

# Caffeine Consumption Pattern and Perception of Its Effect among University Students in Malaysia

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## ABSTRACT

The consumption of caffeine-based drinks has increased in recent years, especially among teenagers and young adults. Among university students, caffeine consumption is the main choice for those who want to focus on learning. Thus, the study aimed to identify patterns and perceptions of the effects of caffeine consumption among university students in Malaysia. This cross-sectional study involved 240 students selected using convenience sampling. The results revealed that about 60.5% of participants preferred coffee, followed by tea (23.3%), caffeinated soft drinks (11.9%), and energy drinks (4.3%). The study also found that male students are more likely to consume caffeine than female students. The results of students' perceptions of the effect of caffeine consumption on their learning found that most students agree that caffeine consumption can improve academic performance, reduce fatigue, increase self-confidence, and improve certain aspects of cognitive performance. However, excessive consumption of caffeine can lead to addiction and health problems. Therefore, the responsible parties need to play a role in increasing students' awareness of the side effects of excessive caffeine.

**Keywords:** Caffeine consumption, patterns, performance, students' perceptions, university students

## INTRODUCTION

People in Malaysia have traditionally consumed hot beverages like coffee and tea as part of their daily routine. It has now established a habit in local communities in Western countries, including the United States [1]. The prevalence of the world's population drinking coffee now, regardless of age, especially young people and teenagers aged 18–24, drink coffee to give them energy throughout the day [2] because coffee is an energy-boosting drink. Many foods and beverages, such as coffee, tea, and cocoa, contain caffeine naturally [3]. Caffeine is the most widely used stimulant of the central nervous system in the world [3] and is a type of psychoactive substance that comes from the pharmacological class of methylxanthine [4]. However, synthetic caffeine is often added to food and beverage products to enhance its stimulant properties. The daily caffeine intake should not exceed 400 mg [5, 6] to avoid side effects such as insomnia, anxiety, daytime sleepiness, poor academic performance, and more serious cardiovascular problems.

Caffeine consumption has a crucial impact on university students' learning. Caffeine is a psychoactive substance in coffee, tea, and energy drinks. It is the most popular alternative among students who want to focus during learning sessions and deal with academic pressure and social demands [7]. According to [8], the most preferred caffeine intake by students is coffee (67.7%), followed by tea (47.3%), with an average daily intake of 264 mg/day. Previous studies have indicated that caffeine consumption patterns among university students vary widely, influenced by gender, academic pressure, and social norms. For example, a study conducted by [9] on the consumption of energy drinks among students at a rural university in Texas

found that most of the students who consumed caffeinated drinks regularly and were the primary consumers were women and Caucasians. Research conducted among pharmacy students in Malaysia emphasized that the main reason for consuming caffeine is to feel more awake, especially during the examination period [10]. Additionally, research by [11] has shown that 90% of students consume caffeine, and most consume less than seven servings per week. Thus, it indicates that university students who are studying show strong caffeine consumption habits.

The high prevalence of caffeine consumption among university students contributes to the perception of caffeine, which can influence individual caffeine consumption habits [12]. Students frequently take this caffeinated beverage to stay awake while completing assignments and reviewing lessons. Excessive consumption of caffeine can cause symptoms such as insomnia, palpitations, headaches, and anxiety, especially in users who are not accustomed to it [7, 13]. As reported in 2014, an 18-year-old teenager from Ohio, United States, suffered cardiac arrhythmia and died from an overdose of pure caffeine powder [14]. As a result, ingesting too much caffeine over time can cause caffeine addiction symptoms as well as psychological instability, including severe anxiety [15].

The effect of excessive caffeine consumption on university students' learning is significant, affecting both their cognitive function and academic performance. Although caffeine consumption is commonly used to enhance the cognitive function of students, there is insufficient research on the frequency and types of caffeinated products utilized by university students, particularly in Malaysia. Therefore, this study aims to identify the frequency of caffeine consumption and the perception of its effect among university students in Malaysia. Understanding the perception of caffeine consumption among university students is vital for developing effective educational interventions and policies to promote healthier caffeine consumption habits. Therefore, identifying the factors that impact caffeine use and measuring students' awareness of its possible health concerns might provide important information about public health and nutrition.

