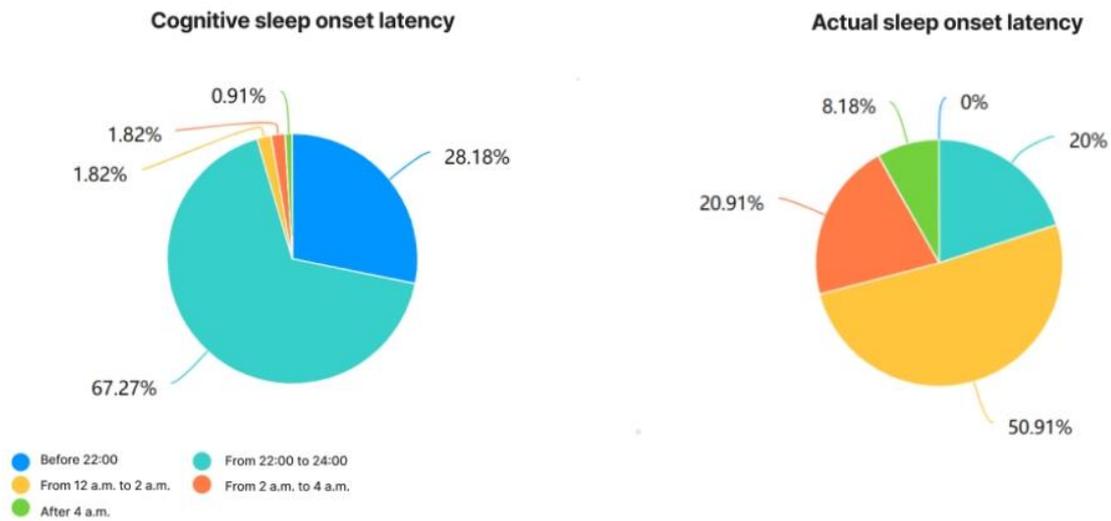


Figure 2. Cognitive and actual sleep onset time data for university students.

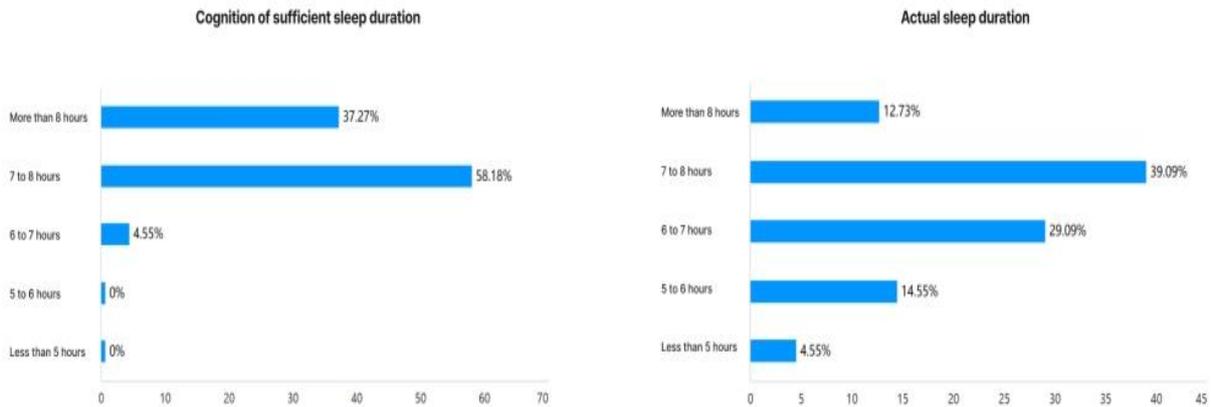


Figure 3. Data on university students' perceptions of sleep duration and actual sleep duration.

It is worth noting that 79.09% of university students have the habit of using their smartphones before bedtime, 50% of students do not exercise regularly, and 55.45% of students have irregular eating habits. Fortunately, 84.55% of students do not have the habit of smoking or drinking alcohol. 85.45% of the respondents have a history of insomnia, with the highest number experiencing sleep disorders and poor daytime mental states. Among the coping methods, the highest proportion is using relaxation exercises before bedtime, which is generally considered to have the best effect on improving insomnia. Although 69.09% of university students have not used sleep aid apps, 75% are willing to try, with the highest interest in sleep tracking and analysis functions.

From the above data, several conclusions can be drawn. Firstly, insomnia is indeed prevalent among university students, and most university students have relatively consistent basic knowledge of sleep. Secondly, excessive reliance on electronic devices and unhealthy lifestyle habits exacerbate insomnia among university students. Thirdly, university students' coping methods for insomnia are uncertain; they generally adopt pre-sleep relaxation exercises as a means to combat insomnia, but the effectiveness is not yet clear. Fourthly, university students show a high acceptance of sleep-related applications.

