



Daffodil
International
University

**RELATIONSHIP BETWEEN CAFFEINE CONSUMPTION AND
MENTAL HEALTH FACTORS (INSOMNIA AND DEPRESSION): A
STUDY ON UNIVERSITY STUDENTS, FACULTY AND
EMPLOYEES AT DAFFODIL INTERNATIONAL UNIVERSITY**

A PROJECT REPORT

BY

MAHIMA AFROZ

ID: 201-34-321

Submitted to the Department of Nutrition and Food Engineering in the partial fulfillment
of B.Sc. in Nutrition and Food Engineering

Supervised By

Syeeda Shiraj-Um-Monira

Lecturer (Senior Scale)

Department of Nutrition and Food Engineering

Co-Supervised By

Md. Shamsur Rahman

Senior Lecturer

Department of Nutrition and Food Engineering

FACULTY OF HEALTH AND LIFE SCIENCES (FHLS)

DAFFODIL INTERNATIONAL UNIVERSITY

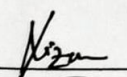
DECEMBER 2024

APPROVAL

This Project titled “**Relationship Between Caffeine Consumption and Mental Health Factors (Insomnia and Depression): A Study on University Students, Faculty and Employees at Daffodil International University**”, submitted by **Mahima Afroz, ID: 201-34-321** to the Department of Nutrition and Food Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Nutrition and Food Engineering and approved as to its style and contents.

EXAMINING COMMITTEE

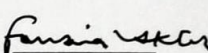
Chairman of the Board

Dr. Nizam Uddin 

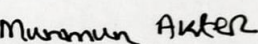
External Member

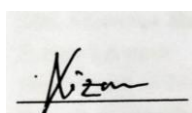
Dr. Md. Al-Mamun 

Internal Member-1

Fauzia Akter 

Internal Member-2

MUNMUN AKTER 



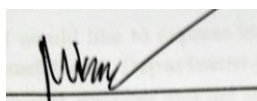
Dr. Nizam Uddin

Associate Professor and Head
Department of Nutrition and Food Engineering
Faculty of Health and Life Sciences
Daffodil International University

DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Syeeda Shiraj-Um-Monira, Lecturer (Senior Scale), Department of Nutrition and Food Engineering, Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:



Syeeda Shiraj-Um-Monira

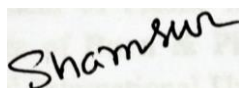
Lecturer (Senior Scale)

Department of Nutrition and Food Engineering

Faculty of Health and Life Sciences (FHLS)

Daffodil International University

Co-Supervised by:



Md. Shamsur Rahman

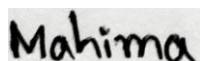
Senior Lecturer

Department of Nutrition and Food Engineering

Faculty of Health and Life Sciences (FHLS)

Daffodil International University

Submitted by:



Mahima Afroz

ID: 201-34-321

Department of Nutrition and Food Engineering

Daffodil International University

ACKNOWLEDGEMENT

First, I express my heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final year project successfully.

I really grateful and wish my profound indebtedness to my supervisor **Syeeda Shiraj-Um-Monira, Lecturer (Senior Scale), Department of NFE, Daffodil International University**. Deep Knowledge & keen interest of my supervisor in the field of “*Nutrition*” to carry out this project. Her endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stage have made it possible to complete this project.

I also want to convey my sincere appreciation to my co-supervisor **Md. Shamsur Rahman, Senior Leturer, Department of Nutrition and Food Engineering**, for his kind help to finish my project.

I would like to express my heartiest gratitude to **Dr. Nizam Uddin, Associate Professor and Head, Department of NFE**, for his kind help to finish my project and also to other faculty member and the staff of NFE department of Daffodil International University.

I would like to express my heartiest gratitude to **Professor Dr. Md. Bellal Hossain, Dean, Faculty of Health and Life Sciences**, for his kind help to finish my project and also to other faculty member and the staff of NFE department of Daffodil International University.

I would like to thank my entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

This study investigates the relationship between caffeine consumption and its potential impacts on mental health factors, specifically insomnia and depression, among students, faculty, and employees at Daffodil International University. Caffeine, widely consumed in beverages such as coffee, tea, and energy drinks, is known for its stimulating effects on the central nervous system, yet its impact on mental health remains an area of active inquiry. Given the high-stress environment and demanding schedules in academic settings, caffeine intake is common among university populations, possibly affecting sleep patterns and psychological well-being. This study aims to explore the prevalence of caffeine consumption within this community and assess correlations with self-reported symptoms of insomnia and depression. Using a cross-sectional survey approach, data on caffeine intake frequency, quantity, and timing were gathered alongside validated scales for insomnia and depression symptoms. Statistical analyses were conducted to determine the extent to which caffeine consumption may be associated with disruptions in sleep quality and mood disorders, considering demographic variables and lifestyle factors. Findings from this research will provide insights into the potential influence of caffeine on mental health, helping inform recommendations for healthier consumption habits and suggesting areas for institutional support to promote mental well-being among university members.

Keywords: Caffeine, Energy drinks, Tea, Insomnia, Well-being.

TABLE OF CONTENTS

CONTENTS	PAGE
Approval	ii
Declaration	iii
Acknowledgements	iv
Abstract	v
CHAPTER 1: INTRODUCTION	1-3
1.1 Introduction	1
1.2 Justification	2
1.3 Research Objectives	3
CHAPTER 2: LITERATURE REVIEW	4-6
2.1 Caffeine consumption habits in various countries	4
2.2 Caffeine consumption habits among university students	4
2.3 Health effects of caffeine consumption	5
2.4 Health implications	6
CHAPTER 3: METHODOLOGY	7-8
3.1 Research Design	7
3.2 Research Participants	7
3.3 Sample Size Calculation	7
3.4 Questionnaire Design	8
CHAPTER 4: RESULTS AND DISCUSSION	9-17
4.1 Results Analysis	9-15
4.2 Discussion	16

4.3 Limitations	17
CHAPTER 5: CONCLUSION	18
5.1 Conclusion	18
5.2 Recommendation	18
REFERENCES	19-21
CHAPTER 6: APPENDICES	22-28
Appendix 1: Synopsis	22-24
Appendix 2: Questionnaires	25-27
Appendix 3: Plagiarism Report	28

LIST OF TABLES

TABLE	Page
Table 4.1.1: Characteristics of study sample, n=366	9
Table 4.1.2: Frequency of Consumption for Various Caffeine-Containing Products	10
Table 4.1.3: Characteristics of the subjects according to caffeine intake groups	12
Table 4.1.6: Non-parametric correlation ^a analysis between insomnia severity, depression, and caffeine consumption	15

LIST OF FIGURES

FIGURE	Page
Figure 4.1.2: Frequency of Consumption for Various Caffeine-Containing Products	11
Figure 4.1.4: Caffeine consumption and insomnia level	13
Figure 4.1.5: Caffeine consumption and depression level	14