## **METHODOLOGY**

### **Study design**

A convenience sampling method using a cross-sectional study was conducted among the students of UiTM Perak Branch, Tapah Campus, Malaysia from March to April 2024. Questionnaires were distributed to 240 undergraduate students through WhatsApp and Telegram Messenger. Every participant in this study gave their consent and was required to spend an average of five minutes completing an online questionnaire.

### **Research instrument**

The questionnaire contains 13 items that have been divided into three main parts: Part A: Demographic Profile (3 questions), Part B: Caffeine consumption patterns (4 questions), and Part C: Perceptions regarding the effects of caffeine consumption among students (6 questions). In part C, the instruments were assessed using a 4-point scale ranging from "1 – strongly disagree" to "4 – strongly agree".

### **Statistical analysis**

Data obtained throughout the study was assembled and statistically analyzed using the Statistical Package for the Social Sciences version 26.0 [16]. Descriptive statistics were applied as frequency and percentage to develop the frequency tables and graphs. The internal consistency reliability of the questionnaire was assessed using Cronbach's alpha. The consistency value of the reliability coefficient should exceed 0.7 [17]. The reliability test for items constructed in Part C is 0.832 which is above the consistency value.

## RESULTS AND DISCUSSION

### Socio-demographic information

According to Table 1, the total number of participants was 240, of which 97 (40.4%) were male and 143 (59.6%) were female. The majority of the students (87.5%) were 18–20 years of age. As for the CGPA, most participants had a CGPA between 3.50 and 4.00 at 43.3%, followed by 3.00 and 3.50 at 36.7%. Meanwhile, the least get a CGPA of less than 2.50 of 8.3%.

Table 1. Socio-demographic characteristics of respondents

Characteristics	Frequency	Percentage (%)
<b>Gender</b>		
Male	97	40.4
Female	143	59.6
<b>Age</b>		
18 – 20	210	87.5
21 – 23	26	10.8
Above 24	4	1.7
<b>CGPA</b>		
<2.50	20	8.3
2.50 – 3.00	28	11.7
3.00 – 3.50	88	36.7
3.50 – 4.00	104	43.3

### Caffeine Consumption Among Students

Figure 1 shows the respondents' preferences for their types of caffeinated beverages. More than half (60.5%) of the respondents prefer coffee, followed by tea (23.3%), caffeinated soft drinks (11.9%), and energy drinks (4.3%). These findings are consistent with similar research that shows high coffee consumption among university students and young people worldwide [8, 10, 18].

