

PHARMACEUTICS

MELATONIN USAGE AMONG MEDICAL STUDENTS IN AL-IRAQIA UNIVERSITY: A SUBJECT REVIEW

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<https://doi.org/10.5281/zenodo.20186459>

Abstract

1.1: Introduction: In response to challenges, many medical students turn to pharmacological sleep aids, including melatonin supplements, as means to regulate their sleep cycle.

1.2: Objectives: Assess the prevalence of melatonin use and its perceived benefits among in aliraqia university college of medicine.

1.3: Methodology: Data about demographics, time of melatonin use, perceived reasons for exogenous melatonin use, melatonin use in relation to exam periods, perceived safety, and adverse effects were gathered.

1.4: Results: About 100 students, 70% reported using exogenous melatonin for sleep disorders. Most participants reported using melatonin during and after exam periods. Additionally, several 37% believed that its use was safe. The predominant use patterns were daily and as needed, and this study observed a higher rate of use compared with previous studies in Al-Iraqia University College of Medicine. The most frequently reported adverse effect was headache 47%. A significant number of undergraduate male students in health specialties used melatonin. A high rate of melatonin use was noted during exam periods, which was attributed to sleep deprivation.

1.5: Conclusion: Additionally, a significant number of students from private universities reported using exogenous melatonin. Melatonin use is common among university students. Future research should use a reliable psychometric measure to test its effect on university students' sleep quality and quantity.

2. Introduction

Sleep is an essential biological function that plays a vital role in cognitive performance, memory consolidation, immune function, and emotional regulation. However, due to academic demands, stress, and irregular schedules, many university students—particularly medical students—experience chronic sleep deprivation and poor sleep quality. Studies have shown that medical students sleep significantly fewer hours than the general population, with many reporting difficulties in maintaining consistent sleep schedules due to long study sessions, clinical rotations, and night shifts. Sleep disturbances in this population have been linked to decreased academic performance, impaired clinical judgment, and an increased risk of anxiety, depression, and burnout ⁽¹⁾.

In response to these challenges, many medical students turn to pharmacological sleep aids, including melatonin supplements, as a means to regulate their sleep cycles. Melatonin, a hormone primarily secreted by the pineal gland, is integral to the regulation of the circadian rhythm, with levels rising in the evening to promote sleep onset and falling in the morning to facilitate wakefulness. Unlike prescription sedatives, melatonin is widely available over the counter and is often perceived as a safe and natural remedy for sleep disturbances. As a result, its use has increased significantly among students who experience difficulties in falling or staying asleep ⁽²⁾.

Although melatonin is generally considered safe, concerns remain regarding its long-term effects, potential for misuse, and the lack of standardized dosing guidelines. Many medical students self-prescribe melatonin without consulting a healthcare professional, assuming that its use is entirely risk-free. However, studies have shown that excessive or inappropriate use of melatonin can lead to adverse effects, including daytime drowsiness, dizziness, headaches, hormonal imbalances, and disruptions in natural melatonin production. Additionally, melatonin's effectiveness varies between individuals based on genetic factors, lifestyle habits, and sleep disorders, raising questions about its optimal use in this population ⁽³⁾.

Beyond its physiological effects, the increasing reliance on melatonin among medical students also raises ethical and professional concerns. As future healthcare providers, medical students' experiences with pharmacological sleep aids may influence their attitudes toward sleep management and prescribing practices. This trend highlights the need for greater awareness of evidence-based sleep hygiene practices and the potential risks associated with self-medicating for sleep disturbances ^(4,5).

Understanding the patterns, motivations, and consequences of melatonin use among medical students is essential for several reasons. First, it provides insight into whether students rely on melatonin as a temporary solution for acute sleep deprivation or if they are using it chronically without medical supervision. Second, it helps identify any misconceptions or knowledge gaps regarding melatonin's effectiveness, potential risks, and appropriate use. Third, it allows for the development of targeted educational interventions that promote healthier sleep habits, reducing the need for pharmacological sleep aids ^(6,7).

Finally, given that medical students are future healthcare professionals, their understanding and experiences with sleep management will shape their future patient care and recommendations.