CHAPTER 1

INTRODUCTION

1.1 Introduction

Caffeine is a widely used psychoactive drug that activates the central nervous system. Adenosine receptors in the brain are the main mechanism by which caffeine produces its stimulatory effects, which improve wakefulness and alertness (Urry, 2014). Although moderate caffeine use is thought to be safe and may have health advantages (Lara, 2010), excessive or long-term usage has sparked worries about how it may affect mental health, especially in relation to mental diseases like insomnia, depression and anxiety (Jee, 2020). A commonly ingested chemical, caffeine is naturally present in plants such as the coffee plant, tea leaves, cacao beans, and certain nuts (Roberts, 2021). Particularly well-known for their high caffeine content, coffee beans are used to form the widely consumed beverage (Clifford, 2012). Caffeine is frequently used by students and professionals to relieve stress, improve attention, and withstand long work days. However, excessive consumption can cause insomnia and anxiety, reducing productivity, cognitive performance, and overall well-being. Understanding the link between caffeine use and mental health can help institutions create awareness campaigns and resources to encourage healthy lifestyle choices. Research findings can also be used to make recommendations for moderate caffeine usage, weighing the advantages against the potential hazards to sleep and mood. These days, depression is a prevalent and serious mental health condition characterized by persistent feelings of sadness, hopelessness, and a loss of interest. It affects the academic life and also has an impact on a person's thoughts, feelings, and behavior. Energy drinks are becoming a bigger issue these days because of the link between caffeine and mental performance, coronary heart disease, the cardiovascular effects of antidepressants in kids and teens, and bone growth in kids and teens (Mihaiescu, 2024). Caffeine is a topic of interest in disciplines including medicine, nutrition, and psychology because of its constant effects on the body and mind, despite its many sources (Antonio, 2024). However, contradictory data makes it difficult for the public and specialists to accurately appreciate its health implications (Herawati, 2024). In Bangladesh, people generally consume caffeine containing items such as tea, coffee, cola, energy drinks and chocolate the most (Jothi, 2021). The great majority of students and teachers in Bangladesh routinely drink tea and coffee to relax or stay awake. Bangladeshi people usually drink tea or coffee in cups and cola or energy drinks in cans or bottles. Anxiety, Insomnia, depression, nervousness, and hypertension can all be brought on by caffeine. As a diuretic, caffeine causes an increase in urine production. Many over-the-counter and prescription pain medicines contain caffeine as a component, typically in combination with aspirin or another analgesic, since it can aid with headaches (Cho, 2024). Caffeine dependency is therefore recognized as a clinical disease by the World Health Organization and certain medical specialists.

1.2 Justification

Researchers and medical professionals have long focused a great deal of emphasis on the relationship between caffeine use and mental health. The possible connections between excessive caffeine use and other health effects have been the subject of several investigations (Poole, 2017). Results have been mixed, nevertheless, with some research indicating that a high caffeine intake may raise the risk of mental illness (Jee, 2020), while other studies show no meaningful correlations or even protective benefits (Staack, 2022). Numerous factors, such as changes in research design, demographic characteristics, and methodology used to evaluate caffeine consumption and mental health outcomes, might be responsible for these variation in results.

Here are some justification points for studying the relationship between caffeine consumption and mental health factors like insomnia and depression in the Bangladeshi context:

- **Growing Popularity of Caffeinated Beverages:** In Bangladesh, coffee and energy drinks have gained popularity, especially among young adults and professionals. Increased accessibility to such beverages highlights the need to understand how caffeine affects mental health in this demographic.
- **High Academic and Work Pressure:** Students, faculty, and employees in Bangladesh often face high levels of academic and workplace stress, which can contribute to mental health issues. Caffeine is often used to cope with heavy workloads and long hours, which may aggravate depressed symptoms and insomnia.
- **Limited Mental Health Awareness and Resources:** Mental health awareness in Bangladesh is limited, and stigmatization often prevents individuals from seeking help. Research on lifestyle factors, such as caffeine consumption, can raise awareness and encourage healthier habits, offering a proactive approach to mental health management.
- **Cultural Factors and Lifestyle Shifts:** Rapid urbanization and lifestyle shifts in Bangladesh have led to more sedentary routines, irregular sleep patterns, and increased caffeine use. This study can offer insights relevant to the country's changing lifestyle and promote holistic health practices.
- **Potential for Policy and Health Program Development:** Findings can inform university and workplace policies in Bangladesh to promote mental health, such as creating awareness around caffeine use and mental wellness, potentially influencing health policies and support programs tailored to local needs.

1.3 Research Objectives

Here are some research objectives for the study:

- To analyze the relationship between caffeine consumption and the prevalence of insomnia among university students, faculty, and employees at Daffodil International University.
- To assess the association between caffeine intake and depressive symptoms within the study population.
- To explore variations in caffeine consumption patterns among different demographic groups (students, faculty, employees) and their correlation with mental health factors.
- To provide recommendations based on findings for promoting healthier caffeine consumption habits and mental well-being within the university community.

CHAPTER 2

LITERATURE REVIEW

2.1 Caffeine consumption habits in various countries

In China, a survey found that the prevalence of depression and anxiety among adolescents was 43.7% and 37.4%, respectively, illustrating a troubling level of mental health challenges among students in Asian countries (Zhou, 2020). A study conducted in India reported that anxiety among students in Chandigarh was as high as 65.53% (Kumar, 2017). High rates of mental health problems among students have also been observed in the Middle East. A cross-sectional study of high school females in Saudi Arabia found that 52.5% experienced stress, 66.2% experienced anxiety, and 41.5% experienced depression (Khalid, 2009). Among male students, the rates were somewhat lower but still substantial, with 38.2% reporting depression, 48.9% reporting anxiety, and 35.5% reporting stress (Al-Gelban, 2007). Likewise, research conducted in Ethiopia indicated that 40.4%, 60.8%, and 52.3% of undergraduate students were affected by stress, anxiety, and depression, respectively (Melaku, 2021). In Pakistan, mental health issues have shown a worrying upward trend. A 2004 poll revealed that approximately 6% of individuals showed symptoms of anxiety or depression (Gadit, 2004), but further studies have suggested that these issues, especially among youth, are on the rise. Such findings emphasize the urgency of addressing mental health issues among young people in Pakistan and, by extension, in similar contexts worldwide. According to reports, one in ten Acehnese seniors consume more than five cups of coffee per day, one-third consume three to four cups, and over half consume one to two cups (Yundika, 2023). The majority of respondents (32.5% of male and 40% of female) take caffeine-containing products twice a day, according to a survey done last year at Noakhali Science and Technology University in Bangladesh. The respondents primarily consume caffeine for enjoyment and refreshment. They concluded that the prevalence of caffeinated drinks was higher in males compared to female students (Munna, 2023). A notably little amount of study thoroughly examines the connection between excessive caffeine use and mental health in the Indonesian environment, despite this culturally integrated practice. Therefore, it is crucial to comprehend the possible effects of excessive caffeine use on mental health in this dynamic and diverse population.

2.2 Caffeine consumption habits among university students

The prevalence of anxiety and depression among university students worldwide has become an increasingly significant public health concern. According to the World Health Organization (WHO), over 300 million people globally suffered from depression in 2015, and approximately the same number experienced anxiety disorders (WHO, 2017). Mental health issues in university students are particularly concerning, as their rates of stress, anxiety, and depression are often notably higher than those observed in the general population. Academic pressures, the transition to independent living, and social expectations contribute to elevated stress levels among students. A study implemented at Chattogram Veterinary and Animal Sciences University in Bangladesh shows that the main

reasons for tea consumption by university students included keeping alert during the examination period (38.8%), followed by the removal of anxiety and stress (Jothi, 2021). For instance, a cross-sectional study conducted in Malaysia found that 39.7%, 67.1%, and 44.9% of students reported experiencing stress, anxiety, and depression, respectively (Wahab, 2013). These figures illustrate how prevalent mental health challenges are within student populations, warranting further exploration and attention. Similarly, a survey of 48,720 secondary school students in Iraq indicated that 29%, 40%, and 51.1% of respondents exhibited symptoms of stress, anxiety, and depression, respectively (Al-Abbudi, 2018). These results are not isolated; comparable findings have been documented in various countries, underscoring the universal nature of mental health issues among young adults.

