

Prevalence of Hypnotic Drug Use among University Students in Saudi Arabia

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ABSTRACT

The consumption of hypnotics by university students has become a rising issue in connection to problems such as sleeping troubles, academic pressures, and addiction behavior issues. Nonetheless, the data on this issue for the Middle East countries, especially Saudi Arabia, is limited. To determine the prevalence of hypnotic drug consumption by university students residing in Saudi Arabia, and to measure its connection with symptoms of addiction along with academic and cognitive outcomes. A cross-sectional study was conducted among undergraduate university students in Saudi Arabia from October to December 2025. A total of 298 eligible students completed the questionnaire and were included in the final analysis, comprising 73 medical students and 225 non-medical students. Data were collected using an anonymous structured online questionnaire developed for this study. The questionnaire comprised four sections covering demographic and clinical characteristics, patterns of hypnotic drug use (prescribed and non-prescribed), self-reported cognitive and academic changes over the preceding 12 months, and an assessment of hypnotic-related substance use disorder adapted from the 11 DSM-5 diagnostic criteria, with severity categorized as mild, moderate, or severe. Content validity was confirmed through expert panel review, and face validity and internal consistency (Cronbach's $\alpha > 0.7$) were established through a pilot study. Data were analyzed using SPSS version 27, utilizing descriptive statistics, comparison testing, and multivariate linear regression. A p-value < 0.05 was considered statistically significant. The inclusion criteria for the study were undergraduate university students in Saudi Arabia, including both medical and non-medical students, who were above 18 years of age, currently registered at their universities during the study period, and willing to participate by providing electronic informed consent. Hypnotic medications were defined as medications used for sleep induction and maintenance, excluding melatonin. The exclusion criteria included non-university students, postgraduate students, and participants who refused to provide consent or did not complete the questionnaire. The study involved a total number of 298 respondents, comprising 73 medical and 225 non-medical students. The consumption of hypnotic drugs was reported in both categories of respondents, but there was no statistically significant difference in the degree of hypnotic substance abuse disorder between the two groups of respondents ($p > 0.05$). There were also no differences in any of the academic and cognitive performances. However, some percentage of the respondents reported difficulties in concentration and memory. In the multivariate regression analysis, marital status ($B = 0.460$, $p = 0.044$) and change in college attendance ($B = 0.575$, $p = 0.037$) were significant independent predictors of severity, and other demographic factors were not significant. Hypnotic drug use is common among university students in Saudi Arabia and is linked with cognitive and functional problems without any apparent difference in their academic performance. This study highlights the need for interventions to foster good behavior among university students.

Keywords: hypnotic drugs, university students, addiction, sleep, academic performance, Saudi Arabia

INTRODUCTION

Sleep disorders are common among university students and might be associated with stress factors, intense workloads, irregular schedule, and psychological strain. Medical students may be more susceptible to sleeping problems owing to the constant academic demands and need for updating their knowledge in a changing environment. Under the influence of stress, anxiety, and insomnia, some students might resort to the use of hypnotic drugs to alleviate their state. A hypnotic drug refers to a substance that causes sedation through decreased irritability or excitement of an individual and is used to initiate sleep¹.

While using hypnotic drugs provides some benefit to one's health, improper and uncontrolled use can result in a number of negative

effects, such as development of tolerance and addiction, inability to concentrate and have a good memory, as well as decrease in physical activity. Insomnia, by itself, might have a negative impact on psychological well-being and proper immunity functions. As a way to deal with insomnia or long hours of studying, some students can use sleeping drugs and even stimulants, worsening their ability to concentrate and perform effectively^{2,3}.

Several researchers noted that the consumption of sedatives and hypnotics is a common phenomenon among students, and there might be correlations between such medication use and negative mental health consequences as well as poor academic performance. One study conducted in 2020 showed that the intake of drugs for alleviation of

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anxiety and inducing sleep had a correlation with suicidal ideations and behaviors in university students⁴. Another research highlighted that low sleep efficiency, sleeping difficulties, and the use of sleeping pills were serious issues related to poor sleep quality in university students⁵. According to the previous research among medical students at King Saud University, Saudi Arabia, 17.0% of students used sedatives³.