This study aims to explore the prevalence, motivations, and effects of melatonin use among medical students. Specifically, it seeks to assess how frequently medical students use melatonin, their reasons for doing so, their knowledge of its potential risks, and any self-reported side effects. By analyzing these factors, this research aims to contribute to a broader understanding of sleep health in medical education and inform strategies to promote safe, evidence-based sleep management practices among students. With the increasing reliance on melatonin supplements, it is imperative to examine their role in medical students' sleep behaviors and overall well-being, ensuring responsible usage in this academically demanding population.

2. METHODOLOGY

The methodology section serves as the blueprint for executing the research objectives with precision, rigor, and reliability. In this section, we delineate the methodological framework guiding data collection, analysis, and interpretation, ensuring methodological transparency and integrity throughout the research process. A questionnaire was prepared and presented to the students of the Iraqi University in Baghdad (as a cross sectional study)on November 13, 2024, and it remained effective for one months,100 students from various colleges of the Iraqi University, especially the College of Medicine Research Design Central to this study is the adoption of a mixed-methods research design, synthesizing quantitative and qualitative approaches to capture the complexity and nuance inherent in the investigation of using melatonin and its multifaceted impacts. **Sampling Strategy:** - A purposive sampling strategy will be employed to recruit participants representative of the diverse demographic profile within the college community. Stratification by using melatonin to improved sleeping (strongly disagree, disagree, neutral, agree, strongly agree) will be utilized to ensure adequate representation across the spectrum, facilitating robust comparative analyses and insights generation. **Data Analysis** Quantitative data will be analyzed using statistical software packages, employing descriptive and inferential statistical techniques to elucidate patterns, associations, and correlations between variables of interest. Qualitative data will be subjected to thematic analysis, iteratively coding, and categorizing emergent themes to distil salient patterns and interpretations. **Ethical Considerations:** - Ethical principles

will underpin all facets of the research process, ensuring the protection of participants' rights, confidentiality, and anonymity. Informed consent will be obtained from all participants, and measures will be implemented to minimize potential harm or distress arising from participation.

Studying Type: - The methodological approach employed in this research encompasses a mixed- methods study design, leveraging a combination of cross-sectional survey methodology and Likert-scale survey instruments to comprehensively address the research objectives.

Questionnaire Structure: - Utilizing Google Forms, the questionnaire was disseminated electronically to participants, allowing for seamless access and submission of responses at their convenience. The online format facilitated efficient data collection and minimized logistical constraints associated with traditional paper-based surveys. The questionnaire utilized in this study was meticulously structured to encompass distinct sections, each tailored to capture diverse dimensions of the research inquiry. The questionnaire was divided into three main sections, each focusing on specific domains pertinent to the investigation of using melatonin and its multifaceted impacts. The number of questions was 17 multiple-choice and short answer: The first section (Anthropometric Information): the questionnaire gathered information on the sociodemographic characteristics of the students (Student grade, Gender). The second section: included 9 questions on patterns of exogenous melatonin use from the students' perspective, the main reasons for exogenous melatonin use, dose and the use of melatonin in relation to examination periods or after and time taking before sleeping, sleeping for (1-4 or 5-8) hours after taking, misused and taking another drug and what is it? The third section (Health-related Inquiries): Finally, perceived safety and improved sleeping or not, the list of potential adverse effects included headache, nausea, dizziness, sleepiness, or no side effects and feeling when used. The questions further investigated the recommend melatonin to other university students who have sleeping difficulties, rely melatonin to sleep (strongly disagree, disagree, neutral, agree, strongly agree)

3. Results:

- Total number of 100 medical students participated in the study. Among them, 47% were male and 53% were female.

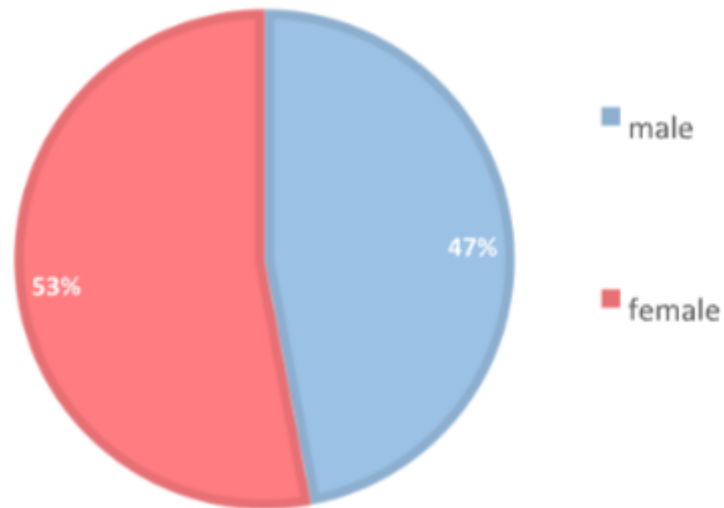


Figure 1: - Melatonin usage in both male and female.