The rise in mental health problems, especially among college students, has coincided with an increase in caffeine consumption in recent years. Caffeine's perceived advantages, including elevated mood, postponed sleep onset, and increased alertness and attention, are largely responsible for its appeal (Kawachi, 1996). Students frequently use caffeine to remain awake, stay focused, and do better academically when the demands of school increase (HRF, 2014). Coffee, tea, caffeinated soft drinks, and energy drinks are common sources of caffeine and are consumed by many college students. Notwithstanding its alleged benefits, excessive caffeine use can have detrimental effects on mental health, aggravating preexisting mental health conditions and fostering a cycle of dependence.

2.3 Health effects of caffeine consumption

Excessive caffeine intake, generally considered to be consumption levels of 450 mg per day or more, has been associated with various adverse effects, including anxiety, depression, restlessness, tachycardia (rapid heart rate), insomnia, nausea, and increased urination (diuresis) (McLean, 2010). While caffeine in moderate amounts can have positive effects, such as a reduced risk of suicide and protective effects against depressive mood disorders, excessive use can lead to negative psychological outcomes. For example, caffeine intoxication, though rare, can lead to panic attacks and, in severe cases, may induce manic or psychotic symptoms, particularly in individuals already predisposed to mental health conditions (Gilliland, 1981). This dual nature of caffeine's effects on mental health—protective in moderate doses but potentially harmful in excessive amounts—highlights the importance of understanding individual consumption patterns and their mental health implications. Caffeine's effects on the central nervous system stimulate the release of adrenaline, which may heighten anxiety levels, particularly in individuals with anxiety-prone dispositions. Furthermore, caffeine's ability to delay sleep onset and disrupt sleep patterns can aggravate insomnia, creating a vicious cycle in which lack of sleep exacerbates anxiety and depression symptoms, which, in turn, leads to increased caffeine consumption. Studies have shown that caffeine consumption late in the day can interfere with the body's natural sleep-wake cycle, making it harder for individuals to fall asleep and stay asleep. This sleep disruption not only affects mental alertness and cognitive function but can also contribute to emotional dysregulation and exacerbate symptoms of anxiety and depression.

2.4 Health implications

In the context of university students, the implications of this relationship between caffeine consumption and mental health are particularly significant. Academic pressures, lifestyle choices, and social expectations combine to create a high-stress environment that fosters dependence on stimulants like caffeine. Students may consume caffeine to meet academic deadlines, manage social obligations, or maintain alertness during long study sessions, but these short-term benefits can mask the potential long-term mental health costs (Kawachi, 1996). As students rely more heavily on caffeine, they may experience a deterioration in mental well-being, as the substance can exacerbate underlying symptoms of depression, anxiety, and insomnia. Given that mental health issues are already prevalent in university populations, as indicated by studies from Malaysia, Iraq, China, India, Saudi Arabia, and other countries, caffeine's role as a possible contributor to these issues deserves closer examination (Wahab, 2013).

The relationship between caffeine consumption and mental health factors, particularly insomnia and depression, among university students, faculty, and employees at institutions like Daffodil International University, represents an area of growing concern and importance. Understanding how caffeine influences mental health can provide insights into mitigating its negative effects and promoting better mental health outcomes. By examining the patterns and effects of caffeine use, especially within high-stress environments such as universities, future research can contribute to the development of targeted interventions that encourage healthier consumption habits (Gadit, 2004). These findings may inform university policies, awareness campaigns, and student support programs, all of which could play a role in promoting mental well-being and reducing the incidence of caffeine-related mental health issues among students, faculty, and staff alike.

CHAPTER 3

METHODOLOGY

3.1 Research Design

This cross-sectional study was conducted at Daffodil International University from May, 2023 to September, 2023. As a result, I initially interacted with the students, faculty and employees. During my visits to different departments at DIU, I learned about their caffeine habit and any related complications through verbal communication. I then recorded this information. Data collection was mandatory for every survey. I used a convenient sampling method for data collection because the method is simple and easy to execute. As part of my routine, I conducted comprehensive visits across the university. A stratified cluster sampling method was used to ensure broad demographic representation, considering age, gender, BMI, and weight were all taken into consideration while using a stratified cluster sample approach to guarantee a broad representation of the population.

3.2 Research Participants

We conducted a cross-sectional study on university students, teachers, and employees (Admin, Transport members, Guard, Cleaner, Lab assistant, Teacher's Assistant). To achieve the objectives of the research accurately, we reviewed the results of the research questionnaire. I went to meet with my participants to find out about their mental health, caffeine intake, and any issues. I then took note of that data.

3.3 Sample Size Calculation

For this study, the sample size was calculated with below process:

Z is the Z score

P is the estimate proportion of attribute,

Q = 1-P

E is the margin of error

The following formula has adopted for sample size calculation-

$$n_0 = \frac{Z^2 PQ}{E^2}$$

3.4 Questionnaire Design

To gather data for this study, the questionnaire consisted of four key components:

Demographic Information: Participants were asked to provide basic demographic details, including age, gender, occupation, and other relevant factors, to understand the population's characteristics.

Caffeine Consumption Assessment: The frequency and quantity of caffeine use were recorded and evaluated in Microsoft Excel to ensure proper data compilation and categorization. Caffeine intake was calculated using data from the USDA food composition databases. The caffeine content employed in these computations was 137 mg per cup of coffee, 47 mg per cup of tea, 46 mg per can or bottle of cola beverage, and 7 mg per serving of chocolate (Giovannucci, 2005).

Insomnia Assessment (ISI): The Insomnia Severity Index (ISI) tool was used to evaluate participants' sleep difficulties. This standardized instrument assesses the severity of insomnia symptoms using a seven-item scale that considers characteristics such as sleep onset, maintenance, and daytime impairment (Morin, 2001).

Depression Assessment (PHQ-9): The Patient Health Questionnaire-9 (PHQ-9) was used to measure depressed symptoms. This validated nine-item questionnaire is commonly used to assess the severity of depression by examining mood, interest, energy levels, and other relevant symptoms over the last two weeks (Williams, 2001).

These tools were chosen for their reliability and validity in assessing the respective domains of interest and ensuring consistency in data collection.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Results Analysis

In this segment, I have generated some visualization of graph with my collected data. I have noted the datapoints of every participant and updated in database.