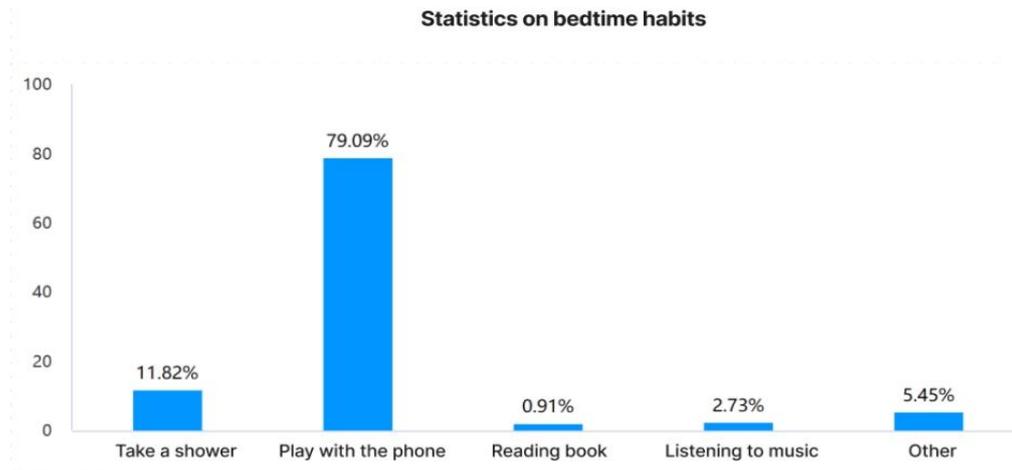


Figure 4. Statistics on bedtime habits.

**Insight Analysis of University Students Through In-Depth Interview**

To gain a more precise understanding of the needs and expectations of university students in order to find targeted approaches to address insomnia, semi-structured in-depth interviews were conducted with five students who had previously used sleep assistance applications to manage insomnia. When selecting interviewees, gender and differences in academic pressures across various majors were taken into account. The detailed profiles of the interviewees are shown in Table 3. The in-depth interviews primarily focused on daily habits, understanding of sleep assistance application functionalities, preferences for sleep coping methods, expectations from sleep assistance, and other related aspects. Through these in-depth interviews, typical persona and user journey map were developed. Refer to Figure 5 and Figure 6 for more details.

Through in-depth interviews and analysis of the interview results, we obtained the following findings.

- The unique lifestyle rhythm and sources of stress among university students are important factors influencing sleep.
  - University students lack awareness of the harms of insomnia and tend to neglect treatment.
  - Insufficient sleep leads to poor daytime alertness, while paradoxically, students may experience heightened excitement before bedtime, possibly due to a retaliatory psychology against early sleep.
  - Personality and psychological factors can exacerbate the likelihood of insomnia.
  - The moments of waking up and before bedtime are crucial for real-time intervention, assisting in adjusting arousal levels and creating a comfortable atmosphere.
  - Students prefer to engage in communication and interaction through social media and groups.
  - They are increasingly looking forward to real-time online professional guidance and relevant benefits provided by the school.

Table 3

*Profiles of the Interviewees*

Respondent	P1	P2	P3	P4	P5
Age	23	19	21	24	22
Gender	Female	Female	Male	Male	Female
Profession	Linguistics major	Design major	Finance major	Automotive engineering major	Biology major

Table 3 to be continued

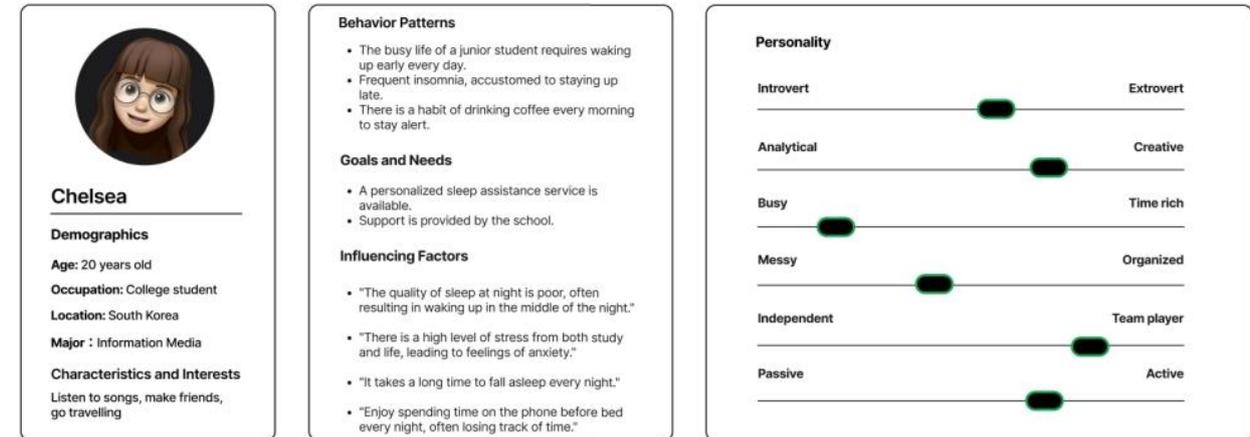


Figure 5. Persona (drawn by the authors).