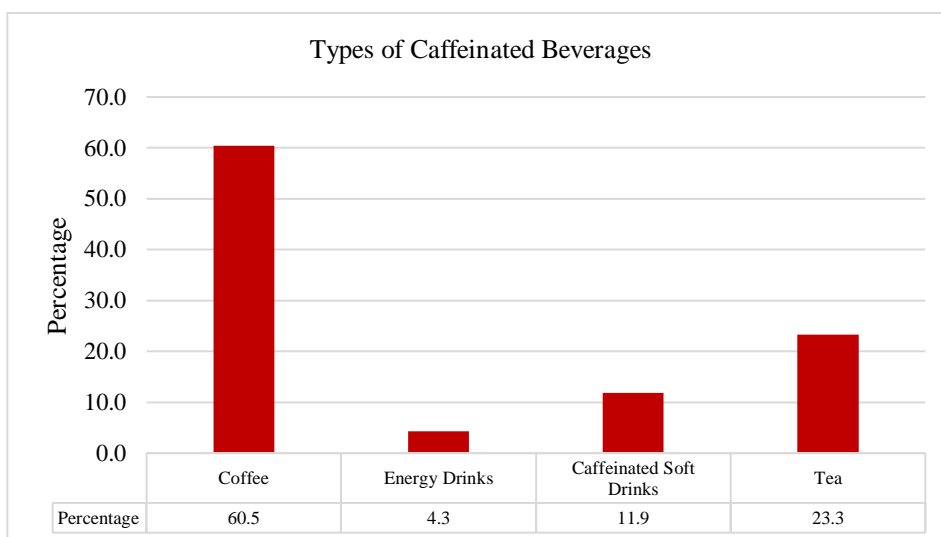


Fig. 1 Types of Caffeinated Beverages

The result in Figure 2 shows that most female students consume caffeine less than five times per week. Meanwhile, most male students consume caffeine 5–10 times per week. In Figure 3, out of 240 respondents, the majority of students consumed caffeine as a daily habit (29.6%), followed by staying alert and focused during the study (26.3%), to help deal with stress (22.1%), to pull all-nighters (12.9%), for taste (6.6%), and to enhance performance in academics (2.5%). This finding is contrary to the results of a study conducted by [8], where female students were found to consume more caffeinated drinks compared to male students, with a daily average of 275 mg and 242 mg, respectively, due to the different lifestyles and hangouts of female students compared to males in the Arabic world. However, the same study’s findings were also reported by [1], who discovered that many students consume caffeine one to three times a week due to their preference for the flavor, which helps them stay up late at night and get up in the morning. There is no substantial difference between the findings of this study and other studies, and it is possible to demonstrate that every student takes caffeine daily for nearly identical reasons connected to their beliefs about caffeine.