4.1.1 Demographic information of participants

Table 4.1.1: Characteristics of study sample, n=366

Characteristics	Frequency (%)
Gender	
Female	189 (51.6)
Male	177 (48.4)
Age	
< 30 Years	246 (67.2)
≥ 30 Years	120 (32.8)
Occupation	
Student	129 (35.2)
Faculty	138 (37.7)
Staff	99 (27.0)
Education Level	
Undergraduate	222 (60.7)
Graduate	144 (39.3)
BMI Status	
18.5–24.9	186 (50.8)
<18.5 or >24.9	180 (49.2)
Exercise	
Rarely	81 (22.1)
Sometimes	231 (63.1)
Regularly	54 (14.8)
Smoking Status	
Non-smoker	336 (91.8)
Smoker	30 (8.2)
Monthly spend on caffeine	
<600 BDT	105 (28.7)
600-800 BDT	99 (27.0)
>800 BDT	162 (44.3)

The study sample consisted of 366 individuals, with a nearly balanced gender distribution: 189 females (51.6%) and 177 males (48.4%). Age distribution showed that a majority, 246 participants (67.2%), were under 30 years, while 120 participants (32.8%) were 30 years or older. Occupational categories included 129 students (35.2%), 138 faculty members (37.7%), and 99 staff members (27.0%). Educational levels were predominantly

undergraduate (222 participants, 60.7%), with the remaining 144 participants (39.3%) holding graduate-level education. BMI status was nearly evenly divided, with 186 participants (50.8%) in the normal range (18.5–24.9) and 180 participants (49.2%) outside this range (<18.5 or >24.9). Exercise frequency varied, with 81 participants (22.1%) rarely exercising, 231 participants (63.1%) exercising sometimes, and 54 participants (14.8%) exercising regularly. The majority of participants were non-smokers (336, 91.8%), while a small proportion reported smoking (30, 8.2%). Caffeine expenditure showed that 105 participants (28.7%) spent less than 600 BDT monthly, 99 participants (27.0%) spent between 600–800 BDT, and 162 participants (44.3%) spent over 800 BDT per month. Statistical analysis for associations among these characteristics, including correlations and significance testing (e.g., p-values), would be required to interpret relationships further.

4.1.2 Frequency of caffeine consumption

Table 4.1.2: Frequency of Consumption for Various Caffeine-Containing Products

Consumption Frequency	Coffee	Tea	Cola	Energy drink
Frequency (%)				
Never	63 (17.2)	42 (11.5)	99 (27.0)	228 (62.3)
Once a month	39 (10.70)	42 (11.5)	60 (16.4)	66 (18.0)
Once/Twice a week	69 (18.9)	51 (13.9)	102 (27.9)	45 (12.3)
Most days (3-6 Days)	129 (18.0)	84 (23.0)	63 (17.2)	18 (4.9)
Every day	66 (18.0)	147 (40.2)	42 (11.5)	9 (2.5)

The frequency of consumption for various caffeine-containing products was distributed as follows among participants:

63 participants (17.2%) reported never consuming coffee, while 39 (10.7%) consumed it once a month, 69 (18.9%) once or twice a week, 129 (35.2%) on most days (3–6 days per week), and 66 (18.0%) every day. Only 42 participants (11.5%) reported never drinking tea, whereas 42 (11.5%) consumed it once a month, 51 (13.9%) once or twice a week, 84 (23.0%) on most days, and a significant 147 participants (40.2%) consumed tea daily. Cola was never consumed by 99 participants (27.0%). A total of 60 participants (16.4%) consumed cola once a month, 102 (27.9%) once or twice a week, 63 (17.2%) on most days, and 42 (11.5%) consumed it daily. The majority, 228 participants (62.3%), reported never consuming energy drinks, with 66 (18.0%) drinking them once a month, 45 (12.3%) once or twice a week, 18 (4.9%) on most days, and only 9 participants (2.5%) consuming them every day.

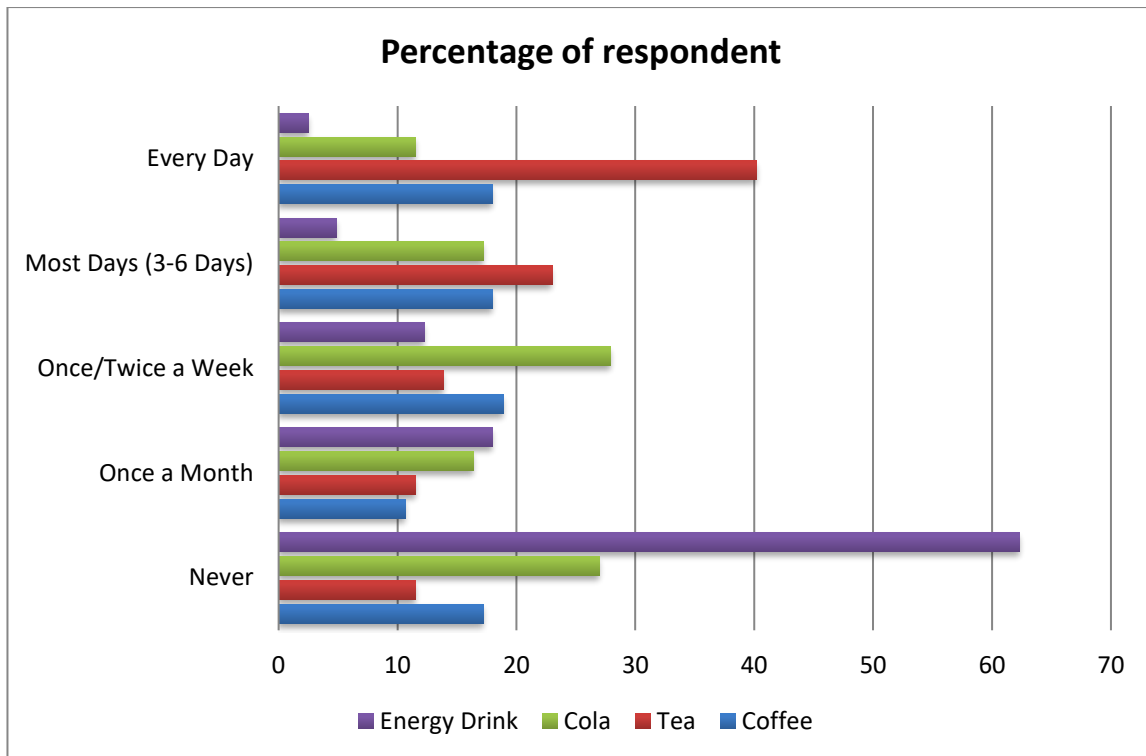


Figure 4.1.2: Frequency of Consumption for Various Caffeine-Containing Products

This bar chart illustrates the frequency of consumption of various caffeine-containing products energy drinks, cola, tea, and coffee among respondents. A significant proportion of respondents (around 62%) reported that they "Never" consume energy drinks, making it the least commonly consumed product. Only a small fraction drink them "Once a month," "Once/Twice a week," or on "Most Days (3-6 days)," with a minimal number consuming them "Every Day." Cola consumption is relatively low as well, with nearly 27% of respondents saying they "Never" consume it. Some consume it "Once a month" or "Once/Twice a week," but daily consumption is low compared to tea and coffee. Tea is the most commonly consumed caffeine product, with the highest percentage of respondents drinking it "Every Day." Many also consume tea on "Most Days" (3-6 days), reflecting its popularity among the respondents. Coffee has a varied consumption pattern, with a balanced distribution across different frequency categories. Some respondents consume coffee "Every Day," while others have it less frequently, such as "Once/Twice a week" or "Once a month."

