

# Consumption of Caffeine and Sleeping Habit among University Students

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**Abstract**—This study is intended to find out the relationship between the consumption of caffeine towards the changing in sleeping habit among university students. This study utilizes the quantitative method in a descriptive form where 311 samplings need to answer the questionnaire. The 311 samplings have consisted of Universiti Sultan Zainal Abidin students. The students involved representatives from three campuses which are Campus Gong Badak, Campus Besut, and City Campus. This study uses 18 items a questionnaire that is comprised of three parts namely the demographics of the respondent, the frequency of the caffeine consumption and sleeping pattern. Later, the collected data will be analyzed by using Exploration Analysis. Then, the researcher will transfer the data into the Excel spreadsheet for the transparency of the data and later will be analyzed. The result of this study shows that the consumption of caffeine drunk in the evening is the highest with 70.42% and causes 59.81% in the sleeping pattern disorder among the respondents. Furthermore, the results also indicate that completing the task with 96.46% is the main reason the students need to sleep late. Hence, the usage of caffeine drunk during nighttime will affect ones' sleeping pattern.

**Keywords**— Caffeine, Sleeping Pattern, Students, Universiti Sultan Zainal Abidin (UniSZA)

## I. INTRODUCTION

Caffeine is a nutrient that often exist in a few type of drink or certain food [9]. Caffeine is also stimulators which acted on central nervous system [7]. Caffeine intake early in the morning help one to avoid to sleepiness early in the morning however if one take caffeine by day, it able help arrest sleepiness when one in tired state [7,35]. If a person take caffeine at night, time which almost to sleep, it will inconvenience a person to sleep night and cause fatigue in the morning on the next day [35].

This caffeine has good effects and adverse effects on humans. The good effect of caffeine intake is to help reduce pain and cure diseases such as fever. The adverse effects of high caffeine consumption are addictive. This is said to be because some consumers are addicted to drinking caffeinated drinks like coffee. If the consumer does not take caffeine over a period of time, the user will feel drowsy, headache and tired. According to [31] caffeinated drinks have a bad effect on human health because when consumers take the drink in high doses of more than 300 mg a day or in a prolonged period such as 4 cups (15ml / cup) coffee and 10 cups of tea.

Humans need about one-third night of sleep every day [14]. In general, adults need adequate sleep for about seven to eight

hours daily [11]. For students, they need to sleep about six to nine hours a day for optimum performance. If they sleep less than seven hours, these individuals are at increased risk of death and weight gain [11,18].

Most students often suffer from inadequate sleep because of their unhealthy sleep time [23]. Students who experience irregular sleep due to impaired sleep quality and sleep satisfaction. The closer to the final week of the study, the less sleep time for students as they will spend time completing the assignment given and revising the lesson by the examination week [14,20]. This problem also occurs because some students practice caffeine intake at night to stay awake at night [23].

According to [29] age differences and sex can cause sleep disorders. According to [21] women sleep more slowly but wake up earlier than men who have enough sleep time as men are more likely to sleep than women. Women aged between 18 and 24 years of age sleep early and wake up earlier than men but are as much sleep as men as women sleep briefly during the day [29].

## II. LITERATURE REVIEW

### 2.1 Sleep pattern

Sleeping is unconscious states where perception and reaction of an individual towards responses are decreasing or disappear and can be awakened again when that individual awoken from the sleeping [30]. Sleeping can also be defined as a process that is vital for human as sleeping is a rejuvenating process in which this process is crucial to restore one's condition to be normal again after facing a hectic life and this happens when that individual has enough sleep [12].

Sleeping is fundamental to have a healthy life in the aspects of physical, mental and emotional well-being [25,31]. This can be reinforced as inadequate sleeping hour which is less than 7 hours can increase the chances to get risky diseases which eventually can lead to the increasing rating of death and additionally, this case has been reported as a risky factoring to get cardiovascular disease, endocrine, weak immune system, nerve system and obesity among adults and children as well as diabetes, hypertension and also drugs abuse [22,17]. There are many factors that can influence the sleeping hours and its quality on adults and children especially when the individuals have the caffeine in a big and frequent quantity.