Hence, the rising number of hypnotic drugs used by university students is a significant issue concerning public health. Previous studies have shown that the use of hypnotic drugs leads to problems such as cognitive impairment, lower alertness, and depression⁷. It has also been found that medical students experience high levels of stress in Saudi Arabia. Such cases have been observed among students studying in King Saud University and King Faisal University⁸. Nevertheless, studies related to the use of hypnotic drugs among university students in Saudi Arabia are scarce. This study attempts to determine the frequency of the use of hypnotic drugs among university students and their relationship with addiction symptoms, academic achievements, and cognition problems.

METHODOLOGY

Study Design and Participants: In the current cross-sectional analysis study, data were collected between October and December 2025 among undergraduate students in Saudi universities. Undergraduate students currently registered in Saudi Arabian universities were considered as the target group for inclusion in the study. The inclusion criteria for the study were undergraduate university students in Saudi Arabia, including both medical and non-medical students, who were above 18 years of age, currently registered at their universities during the study period, and willing to participate by providing electronic informed consent. Hypnotic medications were defined as medications used for sleep induction and maintenance, excluding melatonin. The exclusion criteria included non-university students, postgraduate students, and participants who refused to provide consent or did not complete the questionnaire.

Sampling and Recruitment: Convenience sampling methodology was adopted for selecting respondents. An online survey tool using Google Forms was developed and used to capture data anonymously. The survey tool was expected to take about five minutes to fill out and participation was voluntary. In order to prevent duplication in answering the survey questions, Google Forms' option for collecting a single response was enabled, and only fully filled forms were used. The sample size was calculated using Epi Info software developed by the Centers for Disease Control and Prevention (CDC), based on the prevalence of sedative/hypnotic medication use among university students reported at King Saud University (17%)³. Using a 95% confidence level, the minimum required sample size was calculated to be 217 participants.

Data Collection Tool: The data were gathered through the structured online questionnaire prepared for this study after conducting an extensive literature review regarding hypnotic drug intake and drug dependence by university students. Four major segments were included in this structured online questionnaire. Section one focused on demographic and clinical factors such as age, gender, academic level, marital status, type of college, and chronic disease status. Section two was related to hypnotic drugs' pattern of usage. Here the participants were queried about their experience regarding the use of hypnotic drugs, specifically if there was any prescription or non-prescription use.

Section three consisted of the impact of the hypnotic drugs on academic life and cognitive performance during the past 12 months. The respondents shared their experiences regarding changes in grade

point average, daytime attention, information retrieval, attending college classes, exercising, and sleeping quality and quantity.

Substance use disorder related to hypnosis was evaluated based on 11 yes/no questions derived from the DSM-5 diagnostic criteria for substance use disorders. These questions were aimed at assessing substance intake in larger quantities or for extended periods compared to the intention, failure to cut down or quit the use, spending excessive time in acquiring or utilizing the substance, cravings, failure to meet responsibilities regarding major roles, using despite interpersonal conflicts, cutting down on significant activities due to substance use, engaging in hazardous situations while under the influence of the substance, continuing despite physical or psychological issues resulting from substance intake, developing tolerance, and experiencing withdrawal.

Validity and reliability: The content validity of the developed questionnaire was evaluated through a panel of experts. The panel consisted of five experts in the field of public health, community medicine, preventive medicine, biochemistry and family medicine. The experts independently evaluated the items for clarity, relevance and appropriateness of content and the questionnaire was modified accordingly. Face validity was subsequently established through a pilot study conducted via interviews with a convenience sample of 15 undergraduate students, in which participants were asked about the clarity and comprehensibility of the items. Internal consistency reliability was examined using Cronbach's alpha, which exceeded 0.7, indicating acceptable internal consistency.

Statistical Analysis: Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 27 (IBM Corp., Armonk, NY, USA). The analysis followed a structured pipeline. First, the dataset was checked for completeness and consistency and variables were coded before analysis. Normality of continuous variables was tested using appropriate statistical tests. Descriptive statistics were computed; categorical variables were presented as frequencies and percentages and continuous variables were presented as means and standard deviations or as medians according to their distribution. For bivariate analysis, testing was used to look into associations between categorical variables. Finally, a multivariate linear regression model was conducted to identify independent predictors of the severity of hypnotic use including demographic, academic and health-related variables. All tests were two-tailed, and a p-value of less than 0.05 was considered statistically significant.

Ethical Considerations: The study was approved by the Institutional Review Board of Fakeeh College of Medical Sciences, Jeddah, Saudi Arabia. Participation was entirely voluntary, and informed electronic consent was obtained from all participants prior to completion of the questionnaire. The respondents were informed about the purpose of the study, the anonymous nature of the survey and their right to withdraw from the study at any time without any penalty. No personal identifiers were collected and all responses were securely stored and analyzed in aggregate to protect the confidentiality of the participants.