4.1.3 Association between caffeine intake levels and demographic characteristics

Table 4.1.3: Characteristics of the subjects according to caffeine intake groups

Characteristics		Caffeine intake level per day			χ^2	p-value
		Low	Moderate	High		
		n (%)				
Age						
	<30 Years	30 (12.2)	158 (64.2)	58 (23.6)	6.08	0.048*
	≥ 30 Years	6 (5.0)	90 (75.0)	24 (20.0)		
Gender						
	Female	21 (11.1)	126 (66.7)	42 (22.2)	0.72	0.697
	Male	15 (8.5)	122 (68.9)	40 (22.6)		
Occupation						
	Student	21 (16.3)	86 (66.7)	22 (17.1)	12.75	0.013*
	Faculty	9 (6.5)	90 (65.2)	39 (28.3)		
	Others	6 (6.1)	72 (72.7)	21 (21.2)		
Education level						
	Undergraduate	15 (6.8)	161 (72.5)	46 (20.7)	8.04	0.018*
	Graduate	21 (14.6)	87 (60.4)	36 (25.0)		
Nutritional status						
	18.5–24.9	9 (5.0)	122 (67.8)	49 (27.2)	12.09	0.002*
	<18.5 or >24.9	27 (14.5)	126 (67.7)	33 (17.7)		
Exercise						
	Never	9 (11.1)	59 (72.8)	13 (16.0)	4.66	0.324
	Sometimes	21 (9.1)	150 (64.9)	60 (26.0)		
	Regularly	6 (11.1)	39 (72.2)	9 (16.7)		
Smoking Status						
	Non-smoker	30 (8.9)	230 (68.5)	76 (22.6)	3.81	0.149
	Smoker	6 (20.0)	18 (60.0)	6 (20.8)		
Monthly expenditure on CP ^a						
	<600 BDT	12 (11.4)	81 (77.1)	12 (11.4)	19.97	0.001*
	600-800 BDT	15 (15.2)	53 (53.5)	31 (31.3)		
	>800 BDT	9 (5.6)	114 (70.4)	39 (24.1)		
Insomnia Level						
	No clinically significant insomnia	18 (9.4)	129 (67.2)	45 (23.4)	10.58 ^b	0.080 ^b
	Sub threshold insomnia	12 (9.8)	92 (74.8)	19 (15.4)		
	Moderate clinical insomnia	6 (13.3)	24 (53.3)	15 (33.3)		
	Severe clinical insomnia	0 (0.0)	3 (50.3)	3 (50.3)		
Depression level						
	Minimal depression	6 (7.1)	57 (67.9)	21 (25.0)	62.66	0.000*
	Mild depression	15 (12.2)	93 (75.6)	15 (12.2)		
	Moderate depression	15 (16.1)	54 (58.1)	24 (25.8)		
	Moderately severe depression	0 (0.0)	44 (81.5)	10 (18.5)		
	Severe depression	0 (0.0)	0 (0.0)	12 (100)		

^a Monthly expenditure on caffeinated product, * p- value <0.5 statistically significant,

^b Fisher exact test

This table presents the characteristics of study subjects divided into low, moderate, and high caffeine intake groups, along with their association with various factors. Key findings are: Younger individuals (<30 years) showed a significant association with caffeine intake levels ($\chi^2 = 6.08$, $p = 0.048$), with most (64.2%) having moderate caffeine intake. No significant

association was observed between gender and caffeine intake levels ($p = 0.697$), with similar patterns of moderate caffeine intake among both females and males. Occupation showed a significant association with caffeine intake levels ($\chi^2 = 12.75$, $p = 0.013$). Faculty members had a higher percentage (28.3%) in the high caffeine intake group, compared to students and others. There was a significant association between education level and caffeine intake ($\chi^2 = 8.04$, $p = 0.018$). Graduate students had a higher proportion (25%) in the high intake group compared to undergraduates. BMI was significantly associated with caffeine intake ($\chi^2 = 12.09$, $p = 0.002$). Those within a normal BMI range (18.5–24.9) had a higher percentage (27.2%) of high caffeine intake compared to those outside this range. Exercise frequency did not show a significant association with caffeine intake levels ($p = 0.324$). There was no significant association between smoking status and caffeine intake ($p = 0.149$). A significant association was found on monthly expenditure ($\chi^2 = 19.97$, $p = 0.001$). Respondents spending 600-800 BDT per month had the highest percentage (31.3%) in the high caffeine intake group. Insomnia levels showed no statistically significant association with caffeine intake ($p = 0.080$), although moderate and severe clinical insomnia tended to correlate with higher caffeine intake. Depression level was significantly associated with caffeine intake ($\chi^2 = 62.66$, $p < 0.001$). Respondents with severe depression exclusively had high caffeine intake (100%).

4.1.4 Relationship between Insomnia level with caffeine consumption

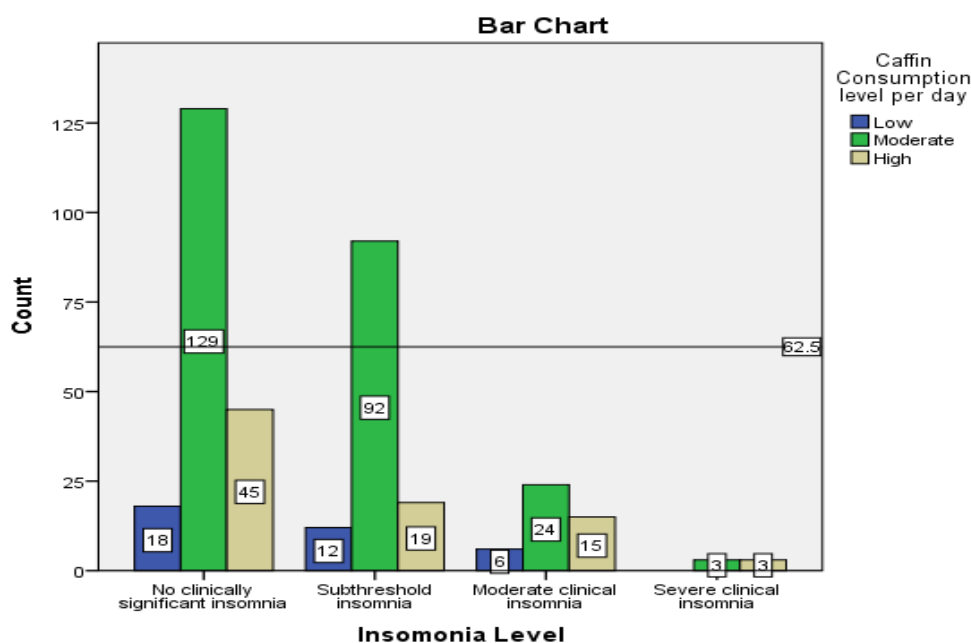


Figure 4.1.4: Caffeine consumption and insomnia level

This bar chart illustrates the distribution of caffeine consumption levels (categorized as Low, Moderate, and High) across different insomnia levels. The chart's key points are:

The majority of individuals in this category “No Clinically Significant Insomnia” have moderate caffeine intake (129 people). High caffeine intake is the second most common (45 people), and low intake is the least (18 people). Most individuals also fall into the moderate

caffeine intake category (92 people) and fewer individuals report high (19 people) and low (12 people) caffeine intake levels. This is categorized as “Subthreshold Insomnia”. In the category of “Moderate Clinical Insomnia” moderate caffeine intake remains the most common (24 people). There is a notable number of individuals with high caffeine intake (15 people) and a smaller number with low intake (6 people). Only a few individuals are represented in “Severe Clinical Insomnia”, with each caffeine intake level (low, moderate, high) having 3 individuals. There seems to be an association between higher caffeine intake and increased insomnia severity, though most individuals fall within the moderate intake category regardless of insomnia level.

