



CAFFEINE USE DISORDER AND ITS ASSOCIATION WITH SLEEP QUALITY AMONG UNIVERSITY STUDENTS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Sleep is essential for cognitive functioning, emotional well-being, and overall health. However, university students often experience poor sleep quality due to academic stress and lifestyle factors, particularly caffeine consumption. Excessive caffeine intake can delay sleep onset and disrupt sleep patterns, leading to adverse health outcomes. This study aimed to assess caffeine consumption and its association with sleep quality among university students. **Methods:** A quantitative cross-sectional study was conducted among 194 students at Chitkara University, Punjab, using purposive sampling. Data were collected through standardized tools, including the Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality and the Caffeine Use Disorder Questionnaire (CUDQ) to evaluate caffeine consumption. Descriptive and inferential statistics were used for data analysis, including Pearson's correlation and chi-square tests. **Results:** The findings showed that 54.6% of participants had poor sleep quality, with a mean PSQI score of 6.00 ± 3.17 . The mean caffeine use disorder score was 7.60 ± 6.45 . A significant positive correlation was found between caffeine consumption and poor sleep quality ($r = 0.306$, $p < 0.001$). Additionally, significant associations were observed between caffeine use disorder and variables such as age, gender, year of study, residence type, craving for caffeine, and amount of intake. **Conclusion:** The study concludes that higher caffeine consumption is significantly associated with poorer sleep quality among university students. These findings emphasize the need for awareness programs and lifestyle modifications to promote responsible caffeine use and improve sleep hygiene.

KEYWORDS : Caffeine Use Disorder, Sleep Quality, Students, Caffeine Consumption.

INTRODUCTION

Sleep is a basic need that helps the body and mind work properly. It supports memory, thinking, emotions, and physical health. Getting enough sleep is important for students to do well in school and stay mentally healthy. However, many students aren't getting enough sleep because of school pressure, unpredictable schedules, too much screen time, and drinking things that make them alert. Not sleeping well can lead to trouble focusing, being easily upset, feeling anxious or sad, and doing worse in school. Not sleeping enough over a long time can also cause serious health issues like weight gain, high blood pressure, and heart problems.

Caffeine is the most common stimulant used around the world. It is found in coffee, tea, soda, energy drinks, chocolate, and other products. A lot of students use caffeine to stay awake during long study sessions or when they have a lot to do. Caffeine works by stopping a chemical in the brain called adenosine, which makes you feel tired. This can make it harder to fall asleep and reduce how long you sleep. It can also make sleep less restful by lowering deep sleep and causing more waking up during the night. How much caffeine affects someone depends on how much they drink, when they drink it, and how sensitive they are to it. Drinking caffeine late in the evening is more likely to cause trouble falling asleep and staying asleep. In recent years, energy drink use has gone up a lot among teens and young adults.

These drinks often have a lot of caffeine along with sugar, taurine, B-vitamins, and other stimulants. While these may help with alertness and concentration for a short time, drinking too much can cause problems like higher heart rate, anxiety, restlessness, and sleep issues. Many students don't know how much caffeine is safe to drink or the risks of drinking too much.

Several studies have found that drinking caffeine is linked to poor sleep among university students.

METHODOLOGY

The study used a quantitative method with a cross-sectional design. It took place at Chitkara University, covering classrooms, hostels, and common areas where students could be easily reached. To choose participants, a purposive sampling method was applied, and 194 students from various departments were selected as a study sample.

The tool is divided into three sections. The first section includes demographic variables such as age, gender, year of study, and residence (hostel/day scholar). The second section utilizes the standardized tool i.e. Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep duration, quality, disturbances, and daytime fatigue. The third

section examines caffeine consumption patterns, including type, frequency, quantity, and timing of intake through standardized CUDQ Questionnaire. To get approval from the research committee and relevant authorities.