70% of participants reported using melatonin as a sleep aid for insomnia

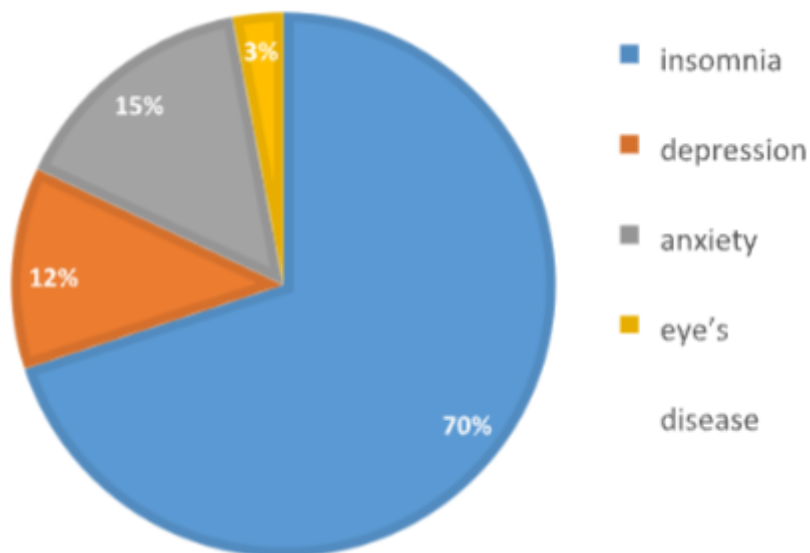


Figure 2: - Causes of melatonin use in participants.

The most commonly used dose was **10 mg**, with variations ranging from **1 mg** to **20 mg**.

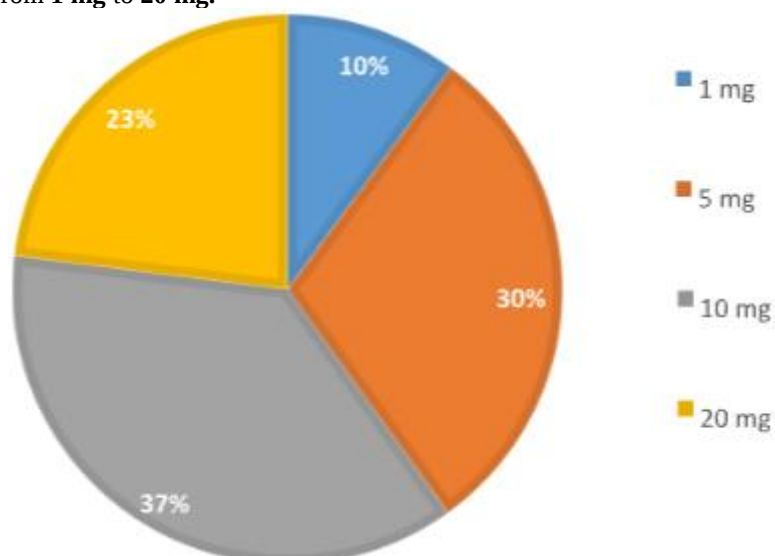


Figure 3:- The use of different dosage of melatonin.

Table 1

The time of melatonin taken before sleep.