RESULTS

A total of 298 students participated in the study, including 73 medical students and 225 non-medical students. The mean age was slightly higher among medical students compared with non-medical students (24 ± 12 vs. 23 ± 4 years). Females represented the majority of participants in both groups. Most students were single; however, marriage was more frequent among medical students than non-medical students.

Regarding academic level, medical students were mainly represented in the senior years, particularly the sixth year, whereas non-medical students were more concentrated in the fourth and fifth years. Chronic illness was reported by a minority of participants in both groups, with a slightly higher proportion among medical students. Additionally, prescribed hypnotic use was more commonly reported among medical students compared with non-medical students (Table 1). The study included students from both medical and non-medical colleges. Non-medical students represented the majority of the participants, accounting for 75% of the total sample, while medical students constituted 25% (Figure 1).

Changes in cognitive and academic functioning over the past 12 months were comparable between medical and non-medical students, with no statistically significant differences observed between the two groups across all assessed domains ($p>0.05$). Regarding academic performance, similar proportions of students in both groups reported no change in their GPA, while the remaining participants reported either an increase or a decrease. In terms of cognitive functioning, a considerable proportion of students in both groups reported decreased daytime focus and reduced ability to retrieve information. Similarly, sleep quality and duration tended to decrease among many participants, particularly among non-medical students. Changes in academic

Table 1. General Characteristics of the Studied Participants

General characteristics		Medical students (n = 73)	Non-medical students (n = 225)
Age (Mean $\pm$ SD) ^a		24 $\pm$ 12	23 $\pm$ 4
Gender ^b	Male	15 (20.5)	53 (23.6)
	Female	58 (79.5)	172 (76.4)
Marital status ^b	Single	58 (79.5)	209 (92.9)
	Divorced	1 (1.4)	3 (1.3)
	Married	14 (19.2)	13 (5.8)
Study year ^b	1	15 (20.5)	35 (15.6)
	2	7 (9.6)	36 (16.0)
	3	9 (12.3)	30 (13.3)
	4	17 (23.3)	64 (28.4)
	5	5 (6.8)	59 (26.6)
	6	20 (27.4)	0 (0.0)
Chronic illness ^b	Present	14 (19.2)	35 (15.6)
	Absent	59 (80.8)	190 (84.4)
Hypnotic use ^b	Prescribed	28 (38.4)	53 (23.6)
	Non-prescribed	45 (61.6)	172 (76.4)

Note. Frequency (%) unless otherwise noted. a Mean $\pm$ SD. b Frequency (%).

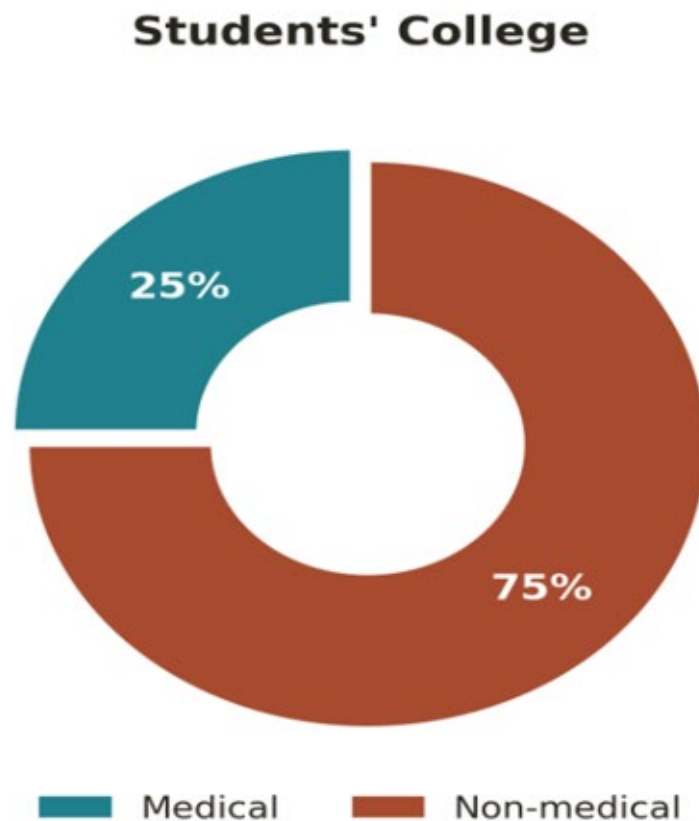


Figure 1. Distribution of students by college affiliation (Medical vs. Non-medical)

attendance and exercise activities varied across participants, with no clear predominance of improvement or decline, and no significant differences between medical and non-medical students (Table 2).