As a normal human, he or she needs a constant sleeping pattern where they need use one out of third or one-quarter of 24 hours to sleep to relieve fatigue after a whole day doing jobs and mental exhaustion [12,8]. Normally, university students have difficulty to sleep at [9,8], and in fact, this is due to many of the university students using their nighttime to watch television, chilling, talking etc. At the end of the final semester, the students will struggle to finish the tasks given and make revision as the preparation before the examination.

Some individual faces sleeping difficulty which they are needed to sleep at a normal time, but the statistic shows that 74% of adults in America are having difficulty to sleep for a few days or even weeks [27]. Hence, there are few factors which are anxiety and constant of having thought that contribute towards sleeping difficulty and this problem has been reported to be a main cause of death [9, 3]. Normally, a sleeping disorder is a common condition in the society but this crisis should be overcome to avoid from long-term drawback and if that certain person can detect the problem early, this problem can be treated promptly [4].

## 2.2 Caffeine

According to the research, caffeine is a popular medicine in the where it is found that 85% of American consume caffeine daily [18]. This is because caffeine is widely contained in drinking, medicine, and supplement [2,8]. Malaysian society usually drinks coffee since the pre-independent era [6]. Apart from that, caffeine will react actively with the metabolism of ones' body as it can dissolve in liquid and eventually will be absorbed by the internal organs such as stomach and intestine [35,5]. Caffeine also can alter the PH or food that is currently in the gastrointestinal channel where it can affect the absorption rated of nutrition [36,2,6].

Caffeine is easily accessible and available due to the wide range of its consumption and it is accepted by people walked of life in the world as it is believed can influence the mental state to reduce or avoid sleepiness [1,35]. Furthermore, caffeine can also enhance the cognitive function such as response, attention, and memory of an individual depending on the taken quantity [16]. Consequently, consuming caffeine drunk in a bigger quantity will affect that person to face sleep deprivation [33,28]. According to the research, add more by stating that most of the consumer drinks caffeine because they want to improve their work achievement, avoid boring or sleepy and exhaustion upon completing the task whole day [33,28].

Regardless of the negative consequence that caffeine may bring, previous studies testify that caffeine may also have positive affect likes it can bring calmness, reduce tension and anger and making one be more active [33, 28]. However, there are researchers elucidate that caffeine can deteriorate health condition and the working environment if it is practiced constantly [5]. It is evident that consuming caffeine can stimuli sleeping pattern of that person and affect one to be sleepy during daytime [10, 5]. Apart from that, the usage of

caffeine may cause the sleeping timed at night is much shorter compared to daytime where naturally, whenever one consumes caffeine, he or she will stay up on nighttime and always sleep on daytime [9, 3,]. Hence, based on the observation, typically, the university students will take caffeine drank to stay ups on nighttime to complete the tasks or revising for exams.

Based on the study in the United States, it is shown that the use of caffeine among teenagers should be given close attention. The study has found that 75-98% of the teenagers consume caffeine drinking at least once in a day meanwhile, 31% of the teenager consume caffeine drinking twice daily [27]. This figure is shown based on the caffeine intake among the teenagers. Regardless of their genders, school teenagers aged 12-21 years, will take caffeine drinking to boost up their spirits to complete the homework as well as to avoid being sleepy during the school sessions. Additionally, it is also been reported that most teenagers will order caffeine drinking in the morning to increase their energy level. Apparently, this scenario clearly shows that many teenagers are facing sleeping problems at night and low a sleeping pattern [26].

## III. METHODOLOGY

### 3.1 Demography

The respondents of this study consist of all students of Universiti Sultan Zainal Abidin (UniSZA) Campus Gong Badak, Campus Tembila, and City Campus. The age ranges of the respondents are 18-27 years old and currently active. There are 311 respondents of males and females that have answered the questionnaires given.

### 3.2 Analysis

The questionnaire of this study has 18 items of questions where the UniSZA students need to access the questionnaire through. The used research of the questionnaire does not require the signature from the respondents. The collected data through descriptive statistics will be analyzed by using Exploration Analysis where this method has eased the researcher to make a later analysis. This study is done soon after the researcher receives approval from the research supervisor on 26 July 2018. The questionnaire is opened for a month starting from 27 July 2018 until 28 August 2018. After the data collection stages are done, the researcher transfers the data into the Excel spreadsheet for data cleaning and analysis.