Time before sleep	percentage
20-40 min.	48%
1 hr.	44%
2 hr.	8%

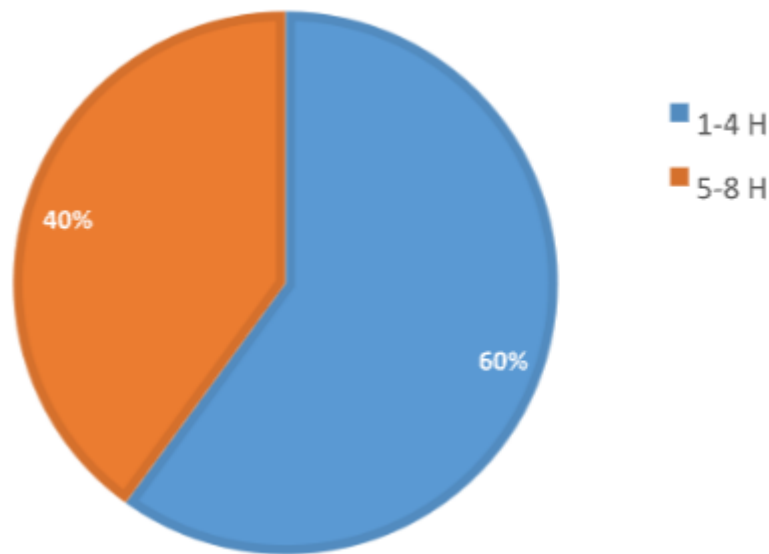
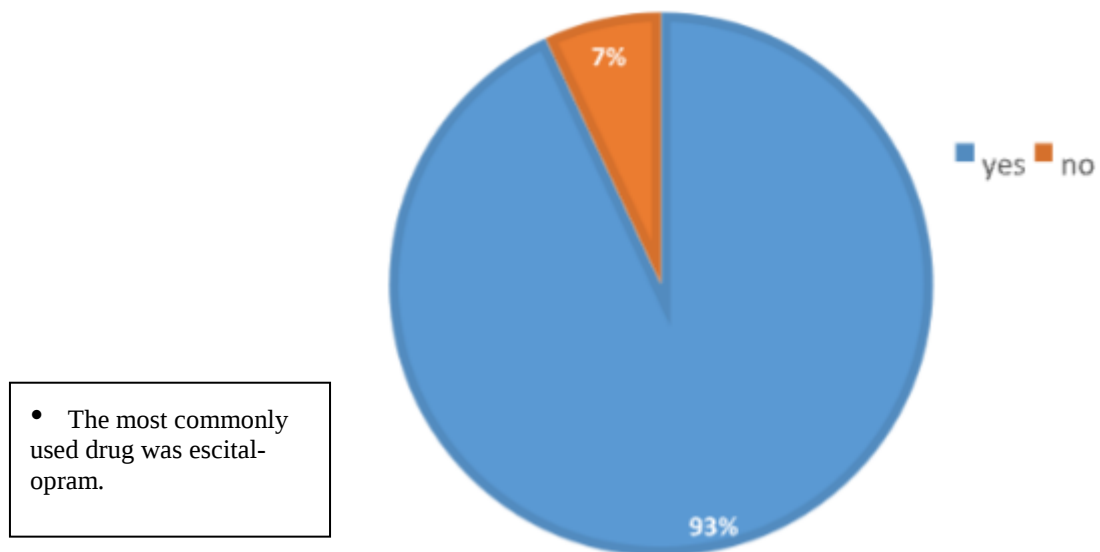


Figure 4: - Participants reported different sleep durations after melatonin use:

- 60% of users slept for 1-4 hours.
- 40% of users slept for 5-8 hours.



- The most commonly used drug was escitalopram.

Figure 5: - 93% of participants reported taking another drug alongside melatonin.
7% reported no use of additional medications.

Table 2

The most common side effects reported were:

Side effects	Percentage%
Headache	17%
Sleeping	16%
Dizziness	12%
Nausea	8%
No side effects	47%

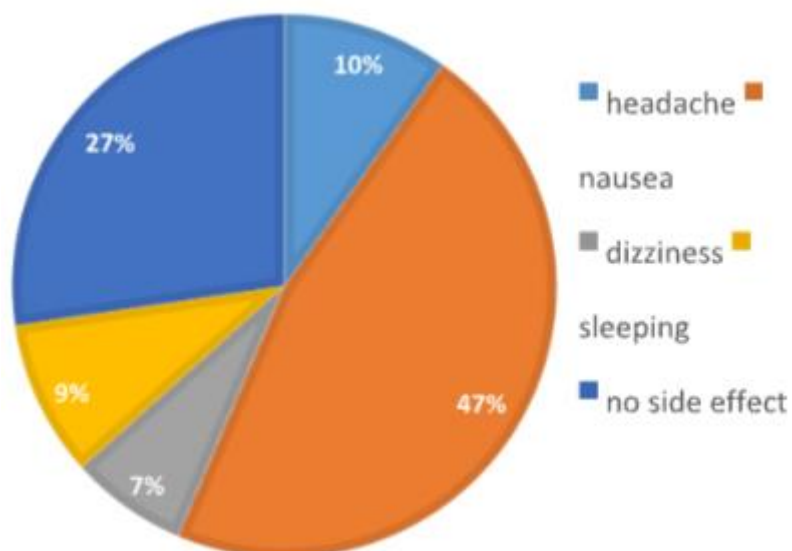


Figure 6:- Side effects that reported while using melatonin.