The comparison of the severity of hypnotic use disorders between medical and non-medical students showed that overall, the distribution of severity levels was comparable between the two groups. No statistically significant difference was observed between medical and non-medical students regarding the severity of hypnotic use disorders ($p>0.05$) (Figure2).

The multivariate regression analysis examining factors associated with the severity of hypnotic use disorders among the studied participants showed that most demographic, academic, and health-related variables were not significantly associated with the severity of hypnotic use disorders ($p>0.05$), including age, gender, study year, presence of chronic illness, prescription status of hypnotic use, and college type. However, marital status and academic attendance were found to be significant predictors. Being married was associated with higher severity scores of hypnotic use disorders ($B = 0.460$, $p = 0.044$). Additionally, changes in academic attendance were significantly

Table 2. Changes in Cognitive and Academic Functioning Over the Last 12 Months Among the Studied Participants

Cognitive and academic functioning		Medical students (n = 73)	Non-medical students (n = 225)	p
Current GPA	No change	27 (37.0)	88 (39.1)	.532
	Increased	27 (37.0)	68 (30.2)	
	Decreased	19 (26.0)	69 (30.7)	
Daytime focus	No change	26 (35.6)	63 (28.0)	.234
	Increased	22 (30.1)	60 (26.7)	
	Decreased	25 (34.2)	102 (45.3)	
Information retrieval	No change	23 (31.5)	85 (37.8)	.342
	Increased	24 (32.9)	55 (24.4)	
	Decreased	26 (35.6)	85 (37.8)	
Academic attendance	No change	37 (50.7)	101 (44.9)	.237
	Increased	17 (23.3)	76 (33.8)	
	Decreased	19 (26.0)	48 (21.3)	
Exercise activities	No change	26 (35.6)	82 (36.4)	.934
	Increased	20 (27.4)	65 (28.9)	
	Decreased	27 (37.0)	78 (34.7)	
Sleep quality/duration	No change	21 (28.8)	69 (30.7)	.455
	Increased	27 (37.0)	66 (29.3)	
	Decreased	25 (34.2)	90 (40.0)	

Note. Values are frequency (%). All p values > .05 (not statistically significant).