4.1.5 Relationship between Depression level with caffeine consumption

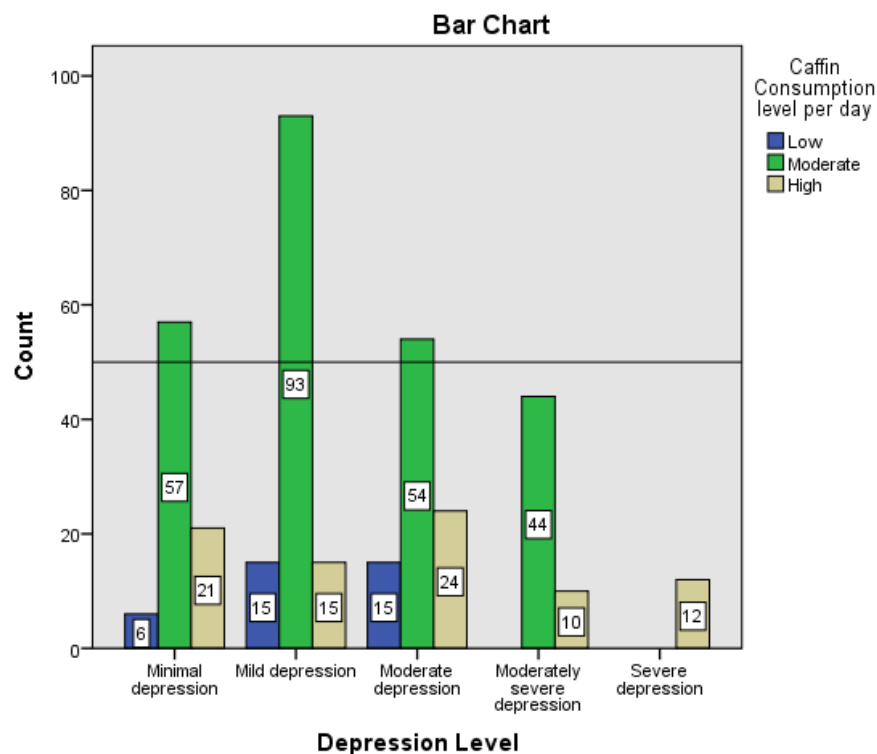


Figure 4.1.5: Caffeine consumption and depression level

This bar chart displays the distribution of caffeine consumption levels (Low, Moderate, and High) across different levels of depression. Here’s an analysis:

The majority of individuals have moderate caffeine intake (57 people) and high caffeine intake is also notable (21 people), while low intake is the least (6 people). This is categorized as “Minimal Depression”. In the category of “Mild Depression” moderate caffeine intake is the highest (93 people). Both low and high caffeine intake levels have an equal count (15 people each). For “Moderate Depression” most individuals are in the moderate caffeine intake category (54 people) and high caffeine intake is also present (24 people), with low intake being the least common (15 people). The largest group has moderate caffeine intake (44 people) and high caffeine intake (10 people) and low intake are much less common which categorized as “Moderately Severe Depression”. Only individuals with high caffeine

intake (12 people) are present, with no representation in the low or moderate intake categorized as “Severe Depression”. This chart suggests a potential correlation between higher caffeine intake and increasing levels of depression, though moderate intake remains the most frequent across all categories.

4.1.6 Correlation between Insomnia, Depression and Caffeine Consumption

Table 4.1.6: Non-parametric correlation^a analysis between insomnia severity, depression, and caffeine consumption

	Insomnia Severity Index Level	Depression Level	Caffeine Consumption Level
ISI Level			
Correlation Coefficient	1.000	0.623**	0.006
Sig. (2-tailed)		0.000	0.914
N	366	366	366
Depression Level			
Correlation Coefficient	0.623**	1.000	0.104*
Sig. (2-tailed)	0.000		0.048
N	366	366	366
Caffeine Consumption Level			
Correlation Coefficient	0.006	0.104*	1.000
Sig. (2-tailed)	0.914	0.048	
N	366	366	366

^a **Spearman’s rho *Correlation is significant at the 0.01 level, **Correlation is significant at the 0.05 level**

This table presents the results of a non-parametric correlation analysis (Spearman's rho) between Insomnia Severity Index (ISI) Level, Depression Level, and Caffeine Consumption Level. For the correlation between Insomnia Severity (ISI) and depression level, correlation coefficient (0.623), indicating a moderate to strong positive correlation. Sig. 2-tailed (0.000), which is highly significant ($p < 0.01$), meaning the correlation is statistically significant. This result suggests that higher levels of insomnia are associated with higher levels of depression. For the correlation between Insomnia Severity (ISI) and caffeine consumption level the correlation coefficient (0.006), indicating virtually no correlation. Significance (Sig. 2-tailed) 0.914, which is not statistically significant. This indicates that there is no meaningful relationship between insomnia severity and caffeine consumption in this dataset. For the correlation between depression level and caffeine consumption level the correlation coefficient (0.104), indicating a very weak positive correlation. Significance (Sig. 2-tailed) 0.048, which is significant at the 0.05 level ($p < 0.05$).

4.2 Discussion

The purpose of this cross-sectional study was to evaluate the connection between caffeine intake and mental health. The results showed a significant association with age, occupation, education level and nutrition status. Most of the participants were under 30 years (67.2%) and students or faculty (60.7%). Additionally, 63.1% exercised occasionally, 91.8% were non-smokers, and 44.3% spent over 800 BDT monthly on caffeine. The frequency of caffeine consumption highlights tea as the most frequently consumed product, followed by coffee, cola, and energy drinks, which had the lowest daily consumption rates among participants. A recent survey conducted Lahore, Pakistan showed that the weak positive correlation suggests a slight tendency for individuals with higher depression levels to consume more caffeine, though the relationship is quite weak. Of the 324 participants, 86 (26.5%) were men and 238 (73.5%) were women. 52.5% of them were in their fifth year or above. Caffeine was mostly found in tea (75.9%), coffee (22.8%), and energy drinks (17.9%). Caffeine intake was significantly positively correlated with both GAD-7 ($r = .258$, $p < .001$) and PHQ-9 ($r = .216$, $p < .001$) scores (Aleem, 2024). According to figure 4.1.4 & 4.1.5, across all insomnia levels, moderate caffeine intake is the most prevalent. Higher caffeine intake appears more frequent among individuals with clinically significant insomnia (moderate or severe insomnia). Severe clinical insomnia has a very low sample size, making it difficult to draw definitive conclusions. Moderate caffeine intake is the most prevalent across all depression levels. High caffeine intake becomes more common as depression severity increases, especially notable in the "Severe Depression" category where only high caffeine intake is observed. Low caffeine intake is consistently the least common across all levels, except in "Minimal Depression" where it is very low. In the table 4.1.6, shows that a strong positive correlation exists between insomnia severity and depression but no significant correlation found between insomnia severity and caffeine consumption. Weak positive correlation between depression and caffeine consumption, which is statistically significant but not very strong. These findings highlight that insomnia and depression are closely linked, while caffeine consumption shows only a minimal association with depression and no association with insomnia severity. In Pakistan, mental health issues have shown a worrying upward trend. A 2004 poll revealed that approximately 6% of individuals showed symptoms of anxiety or depression (Gadit, 2004).

A cross-sectional study of high school females in Saudi Arabia found that 52.5% experienced stress, 66.2% experienced anxiety, and 41.5% experienced depression (Khalid, 2009). Among male students, the rates were somewhat lower but still substantial, with 38.2% reporting depression, 48.9% reporting anxiety, and 35.5% reporting stress (Al-Gelban, 2007). Likewise, research conducted in Ethiopia indicated that 40.4%, 60.8%, and 52.3% of undergraduate students were affected by stress, anxiety, and depression, respectively (Melaku, 2021).