Table 3

How participants feel when taking melatonin.

Feeling of participants	Percentage%
Alertness	23%
Refreshed	10%
Dehydrated	6%
Irritated	5%
Dizziness	5%
Normal	51%

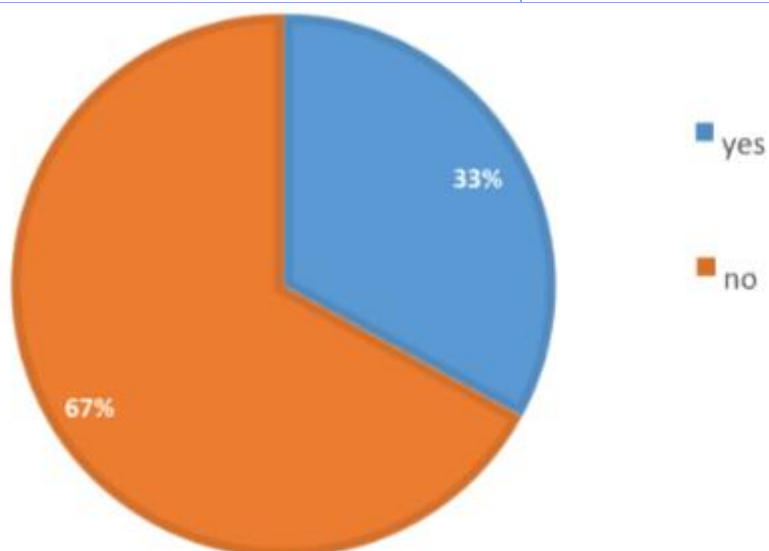


Figure 7: - 33% of students reported using melatonin during exams period.

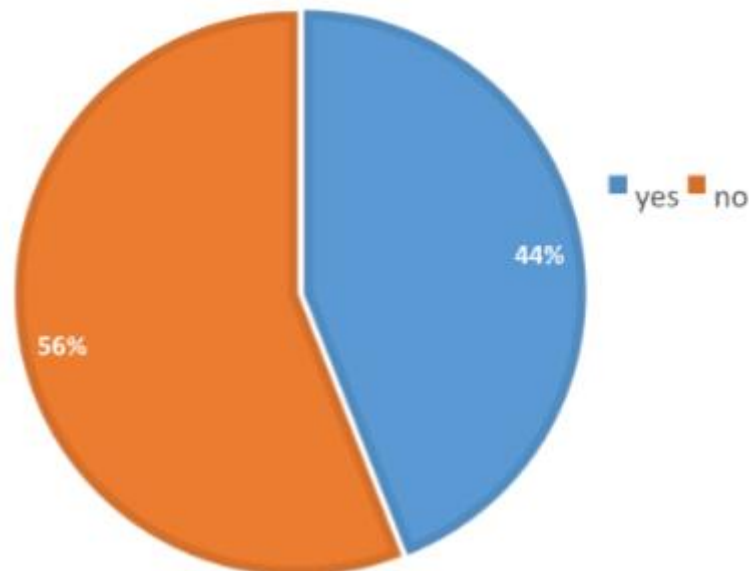


Figure 8:- 44% of students reported using melatonin after exams period.

Table 4 :- Feedback of participants about relying on melatonin to sleep.

Items	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Melatonin has improved my sleep quality	8%	33%	46%	8%	5%
Melatonin is safe to use	17%	34%	30%	12%	7%
I will recommend melatonin to other university students who have sleeping difficulties	10%	40%	32%	7%	11%
I relay on melatonin to sleep	3%	17%	37%	25%	18%