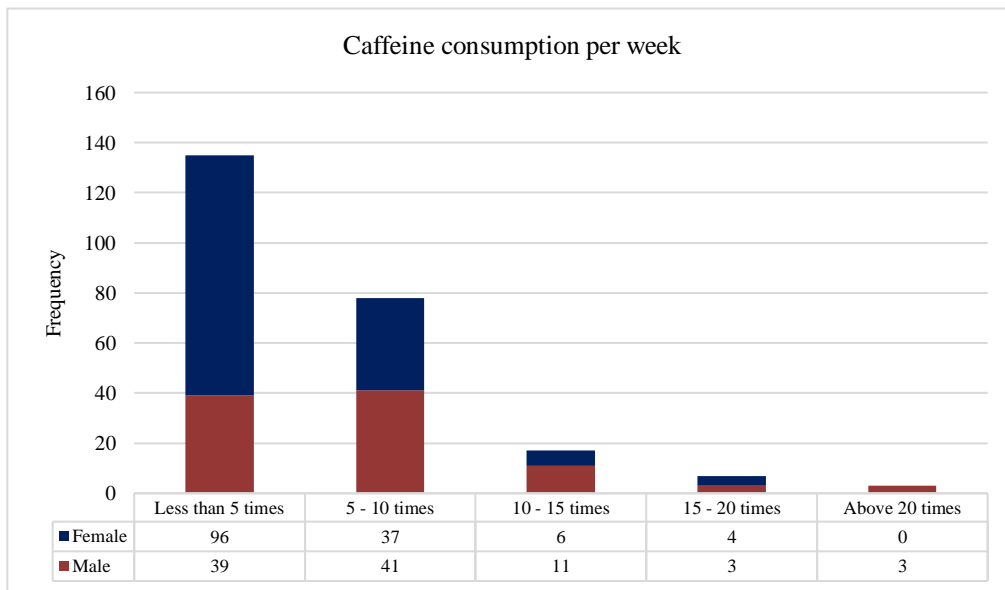


Fig. 2 Caffeine consumption per week

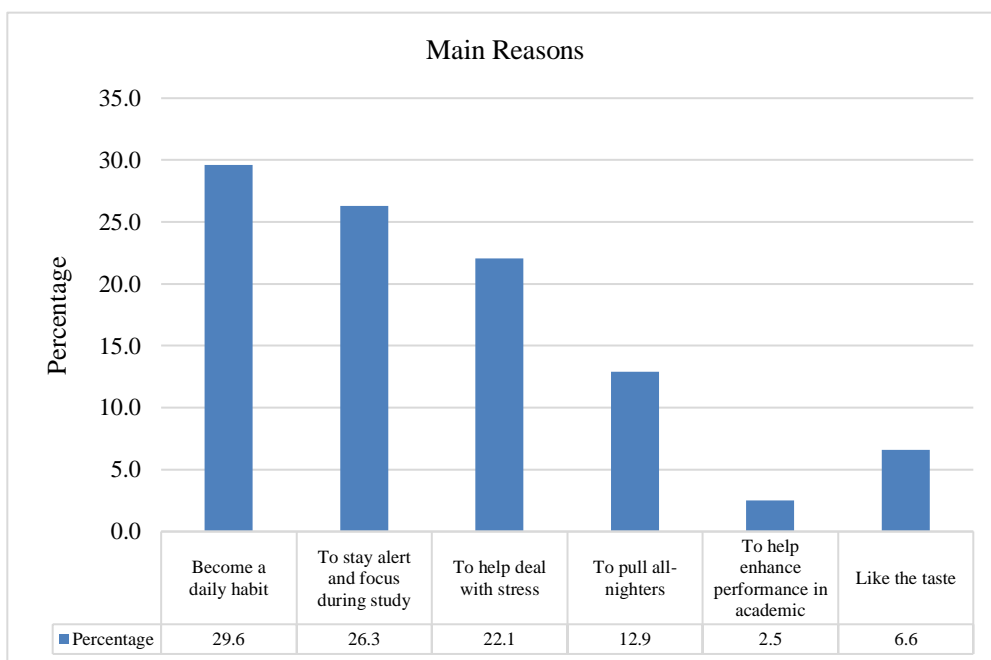


Fig. 3 Main reasons for consuming caffeine

According to Figure 4, most students spend on average RM10 – RM20 per week on caffeine products.