### 3.3 Research Method

The researcher derives the idea from the literature review and researches available regarding the Sleep Habits and Caffeine Use In College Students: A Convenience Sample Written by Christine Ptuff (2013), where 18 items of the questions embedded in the questionnaire. The researcher utilizes the elements contained in the literature review to ensure the questions proposed in the questionnaire be suitable with the context of caffeine intake and sleeping pattern among the students of UniSZA. Apart from that, the researcher also adds

additional questions regarding this study such as the frequency of caffeine intake, sleeping habit, and suitability of the demography. The refined questionnaires are later been given to five students of UniSZA to check the trustworthiness of the questionnaire. Moreover, the researcher can estimate the time taken by the students to answer all the questions given. Test have done beforehand on the questions in the questionnaire is vital to ensure the questions proposed towards the students are suitable. Section A of the questionnaire consists of the demography aspect which focuses on the background of the respondents. The demographic questions are based on six items such as gender, age, place of stay during the study, campus, year of study and faculty. Section B of the questionnaire canters on the frequency of caffeine intake where six questions are in linked scale form, yes or no questions. Each question of this section have five points of linked format scale; never, once, twice, three times and four times above. For instance in this Section B: Q7- Types of coffee drinks in a day. Q10 – Time that usually takes coffee? In this Section C, the questionnaire emphasizes on the sleeping habit of UniSZA students. In this part, there are six questions regarding sleeping habit to know the sleeping pattern that is usually practiced by the students. Examples of the question in this section are; Q13- How is your daily sleeping pattern? Q22- Have you sleep late or needed to stay up late due to something?

### 3.4 Results

Exported data from the questionnaire will be analyzed by using the Excel Spreadsheet. The researcher has extracted the data by transferring the questions in the Excel in a figure forms. The question text and answers obtained in section A, B and C are extracted from the Excel data sheet. Descriptive analysis including frequency and table form is included in the researcher's entire questionnaire. The researcher has utilized a descriptive analysis to explain the obtained data based on the research questions. Exploratory analysis is used to analyze the obtained data from the questionnaire.

## IV. DATA ANALYSIS

### The relationship between caffeine intake and the changing of sleeping habit among university students.

This section consists of 4 questions where all the questions display percentage and the highest frequency from the respondents' answer. Based on Table 1, the findings show that nighttime has the highest percentage of caffeine drinking intake by the respondents with 70.42%. Most teenagers take caffeine drunk to avoid getting sleepy at night [37,6].

Table 1: Time of coffee intake

Item	n	%
Morning	167	53.70
Noon	46	14.79
Afternoon	126	40.51
Evening	219	70.42

Table 2 illustrates 44.05% of the respondents who consume one typed of instant coffee a day meanwhile, 45.02% of the respondents have not consumed powder or pot bags type of coffee and 76.21% of the respondents who do not consume any types of popular coffee. Referring to the previous study, there are 75 98% of the teenagers consume caffeine drunk at least once daily meanwhile, 31% has been reported that some of them have taken caffeine twice daily [27].

Table 2: Daily Intake of Types of Coffee

Item	Never		Once a day		Two times a day		Three times a day		Four times and up	
	n	%	n	%	n	%	n	%	n	%
Instant Coffee (Pre - Mix)	12	38.5	13	44.0	3	9.97	1	5.1	7	2.2
Powder/Pot bags	0	0	7	5	1	0.3	6	4	5	0.3
Popular Coffee (Ex. Starbucks, Gloria Jeans Coffee etc)	14	45.0	12	41.1	3	10.9	0	2.8	-	-
	0	0	8	6	4	3	9	9	0	0
	23	76.2	60	19.2	-	-	1	3.2	4	1.2
	7	1	9	0.3	-	-	0	0	2	0.6

Moreover, the findings of the study show that 59.81% of the respondents practice inconstant sleeping habit. Furthermore, [26] clarifies that teenagers are the one who usually facing sleeping difficulty and experiencing unsatisfied sleeping pattern. Insufficient sleeping time (less than 7 hours) can increase chance to get risky diseases and at the same time, increasing the number of death and it is also been reported as the factor to encounter risky health problem such as cardiovascular diseases, endocrine, immune system, nerve system as well as obesity in adult and children, diabetes and glucose intolerant, hypertension, mood swing and drugs abuse [22, 16].