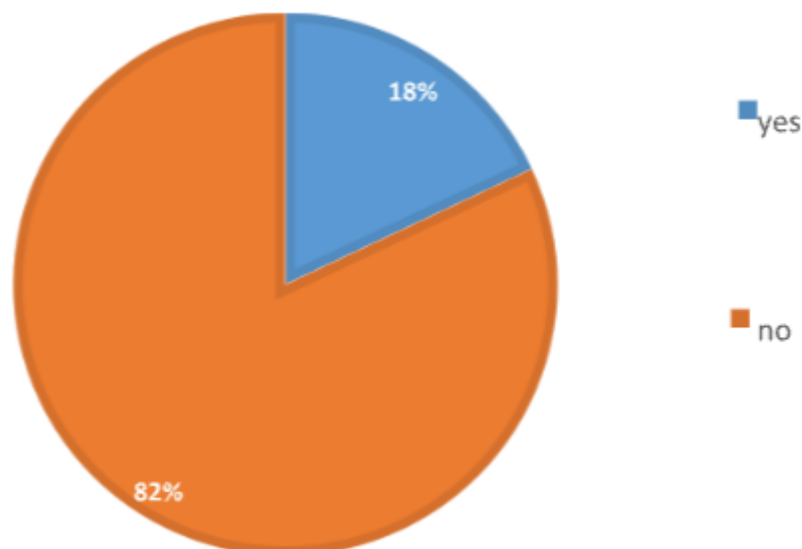


Figure 8: - 18% of participants have misused melatonin.

4. Discussion

This study assessed medical students' attitudes toward melatonin usage. The study also estimated the prevalence of melatonin misuse and the factors associated with it among al Iraqia medical students. These results provide valuable insights into the prevalence, patterns, and misuse of, and attitudes toward, exogenous

melatonin among university students. More than half of the participating students reported self-medication with melatonin to manage their sleep disorders. Similar studies have shown an increase in the self-prescription of melatonin among medical students to cope with the highly demanding learning environment and to meet

the expectation of managing the academic load. Medical students appear to consume a high quantity of sleeping aids, possibly owing to their greater familiarity with hypnotic agents by virtue of their studies. The observed higher rates of use could be attributed to misuse, perceived safety, observed low levels of adverse effects and easy access.

Another significant finding reported the high use of exogenous melatonin among students studying in health and/or medical schools compared with students studying in non-health related. The examination period showed relatively higher rates of use, which could be attributed to sleep deprivation.

This study also found that melatonin is perceived as safe and effective by university students. About 46% of these students reported as good effective concerning its effectiveness in improving the quality of sleep during examination periods. The study also show that female students are more likely to consume melatonin than the male.

The study provided evidence of factors associated with uses of melatonin, such as needing of more than 20 min to fall asleep, and sleeping almost for 5-8 hours. Notably, the results from this study concluded that 5 mg melatonin intake is effective in improving the psychomotor and physical performance of sleep deprived students.

Medical students' attitudes toward the usage of melatonin were assessed after considering the following as indicators of misuse: use of melatonin almost daily, use in greater amounts than the recommended dose and self-prescription, most students self-prescribed of melatonin, which was considered a misuse attitude. Similar studies have shown self-prescription to be a common issue among medical students; self-prescription is exacerbated by easy accessibility and the availability of several types of over-the-counter drugs, such as Panadol Night and melatonin. Although self-prescribed medications can have some benefits when used appropriately, it is a dangerous practice that can delay an accurate medical diagnosis and result in adverse effects, drug interactions, and developing dependence, thereby aggravating what was intended to be treated.

The rising prevalence of sleep disturbance and melatonin use among university students warrants further investigation and intervention strategies. Future research should explore the factors influencing melatonin use, including academic stress and, underlying mental health conditions, in depth⁽⁸⁻¹⁰⁾. Additionally, studies should assess the long-term effects of melatonin use in this population, particularly with regard to potential dependence on or interactions with other medications. Within universities and colleges, it is essential to offer students information, programs, and resources on sleep hygiene and the appropriate use of sleeping aids.

Notably, a multifaceted approach that combines education, mental health support, and accessible therapeutic interventions can help improve sleep health and reduce the reliance on melatonin among university students^(11,12).

Universities and health services can play a pivotal role in addressing this issue. Proactive measures include educational programs such as workshops and

seminars on healthy sleep habits, the risks and benefits of melatonin, and alternative sleep promoting strategies. These initiatives can empower students to make informed decisions about their sleep health. Increasing access to mental health services and promoting help-seeking behaviors can address the underlying conditions contributing to sleep disturbance and consequent melatonin use^(13,14).