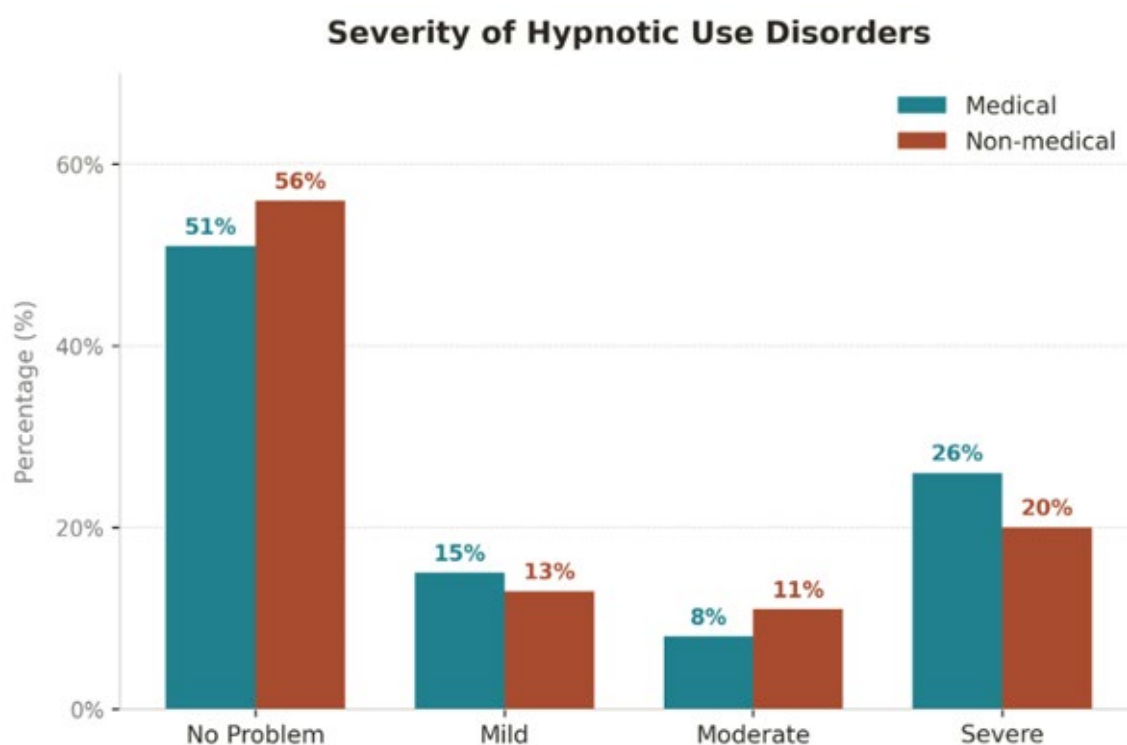


Figure 2. Severity of hypnotic use disorders by college affiliation (Medical vs. Non-medical students)

Table 3. Multivariate Regression Analysis for Factors Affecting the Severity of Hypnotic Use Disorders

Variable	<i>B</i>	SE	β	<i>t</i>	<i>p</i>	95% CI
Age	.006	.030	.013	.21	.832	[-.054, .066]
Gender	-.358	.465	-.045	-.77	.442	[-1.274, .557]
Marital status	.460	.228	.120	2.02	.044*	[.012, .908]
Study year	-.110	.126	-.051	-.87	.385	[-.357, .138]
Chronic illness	-.313	.533	-.035	-.59	.557	[-1.361, .735]
Prescription status	-.488	.443	-.065	-1.10	.272	[-1.361, .385]
Current GPA change	.390	.249	.096	1.57	.119	[-.101, .881]
Daytime focus	.220	.292	.056	.76	.451	[-.354, .795]
Information retrieval	.053	.299	.014	.18	.859	[-.535, .641]
Academic attendance	.575	.274	.137	2.10	.037*	[.036, 1.113]
Exercise activities	.236	.259	.060	.91	.364	[-.275, .746]
Sleep quality/duration	.006	.260	.002	.02	.981	[-.506, .519]
College type	-.114	.454	-.015	-.25	.801	[-1.008, .779]

Note. SE = standard error; CI = confidence interval; β = standardized coefficient. * $p < .05$.

associated with the severity of hypnotic use disorders ($B = 0.575$, $p = 0.037$). Other factors, such as changes in GPA, daytime focus, ability to retrieve information, exercise activities, and sleep quality and duration, were not significant predictors in the model (Table 3).

DISCUSSION

In this study, the effects of hypnotic drugs and addiction behavior were examined among students at the universities of Saudi Arabia. These findings will be valuable in the increasing number of researches conducted regarding sedative/hypnotic use in the student population, especially in the Middle East region where studies on the topic are scarce^{1,2}.

The results of the current study confirm those reported by the literature on the frequency of hypnotic and sedative drug usage among college students. For instance, the global prevalence of this behavior was found to be around 9.9%¹. At the same time, for the Middle Eastern countries and Saudi Arabia in particular, the frequency of such behavior varies from 12.5% to even up to 46% depending on specific populations and other parameters under consideration²⁻⁴. Nevertheless, one should point out that the current study revealed no considerable differences in severity between medical and non-medical students regarding their hypnotic use. As far as the literature review is concerned, such comparisons are scarce and, therefore, inconclusive⁵.

Even without significant variations in academic and cognitive performances between the two groups of participants, there was a sizable percentage of those who indicated their perception of negative impacts such as decreased ability to focus, poor memory recall, and lower quality of sleep. These results concur with previous findings regarding the negative consequences of the consumption of hypnotic medications, which include diminished alertness, memory problems, and motor function issues^{6,7}. Notably, it is important to clarify that there is no indication of any improvement in academic achievement or other daily functions from the consumption of hypnotics⁸. Nonetheless, few findings have indicated that there might be no impact on the next day due to some specific conditions⁹.

Marital status and academic attendance were identified as important determinants for the severity of hypnotics use disorder by the multivariate analysis. Regarding marital status, married participants scored higher than unmarried participants. This finding may reflect the additional psychosocial and financial responsibilities associated with marriage, which can contribute to higher stress levels, sleep

disturbances, and a greater tendency toward maladaptive coping strategies, such as the use of hypnotic drugs.