4.3 Limitations

The limitations of this analysis include the use of self-reported data for insomnia severity, depression, and caffeine consumption, which may be subject to reporting bias or inaccuracies. The study's cross-sectional design prevents us from determining causal relationships between these variables, meaning we cannot conclude if caffeine consumption influences insomnia or depression levels, or vice versa. Additionally, the weak correlation found between caffeine consumption and depression suggests other unmeasured factors could be influencing this relationship, such as lifestyle or genetic factors. The reliance on a single sample may also limit the generalizability of the findings to other populations.

CHAPTER 5

CONCLUSION

5.1 Conclusion

In conclusion, this study highlights significant associations between insomnia severity and depression, with a moderate positive correlation indicating that higher levels of insomnia are linked to increased depression symptoms. However, the correlation between caffeine consumption and both insomnia and depression were weak, suggesting that caffeine intake alone may not be a primary factor influencing these conditions. These findings underscore the complex interplay between mental health and lifestyle factors, where depression and insomnia appear closely connected, while caffeine consumption's impact is less clear. Further research with longitudinal designs and more diverse samples is needed to explore causal relationships and to identify other contributing factors that may influence these associations.

5.2 Recommendation

Here are the recommendations based on the findings of the study:

- **Promote Mental Health Screening:** Regular mental health screenings should be encouraged to identify individuals at risk of insomnia and depression early, enabling timely intervention. Programs addressing both mental health and sleep issues concurrently may be more effective.
- **Encourage Healthy Sleep Practices:** Health professionals should emphasize the importance of healthy sleep habits and provide resources for managing sleep disorders, which may help reduce the severity of both insomnia and depressive symptoms.
- **Moderate Caffeine Consumption:** Though caffeine showed a weak association with insomnia and depression, limiting caffeine intake—especially in the late afternoon and evening—could still support improved sleep quality.
- **Conduct Further Research:** Future studies should include a more diverse population and consider additional lifestyle factors (e.g., physical activity, diet) to better understand the intricate relationships between caffeine, sleep, and mental health.
- **Implement Workplace and School Wellness Programs:** Institutions should incorporate wellness programs that address sleep hygiene, stress management, and mental health support to promote overall well-being.

REFERENCES

- Al-Abbudi S. Prevalence of Symptoms of School Students. 2018.
- Al-Gelban KS. Depression, Anxiety and Stress Among Saudi Adolescent School Boys. *J R Soc Promot Health*. 2007;127(1):33-7.
- Aleem, A., Amanullah, I., Ali, M. A., Ghumman, M. H. M., Tahir, I., Tahir, R., ... & Butt, M. A. (2024). Association of Depression and Anxiety with Consumption of Caffeine-Containing Beverages in University Students of Lahore, Pakistan. *Journal of Health and Rehabilitation Research*, 4(3).
- Antonio J, Newmire DE, Stout JR, et al. Common questions and misconceptions about caffeine supplementation: what does the scientific evidence really show? *J Int Soc Sports Nutr*. 2024Dec;21(1):2323919.
- ArticleID 9936157.10. Gadit AA. Economic Burden of Depression in Pakistan. *J Pak Med Assoc*. 2004;54:43-4.
- Bastien, C. H., Vallières, A., & Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep medicine*, 2(4), 297–307.
- Cho SH, Doo M, Kim JC, et al. Respiratory Safety Pharmacological Testing with Single Intravenous Administration of Caffeine in Sprague-Dawley Rats. *J Med Food*. 2024 Mar;27(3):275-278.
- Clifford MN. (Ed.). *Coffee: botany, biochemistry and production of beans and beverage*. Springer Science & Business Media; 2012.
- Gilliland K, Andress D. Ad Lib Caffeine Consumption, Symptoms of Caffeinism and Academic Performance. *Am J Psychiatry*. 1981;138:512-4
- Hafasnuddin H, Ridwan R and Djalil M A 2019 The Coffee Shop Lifestyle in Banda Aceh City, Indonesia: A Study Based on Marketing Approach Proceedings of the 1st Aceh Global Conference (AGC 2018) Proceedings of the 1st Aceh Global Conference (AGC 2018) (Banda Aceh, Indonesia: Atlantis Press)
- Heckman M A, Weil J and De Mejia E G 2010 Caffeine (1, 3, 7-trimethylxanthine) in Foods: A Comprehensive Review on Consumption, Functionality, Safety, and Regulatory Matters *J. Food Sci*. 75
- Herawati D, Armawan MS, Nurhaliza N, et al. Impact of bean origin and brewing methods on bioactive compounds, bioactivities, nutrition, and sensory perception in coffee brews: An Indonesian coffee gastronomy study. *Int J Gastronom Food Sci*, 2024;35:100892.
- Internal Displacement: Relationship of Mental Health and Education of Children in Swat, Pakistan.
- Jahrami H, Al-Mutarid M, Penson P E, Al-Islam Faris M, Saif Z and Hammad L 2020 Intake of Caffeine and Its Association with Physical and Mental Health Status among University Students in Bahrain *Foods* 9 473

- Jee H J, Lee S G, Bormate K J and Jung Y-S 2020 Effect of Caffeine Consumption on the Risk for Neurological and Psychiatric Disorders: Sex Differences in Human Nutrients 12 3080
- Jothi, Jakia & Rahman, Nahidur & Chakraborty, Anindya & Akther, Shireen. (2021). Prevalence of Tea Consumption among University Students of South-Eastern Region of Bangladesh and Associated Factors. Turkish Journal of Agriculture - Food Science and Technology. 9. 1357-1361. 10.24925/turjaf.v9i8.1357-1361.3976.
- Kawachi I, Willett WC, Colditz GA, Stampfer MJ, Speizer FE. A Prospective Study of Coffee Drinking and Suicide in Women. Arch Intern Med. 1996;156(5):521-5.
- Khalid SAG, Hasan SAA, Ossama AM. Prevalence of Depression, Anxiety and Stress as Measured by the Depression, Anxiety, and Stress Scale (DASS-42) Among Secondary School Girls in Abha, Saudi Arabia. 2009.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. Journal of general internal medicine, 16(9), 606–613.
- Kumar KS, Akoijam BS. Depression, Anxiety, and Stress Among Higher Secondary School Students of Imphal, Manipur. Indian J Community Med. 2017;42(2):94.
- Lara D R 2010 Caffeine, Mental Health, and Psychiatric Disorders ed R A Cunha and A DeMendonça J. Alzheimers Dis. 20 S239–48
- McCook S. The Birth of Coffee. The Oxford Handbook of Agricultural History, 343; 2024.
- McLean SA, Paxton SJ, Wertheim EH. Factors Associated with Body Dissatisfaction and Disordered Eating in Women in Midlife. Int J Eat Disord. 2010;43:527-36.
- Medina DC, Rosero-García D, Burbano D, et al. State development of precision agriculture focused on special coffee production in Southeastern of Colombia.
- Melaku L, Bulcha G, Worku D. The Prevalence and Severity of Depression, Anxiety, and Stress Among Medical Undergraduate Students of Arsi University and Their Association with Substance Use, Southeast Ethiopia. Educ Res Int. 2021;2021:
- Mihaiescu T, Turti S, Souca M, et al. Caffeine and Taurine from Energy Drinks—A Review. Cosmetics, 2024;1(1):12.
- Michels, K. B., Willett, W. C., Fuchs, C. S., & Giovannucci, E. (2005). Coffee, tea, and caffeine consumption and incidence of colon and rectal cancer. Journal of the National Cancer Institute, 97(4), 282–292.
- Munna, A., & Bulbul, L. (2023). PREVALENCE AND PERCEPTIONS OF CAFFEINATED PRODUCT CONSUMPTION IN NOAKHALI REGION, BANGLADESH. EPRA International Journal of Multidisciplinary Research (IJMR), 9(3), 121-131
- Poole R, Kennedy O J, Roderick P, Fallowfield J A, Hayes P C and Parkes J 2017 Coffee consumption and health: umbrella review of meta-analyses of multiple health outcomes BMJ 375:024

Prevalence of Depression in Karachi, Pakistan.