Table 3: Daily Sleeping Habit

Item	Frequency (n)	Percentage (%)
Always sleeping late (1 am and above)	109	35.05
Inconstant	186	59.81
Constant sleeping hours (at 10 pm)	16	5.14

Table 4 and 5 shows that 97.75% of the respondents have agreed that they have slept late or stayed up at night to finish the task. On the other hand, 96.46% of the respondents used to sleep late due to complete the workloads. The difficulty in sleeping at night becomes a habit among students [9, 8].

Table 4: Have You Ever Sleep Late Because Of Something?

Item	Frequency (n)	Percentage (%)
Yes	304	97.75

Table 5: Cause of Late Sleeping

Item	n	%
Finishing task	300	96.46
Revision	263	84.57
Chatting	243	78.14
Watching Movie	254	81.67
Chilling/Partying	196	63.02
Facing a sleeping problem	162	52.09

Table 6 showed an overall correlation between caffeine and sleep pattern. Based on the findings obtained, sleep pattern showed a higher correlation of caffeine and sleep pattern. Sleep pattern was a statistically significant linear relationship with the direction of the relationship is positive and the strength of the relationship was moderate ( $r=0.81$ ,  $p<0.01$ ).

Table 6: The Relationship between Caffeine With Sleep Patterns among Student UniSZA

Variable	Sleep pattern	n
Caffeine	Pearson Correlations	0.81
	Sig (2-tailed)	0.000
	N	311

\*\* Correlation is significant at the 0.01 level (2-tailed)

( $r: 0.81$ ,  $p<0.01$ )

## V. CONCLUSION

The findings of this study illustrate that caffeine drinking intake during evening goes influencing the sleeping pattern of an individual which is based on the results, 70.42% respondents take caffeine drunk at night and this has resulted in inconstant sleeping pattern with 59.81% towards the respondent. Moreover, the result also depicts that the cause of sleeping late due to finishing the task is 96.46%.

According to [10, 5], caffeine intake that has caused one to face difficulty in sleeping is related with the number of doses where the higher the doses of caffeine, the harder to sleep. Same goes to caffeine drinking intake when if it is taken near to the bedtime, it also causes one to have sleeping difficulty [5]. Most of the students take caffeine drunk to stay up at night and this habit is popular among the students as 90% of the consumers come from the students or adults [2, 1]. Continuous caffeine intake in a day or before bedtime can cause sleeping difficulty and may affect the sleeping quality and disrupt ones' sleeping pattern [2,7].

According to the previous research, university students love to take caffeine because they wanted to stay up at night and by doing so, they can avoid feeling sleepy and can perform their

work better [38]. People who practice caffeine drinking will have a problem with their sleeping time when a normal individual needs six to nine hours of sleeping optimally so that the brains can function properly, however by taking caffeine, they will face sleep deprivation [37]. The person who takes caffeine drinking will feel better as the caffeine helps them by boosting up their energy level and automatically refreshing them up [2,7].

Typically, when the exam is around the corner, the quantity of caffeine intake among the students will increase as they intended to stay up since they wanted to make revision and this, in turn, will affect them to have sleeping deprivation [13]. When an individual drinks caffeine in a big quantity, it will surely affect him or her bedtime. Sleeping is fundamental for human because sleeping is a rejuvenation process where this process is crucial to restore one's condition [12]. A Person who has sleep deprivation can easily get a chronic disease such as cardiovascular diseases and diabetes [34, 33]. It is important to note that adequate sleeping can cause one to have an ideal weight, gain good health as well as can control their eating habit [27, 34].

## VI. RECOMMENDATION

Every human being needs enough sleep time 7 to 8 hours a day to avoid getting harmful diseases. Based on the results of the study, students often take caffeine at night and it will affect the sleep time of an individual. Caffeine intake in large quantities can affect health and can cause chronic illness and death. Therefore, students should take caffeine in the prescribed quantities and practice enough sleep time to avoid getting the disease.

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