RESULTS

Frequency and Percentage Distribution of Subjects According to Selected Demographic Variables

The study included 194 participants, with the majority (69.6%) aged between 18–20 years, followed by 21–23 years (26.8%), while very few were above 24 years. In terms of gender, more than half identified as “other” (55.7%), and 44.3% were female, with no male participants reported. Most students were in the 1st year (41.8%), and a large proportion resided at home (44.8%), followed by hostels (26.8%). The majority were unmarried (98.5%). Academic stress was predominantly attributed to a combination of extra study hours, assignments, and exams (77.3%). Regarding caffeine habits, 39.2% reported needing caffeine to start their day, and 45.4% experienced frequent cravings. Coffee (43.3%) and tea (33.5%) were the most commonly consumed caffeinated beverages. Most participants reported feeling more energetic (62.9%) or alert (26.8%) after consumption. Caffeine intake was most common in the evening (36.1%) and morning (30.4%), with the majority consuming 50–150 ml per serving (64.9%). Nearly half of the participants (49.0%) reported going to bed after 11 PM, and most slept for 5–6 hours (43.3%) or 7–8 hours (38.7%). Participants were mainly from BSc Nursing (43.3%) and B Pharmacy (42.3%), with smaller representation from other departments.

Caffeine Use Disorder Scores Frequency and Percentage Distribution of Caffeine Use Disorder Scores (Criteria-Based Categories) N=194

Criteria Measure of Caffeine Use Disorder Score		
Category	Score	Percentage
Severe Caffeine Use Disorder	(15-30)	16.0%
Moderate Caffeine Use Disorder	(10-14)	23.2%
Mild Caffeine Use Disorder	(5-9)	21.1%
No Caffeine Use Disorder	(0-4)	39.7%

Maximum Scores=30

Minimum Scores=0

Descriptive Statistics of Caffeine Use Disorder Scores N = 194

Descriptive Statistics	Mean	SD	Median	Range	Mean%
Caffeine Use Disorder Score	7.60	6.45	6.00	30	25.3%
Maximum= 30 Minimum= 0					

Caffeine Use Disorder Score

The mean caffeine use disorder score of the subjects was 7.60, with a standard deviation of 6.45, indicating wide variability in caffeine consumption behavior among the subjects. The median score was 6.00, suggesting that half of the subjects scored at or below this level. The maximum score recorded was 30, while the minimum score was 0, showing a broad range of caffeine use severity. The overall range was 30, and the mean percentage score was 25.3%, indicating a low-to-moderate level of caffeine use disorder among the subjects.

Frequency and Percentage Distribution of PSQI Scores (Criteria-Based Categories)

Criteria Measure of PSQI Score		
Category Score	Percentage	Frequency
Poor Sleep Quality (6-21)	54.6%	106
Good Sleep Quality (0-5)	45.4%	88
Maximum Score=21 Minimum Score=0		

PSQI Score Categories:

This table indicates that more than half of the subjects (54.6%) were classified under poor sleep quality with PSQI scores ranging from 6–21, whereas 45.4% of the subjects had good sleep quality with PSQI scores between 0–5. This finding shows that a considerable proportion of the study participants were experiencing poor sleep quality.

Descriptive Statistics of PSQI Scores

Descriptive Statistics	Mean	SD	Median	Maximum	Minimum	Range	Mean %
PSQI Score	6.00	3.17	6.00	15	0	15	28.6

Maximum= 21 Minimum= 0

PSQI Score:

The mean PSQI score of the subjects was 6.00, with a standard deviation of 3.17, indicating moderate variability in sleep quality among the subjects. The median score was 6.00, suggesting that half of the subjects had PSQI scores at or below this level. The maximum PSQI score recorded was 15, while the minimum score was 0, showing a wide range of sleep quality levels. The overall range of scores was 15, and the mean percentage score was 28.6%, indicating that, on average, subjects experienced a moderate level of sleep disturbance.

Diagram Showing Percentage Distribution of PSQI Scores



Objective 2: To Find Out the Correlation Between Caffeine Consumption with Sleep Duration and Quality Among College Students.

Correlation Between PSQI and Caffeine Use Disorder Scores

Pearson's Correlation	PSQI Score	Caffeine Use Disorder Score
Mean	6.00	7.60
SD	3.169	6.447
N	194	
Correlation	0.306	
Table Value	0.141	
P Value	<0.001	
Result	Significant	

Objective 3: To Find Out the Association of Caffeine Consumption with their Selected Socio-Demographic Variables.