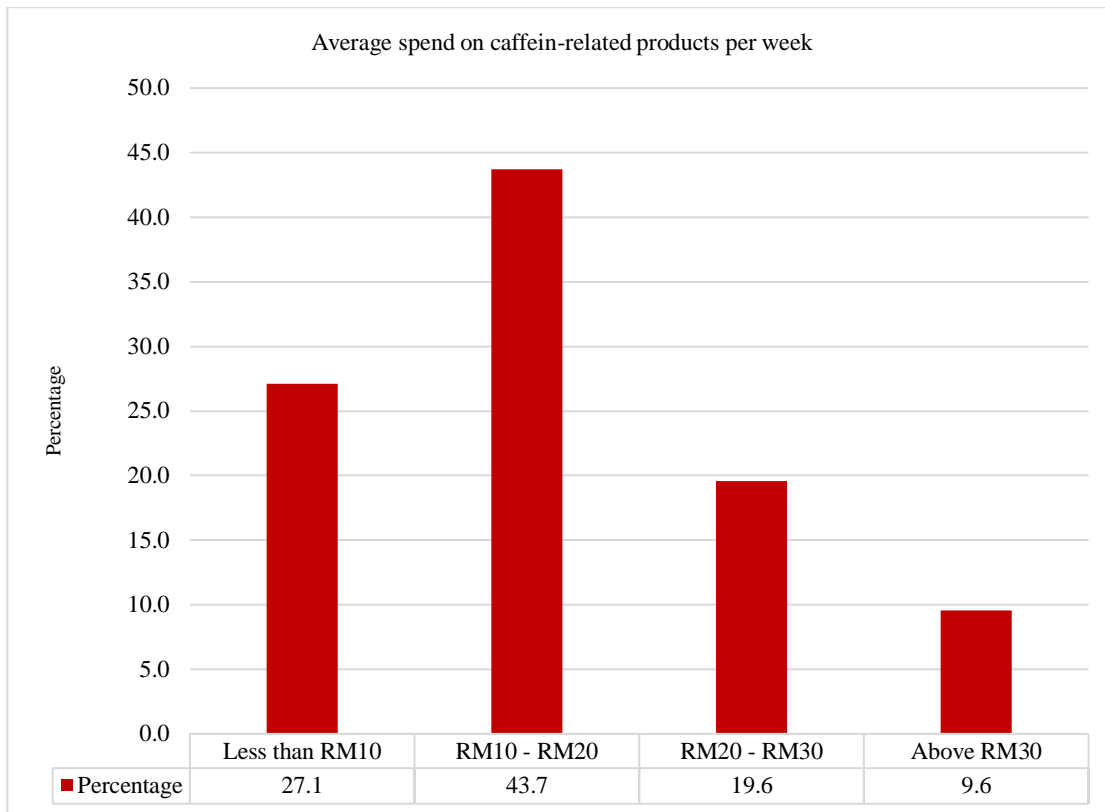


Fig. 4 Average spend on caffeine products per week

### Respondents’ Perceptions regarding the effects of caffeine consumption on their learning

Table 2 shows the students’ perceptions of the effects of caffeine consumption on their learning. 73.4% of respondents agreed that caffeine consumption can enhance their academic performance. The findings of this study are consistent with a study done by [19], which found that 65.6% of students believe caffeine use can boost academic performance.

Meanwhile, 88.3% of the students supported the statement regarding the temporarily elevated mood and reduced feelings of tiredness after consuming caffeine. The results of this study are also in line with the study by [12], who reported that taking caffeine can make students feel more alert, give them more energy to study, and allow them to work for a long time.

It also indicates that most students (80%) believe caffeine can help them study at night. Almost 54% of the study participants believed caffeine would boost their self-confidence. Besides that, about 79.2% of students agreed that caffeine consumption could increase their study hours. On the other hand, most students (81.2%) believed that consuming caffeine could improve certain aspects of cognitive performance.

Caffeine use in moderation can increase cognitive processes such as learning, memory, alertness, and mood, even in challenging situations [20]. According to [21], caffeine improves attention, working memory, and executive function. However, this perceived benefit of caffeine consumption may be due to the temporary relief of caffeine withdrawal symptoms rather than actual cognitive improvement [22]. Excessive caffeine intake can cause emotional problems where feelings override rational thinking and anxiety [22]. Therefore, students who consume caffeine in the appropriate proportions might use it to increase stamina while studying, resulting in improved academic achievement.

Table 2. Students' perception regarding the effects of caffeine consumption on their learning

Item	Items Description	Strongly Disagree & Disagree	Strongly Agree & Agree
		n (%)	n (%)
C1	Caffeine consumption can enhance academic performance	64 (26.6)	176 (73.4)
C2	Caffeine consumption can temporarily elevate mood and reduce feelings of tiredness	28 (11.7)	212 (88.3)
C3	Caffeine consumption helps in night study	48 (20)	192 (80)
C4	Caffeine consumption can increase self-confidence	111 (46.2)	129 (53.8)
C5	Caffeine consumption can increase study hour	50 (20.8)	190 (79.2)
C6	Caffeine consumption can improve certain aspects of cognitive performance	45 (18.8)	195 (81.2)

## CONCLUSION

This study concluded that coffee is the most popular source of caffeine consumed daily among students at this university. Male students consume more caffeine each week than female students. In addition, the main reason students take caffeinated drinks is that it has become their daily habit to drink this caffeine to make them focus while studying, and they like the taste. The majority of students agree with the perception of the effect of caffeine consumption on their learning, which is that caffeine consumption can improve academic performance, reduce tiredness, increase self-confidence, and improve certain aspects of cognitive performance. In this regard, students should be more aware of their daily caffeine intake habits since exceeding the recommended quantity will harm their health and performance in the short or long term. Therefore, certain parties need to organize nutrition education programs to increase student's awareness of the implications of excessive caffeine consumption and avoid worsening physiological symptoms and health effects.

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