Previous research has suggested that psychosocial stressors and emotional burdens are closely linked to substance use behaviors and sleep-related medication misuse among university students and young adults^{11,12}. Studies included in this literature review also emphasized that stress-related sleep disturbances and mental health burdens are major contributors to the use of sleep medications in young adults and university students. Additionally, married students may find it difficult to balance their academic obligations with family and social responsibilities, which may increase their susceptibility to insomnia and dependence on sleep-inducing agents. Married students may therefore represent a subgroup exposed to additional role-related pressures that may negatively affect sleep quality and coping behaviors. Although the proportion of married participants in this study was relatively small, the observed association highlights the importance of considering social and familial contexts when evaluating risk factors for hypnotic use disorder. Although previous studies did not specifically investigate marital status as an independent predictor, the present findings suggest that social circumstances and life responsibilities may contribute to the severity of hypnotic use disorder among university students. It is recommended that future longitudinal studies be conducted to better understand the mechanisms underlying the association between university students' marital status and the use of hypnotic drugs.

Furthermore, alteration of academic attendance was observed to play an important role as well, possibly suggesting a possible two-way relationship between disability and substance abuse.

However, several common predictors mentioned in other studies, such as age, gender, academic years, and presence of chronic disease, were found insignificant in the current case. It should be noted that factors like poor sleep habits, psychiatric co-morbidity, and academic stress were emphasized in previous research as critical causes of drug use among students^{10,11}. The reduction of sleep duration was also stated as the reason behind the use of sedatives among students³.

The connection between the consumption of hypnotic drugs, problems with sleep, and cognitive performance seems to be complex. From the literature review, there exists a pattern whereby students experience stress at school, suffer from insomnia, and consume more sleeping pills^{12,13}.

Biologically speaking, hypnotics interact with GABA-A receptors and cause the CNS to become depressed, thus inducing tolerance and even

dependence when used consistently^{14,15}. Furthermore, problems with sleep itself are considered to be predictors of both substance abuse and relapse¹⁶.

From a psychological point of view, stressful experiences at school and the presence of certain negative emotions may contribute to the development of maladaptive coping mechanisms, one of which includes the consumption of hypnotic drugs¹⁷. On the behavioral level, insufficient physical activity and problems with sleeping patterns contribute to perpetuating this cycle¹³.

The results of this study reveal the necessity of developing interventions aimed at preventing the consumption of hypnotic drugs among university students. According to available studies, awareness programs could increase knowledge and help develop preventive behavior concerning the risks associated with the use of these medications^{18,19}. Nevertheless, empirical evidence is lacking when it comes to proving their efficiency in reducing drug use²⁰.

Since no considerable difference exists between medical and non-medical students, it would be wise to conduct prevention campaigns on a wider scale and not limit it to specific academic fields only. Screening procedures, provision of mental healthcare services, and promoting sleep hygiene can play an important role here²¹.

This research has been useful in gaining insights into hypnotic drugs utilization among students in Saudi universities. Moreover, the study has been useful in filling some gaps in the few studies that have been carried out comparing the usage of hypnotic drugs by medical and non-medical students.

There are several limitations to this study. First, it is important to note that cross-sectional research cannot establish causality; hence, there is need for further longitudinal research. Self-reporting could have introduced problems of recall bias. Furthermore, the research did not consider the use of objective measures of academic performance and mental illnesses. Lastly, there was an unequal group size in the two groups (medical and non-medical students).

CONCLUSION

The present study demonstrates that hypnotic drug use is prevalent among Saudi university students and is associated with addiction, sleep disturbances, and academic difficulties. The lack of a significant difference between medical and non-medical students indicates that hypnotic drug use is a widespread issue across various academic disciplines.

Although no objective decline in academic or cognitive performance was identified, a substantial proportion of students reported difficulties with attention, memory, and sleep, potentially influenced by psychological factors. Marital status and class attendance emerged as significant predictors of hypnotic drug use severity, whereas age, gender, and educational level were not significantly associated.

The findings suggest that the consumption of hypnotic drugs by university students is strongly correlated with stress, poor coping strategies and bad sleeping habits. However, the study was limited by its cross-sectional design, reliance on self-reported data, and lack of objective clinical assessment, which may affect the accuracy of the findings.

Future longitudinal and multi-centre studies based on objective measurements are recommended to better evaluate the long-term

effects of hypnotic drug use on academic and cognitive performance. In conclusion, the study underscores the need to raise awareness, offer mental health support, implement early screening programs, and encourage healthy sleep habits among university students.

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