Association of Caffeine Use Disorder Scores with Selected Demographic Variables:

A statistically significant association was found between caffeine use disorder scores and age ($p = 0.037$), indicating that the level of caffeine use disorder varied significantly across different age groups. Similarly, gender ($p = 0.001$) showed a significant association, suggesting

differences in caffeine use disorder across gender categories.

The year of study ($p = 0.001$) was also significantly associated with caffeine use disorder scores, reflecting that academic progression influences caffeine consumption patterns. In addition, residence type ($p < 0.001$) demonstrated a strong association, indicating that living arrangements significantly affect caffeine use disorder.

Among behavioral variables, the need for caffeine to start the day ($p < 0.001$) and craving for caffeinated beverages ($p < 0.001$) were highly significant, suggesting that dependency-related behaviors are strongly linked with higher caffeine use disorder scores. Furthermore, the type of caffeinated beverages consumed ($p = 0.027$) and the amount of caffeine consumed per intake ($p < 0.001$) were significantly associated, indicating that both type and quantity of caffeine intake contribute to disorder severity.

Association of PSQI Scores with Selected Demographic Variables

A Chi-square test was also applied to examine the association between Pittsburgh Sleep Quality Index (PSQI) scores and selected demographic and behavioural variables.

Similarly, academic stress/workload ($p = 0.889$) did not show a significant relationship with sleep quality. Although individuals who required caffeine to start the day tended to report poorer sleep quality, the association was not statistically significant ($p = 0.056$).

A statistically significant association was observed between craving for caffeinated beverages ($p = 0.001$) and PSQI scores, indicating that frequent craving is linked with poorer sleep quality.

DISCUSSION

The present study findings for survey students, ($n = 194$). The average level of caffeine Consumption was significantly higher in female students than male students ($p < 0.005$). Coffee was the highest favored source of caffeine (43.3%) followed by tea (33.5%).

These findings support by a study conducted by Zelal kharaba (2022) surveyed students, ($n = 467$) completed the survey 93.4%. The average level of caffeine consumption was significantly higher in females compared to male students ($p < 0.005$). Coffee was the highest favoured source of caffeine (67.7%) followed by tea (47.3%).

This findings Supported by a study conducted by Hassan Uzma (2020); majority students were females 128 (58.2%), maximum from third year class 78 (35.5%). Response to different questions was as follows; Preferred choice of caffeine was tea 92 (42.8%).

Objective 2: To Find out the Correlation Between Caffeine Consumption with Sleep Duration and Quality Among College Students.

The present study findings, PSQI score was 6.00 ± 3.169 , while the mean caffeine use disorder score was 7.60 ± 6.447 . Pearson's correlation analysis revealed a positive correlation coefficient ($r = 0.306$) between PSQI scores and caffeine use disorder scores. The obtained p value ($p = 0.004$), ($r = 0.579$, $p = 0.002$), ($r = 0.592$, $p = 0.001$).

This findings support by a study conducted by Ahmed Jawad (2023); PSQI scores in moderately caffeinated were also less as compared to highly caffeinated ($p = 0.000$). Within the low caffeinated, moderately caffeinated, and highly caffeinated subjects caffeine consumption was positively correlated to PSQI scores ($r = 0.529$, $p = 0.004$), ($r = 0.579$, $p = 0.002$), ($r = 0.592$, $p = 0.001$)

This findings Supported by a study conducted by a Sedat Arslan (2025); caffeine consumption was positively associated with sleep duration ($p < 0.05$), but no significant relationship was found with other components of sleep quality.

Objective 3– To Find Out the Association of Caffeine Consumption with their Selected Socio Demographic Variables.

The findings Supported by a study conducted by Mich  l (2013); Most participants were women (68%), aged 21-30 years (88%), with low annual household incomes (43%). Most perceived their academic loads as being heavy (68%), and most perceived their academic stress levels as being moderate (37%). Academic load was significantly correlated with stress level ($p < 0.001$). These beverages were significantly associated with academic stress or load.

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