User Journey Map

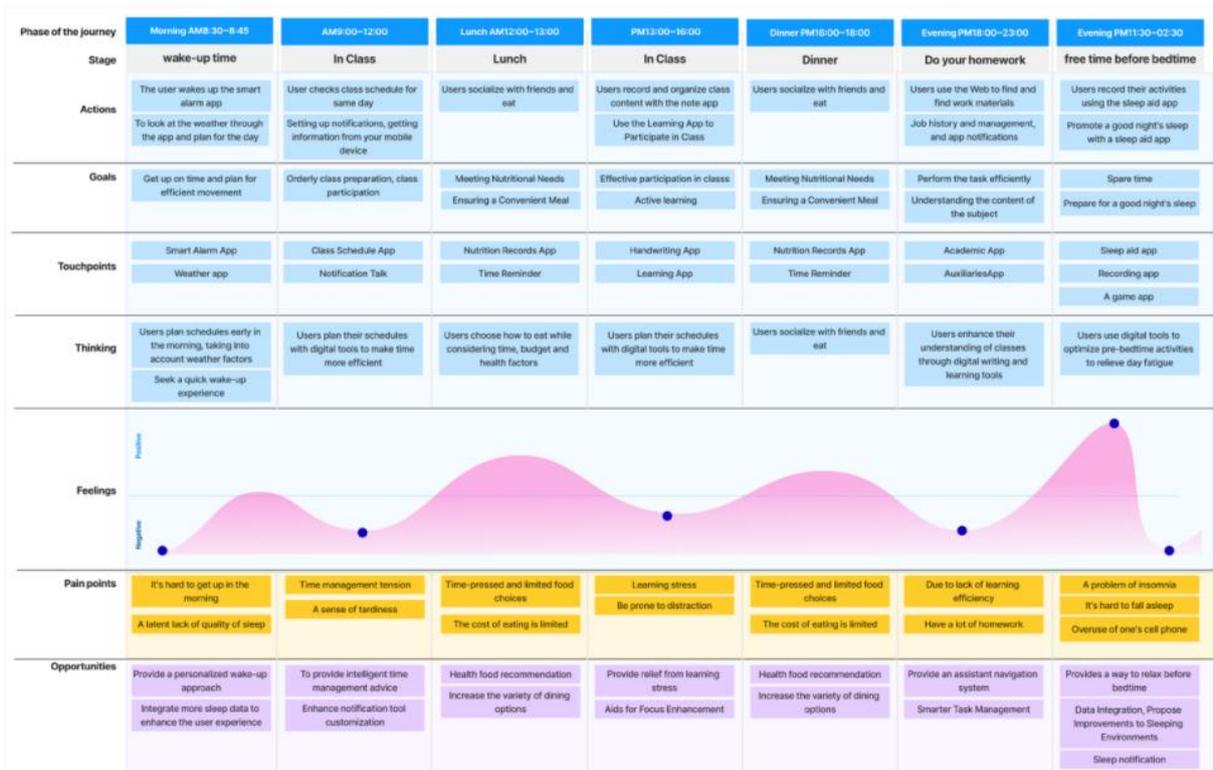


Figure 6. User journey map (drawn by the authors).

## Discussion

The findings of this study emphasize the complex and multifaceted nature of insomnia among university students, highlighting their distinct needs and expectations in addressing sleep issues. The majority of students

reported a high prevalence of insomnia, with primary contributing factors identified as irregular lifestyles, reliance on electronic devices, and academic stress. These findings align with previous research that underscores the vulnerability of university students to sleep disturbances due to their unique lifestyle and stressors.

This study also sheds light on students' preferences for online and school-based services to manage insomnia. Notably, a significant portion of students expressed interest in sleep aid applications, particularly those offering sleep tracking and real-time professional guidance. This suggests a strong inclination towards technology-enhanced, human-centered interventions. Furthermore, in-depth interviews revealed that students prefer interactive solutions that incorporate social elements, allowing them to share their experiences and seek support through social media platforms or online groups. These preferences indicate an emerging demand for comprehensive, community-oriented, and accessible health services that can adapt to students' schedules and lifestyle.

The identified needs and desires of students reflect a broader trend toward human-centered service design in health and wellness, specifically emphasizing tailored interventions that resonate with user preferences. As insomnia affects not only individual well-being but also academic performance and social engagement, the study underlines the importance of prioritizing the user experience in the design of insomnia intervention services. This approach enhances the accessibility and perceived effectiveness of the services, addressing both practical and psychological needs of students.

### Conclusion

This study offers valuable insights into the needs and expectations of university students in coping with insomnia, with implications for both theoretical and practical advancements in health service design. By identifying key factors contributing to insomnia and the preferred intervention methods, the research highlights the potential for human-centered, technology-supported approaches to significantly improve the quality and effectiveness of insomnia interventions for students.

The implications of these findings extend to educational institutions and health professionals, suggesting a need to adopt user-centered design principles in developing insomnia coping strategies. By prioritizing accessibility, real-time professional support, and social interaction features, stakeholders can create more holistic and supportive environments that align with students' evolving preferences. This study provides a foundation for future research in refining intervention strategies, with the aim of not only addressing insomnia symptoms but also fostering an environment conducive to overall student well-being.

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