Despite these limitations, this study sheds light on the prevalence of regular melatonin uses among university students in IUCOM; this may inform future research and lifestyle medicine interventions targeting university students.

Conflict of Interest

The authors declare that there is no conflict of interest.

Acknowledgement

Authors would like to thankful university of Al-Iraqia for offering a great support for current study.

5. Questionnaire:

5.1 Series 1: indication of Melatonin use:-

1. I use melatonin for:

- ☒ A) **Insomnia**
- ☐ B) Depression
- ☐ C) Anxiety
- ☐ D) Eye's disease

2. How much times are you taking Melatonin before sleep:

- ☒ A) **20-40 minutes**
- ☐ B) 1 hour
- ☐ C) 2 hours

3. How many hours do you sleep after taking Melatonin:

- ☒ A) **1-4 hours**
- ☐ B) 5-8 hours

4. Are you taking another drug while using Melatonin, what is it:

- ☒ A) **Yes**
- ☐ B) No

5. Commonly used dose of Melatonin:

- ☐ A) 1mg
- ☐ B) 5mg
- ☒ C) **10mg**
- ☐ D) 20mg

6. I use Melatonin during my exams:

- ☐ A) Yes
- ☒ B) **No**

7. I use Melatonin after my exams:

- ☐ A) Yes
- ☒ B) **No**

8. Have you ever misused Melatonin:

- ☐ A) Yes
- ☒ B) **No**

5.2: Series 2: Physical effect of Melatonin on the student:

1. Side effect appear while using Melatonin:

- ☐ A) Headache
- ☒ B) **Nausea**
- ☐ C) Dizziness

- D) Sleeping
- E) No side effects
- 2. How do you feel when taking Melatonin:
- A) Refreshed
- B) **Normal**
- C) Alert
- D) Dehydrated
- E) Irritated
- F) Dizzy

5.3: Series 3: Students opinion about using of Melatonin and its effect:

1. Melatonin has improved my sleep quality:

- A) Strongly agree
- B) Agree
- C) **Neutral**
- D) Disagree
- E) Strongly disagree

2. Melatonin is safe to use:

- A) Strongly agree
- B) **Agree**
- C) Neutral
- D) Disagree
- E) Strongly disagree

3. I will recommend Melatonin for other university students who have sleeping difficulties:

- A) Strongly agree
- B) **Agree**
- C) Neutral
- D) Disagree
- E) Strongly disagree

4. I rely on Melatonin to sleep:

- A) Strongly agree
- B) Agree
- C) **Neutral**
- D) Disagree
- E) Strongly disagree

6. Recommendation

Policy recommendations for the use of melatonin should focus on safety, efficacy, and public awareness. Here are some suggestions:

6.1: Public Education Campaigns

- Awareness Programs: Launch educational initiatives to inform the public about the appropriate use of melatonin, potential side effects, and the importance of consulting healthcare providers before starting supplementation. This could include information on when melatonin is beneficial versus when behavioral interventions may be more appropriate.

- Targeted Information for Specific Groups: Provide tailored guidance for vulnerable Regulation and Quality Control.

- Targeted Information for Specific Groups: Provide tailored guidance for vulnerable populations, such as children and the elderly, emphasizing that melatonin should not be used casually or without medical advice.

6.2: Research Funding

- Support Clinical Trials: Increase funding for research to explore the long-term effects of melatonin use, its efficacy across different sleep disorders, and its

interactions with other medications. This would help build a stronger evidence base for clinical recommendations.

- Investigate Broader Applications: Encourage studies into melatonin's potential benefits beyond sleep disorders, such as its role in managing mood disorders or metabolic conditions.

6.3: Healthcare Provider Training

- Continuing Education: Implement training programs for healthcare providers on the latest research regarding melatonin use, including its benefits, risks, and appropriate prescribing practices. This will enable providers to offer informed recommendations to patients considering melatonin supplementation.

By focusing on these areas, policymakers can help ensure that melatonin is used safely and effectively while maximizing its potential benefits for those struggling with sleep issues.

6.4: Communication and Consent

- Informed Consent: Patients or guardians must be informed about the off-label status of melatonin and the potential risks involved. Clear communication regarding treatment expectations is crucial.

- Collaboration with Primary Care: Ongoing communication with primary care providers is essential for monitoring treatment effects and making necessary adjustments.

These recommendations aim to optimize the use of melatonin while minimizing risks associated with its off-label use in various populations.

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