Psychological Articles and Infographics. 24 Remarkable Caffeine Consumption Statistics. HRF; August 27, 2014. Available from: healthresearchfunding.org.

Rahman MG, Malek MAA., Hossain MA. Effect of Pruning on Growth, Yield and Quality of Coffee; 2024.

Roberts A. Caffeine: an evaluation of the safety database. In *Nutraceuticals* (pp. 501-518). Academic Press; 2021.

Sandal RK, Goel NK, Sharma MK, Bakshi RK, Singh N, Kumar D. Prevalence of Depression, Anxiety and Stress Among School Going Adolescents in Chandigarh. *J Family Med Prim Care*. 2017;6(2):405.

Staack A, Distelberg B, Moldovan C, Belay R E and Sabaté J 2022 The Impact of Caffeine Intake on Mental Health Symptoms in Postmenopausal Females with Overactive Bladder Symptoms: A Randomized, Double-Blind, Placebo-Controlled Trial *J. Womens Health* 31 819–25

Urry E and Landolt H-P 2014 Adenosine, Caffeine, and Performance: From Cognitive Neuroscience of Sleep to Sleep Pharmacogenetics Sleep, Neuronal Plasticity and Brain Function *Current Topics in Behavioral Neurosciences* vol 25, ed P Meerlo, R M Benca and T Abel (Berlin, Heidelberg: Springer Berlin Heidelberg) pp 331–66

Wahab S, Rahman FNA, Wan Hasan WMH, Zamani IZ, Arbaie NC, Khor SL, et al. Stressors in Secondary Boarding School Students: Association with Stress, Anxiety, and Depressive Symptoms. *Asia Pac Psychiatry*. 2013;5:82-9.

World Health Organization (WHO). Depression and Other Common Mental Disorders: Global Health Estimates. 2017 Apr 7. Available from: www.who.int/mental_health/management/depression/prevalence_global_health_estimates/en/.

Yundika D, Khairani, Khairani and Martina M 2023 A Description of Habitual Coffee Consumption and Blood Pressure of the Elderly in Syiah Kuala Subdistrict 11

Zhou S-J, Zhang L-G, Wang L-L, Goo Z-C, Wang J-Q, Chen J-C, et al. Prevalence and Socio-Demographic Correlates of Psychological Health Problems in Chinese Adolescents During the Outbreak of COVID-19. *Eur Child Adolesc Psychiatry*. 2020;29(6):749-58.

CHAPTER 6

APPENDICES

Appendix 1: Synopsis

Student Name: Mahima Afroz

Id: 201-34-321

Title: Relationship between Caffeine Consumption and Mental Health Factors (Insomnia and Depression): A Study on University Students, Faculty and Employees at DIU.

Introduction

Caffeine is a central nervous system stimulant that is most commonly found in natural products such as coffee beans, cacao beans and some types of tea. Caffeine is also added to other products such as energy drinks, soft drinks, and some over-the-counter medications (J, JR & AS, 2023). Excessive intakes of caffeine may lead Insomnia, Dehydration, Increase heart rate and blood pressure and many more adverse health effects (S.H. et al. ,2023). Caffeine consumption is prevalent among university students and faculty, often as a means to combat fatigue and enhance alertness. This study can contribute to a better understanding of the addiction, dependency and withdrawal symptoms of caffeine consumption patterns among university students and faculty and its potential impact on their well-being and performance. The recommended daily dosage of caffeine intake for adults is 400 mg (1-4 cups per day), according to the European Food Safety Authority. However, consumption of more than the recommended dosage can cause caffeine addiction (N.M. et al. ,2023). According to USDA, 1 cup coffee contain 94.8mg of caffeine, 1 cup green tea contain 26.1mg and black tea contain 47mg of caffeine, 250 ml Energy drink contain 71.9 mg and Cola contain 22mg of Caffeine. This research can guide public health initiatives focused on encouraging responsible caffeine consumption and reducing potential negative effects. By examining how caffeine affects mental health, we can develop targeted interventions to enhance the well-being of among students, faculty and employees. Addressing these concerns could significantly benefit individuals in educational settings and extend its positive effects to the broader community.

Objective

1. To identify the amount of daily caffeine intake (excessive or moderate)
2. To determine the adverse health effect linked with excessive caffeine intake such as Insomnia and Depression
3. To determine the perception of impacts on mood swing and mental health among university students, faculty and employee
4. To propose interventions or guidelines for maintaining a healthy balance of caffeine intake to promote a healthier work environment

Methodology

1. Study Design: A cross-sectional study design will be adopted to gather data among University Students, Faculty and Employee.
2. Data Collection: Using questionnaires to collect information on daily caffeine intake and its connection with Insomnia and Depression. Specifying the characteristics of the participants such as age, gender, health status and caffeine consumption habits.
3. Sample Size and Sampling Technique: A multi stage random sampling technique will be used to select study participants. The sample size will be 300 to 350 for this research project.
4. Data analysis: Using SPSS to analyze the relationship between caffeine intakes and its impact on mental health.
5. Ethical Consideration: The study adheres to ethical standards, ensuring consent from participants and maintaining confidentiality. Ethical clearance up to be obtained from the relevant institutional review board before the outset of data collection.

Work Plan

Major activities	Duration in month		
	1 st	2 nd	3 rd
Literature Review			
Questionnaires and Pilot Testing			
Sample Selection			
Data Collection			
Data Analysis			
Project Paper writing and Submission			

Expected Outcomes

The association between caffeine intake and mental health outcomes is demonstrated by this study. Caffeine may temporarily reduce fatigue and improve cognitive function, but long-term or excessive usage can cause tolerance, dependency, and withdrawal symptoms, which lasts longer of the cycle of consumption.

Conclusion

This study highlights the significant connections between caffeine consumption and mental health factors. This emphasizes how important it is to encourage better caffeine habits and providing support for mental well-being on campus. By addressing these facts, among instructors, employees and students may experience improvements in their general health and academic performance.

References

- Akram, U., & al., e. (2019). The Relationship between Depression and Insomnia Symptoms Amongst a Sample of UK University Students. *Sleep Medicine Research*, 10.
- Alshahrani, S., & al., e. (2023). Dietary caffeine intake is associated with favorable metabolic profile among apparently healthy overweight and obese individuals. *BMC Endocr Disord*, 23.
- Evans J, R. J., & Battisti. (2024). Caffeine. *StatPearls*.
- Makki, T. e. (2023). Caffeine Consumption and Depression, Anxiety, and Stress Levels Among University Students in Medina: A Cross-Sectional Study. *Cureus*, 15.
- Marcuzzi, E., & al., e. (2022). The interplay between multisite pain and insomnia on the risk of anxiety and depression: the HUNT study. *BMC Psychiatry*, 22.

Supervised By

Syedda Shiraj-um-Monira

Senior Lecturer
Department of Nutrition and Food Engineering
Daffodil International University

Appendix 2: Questionnaires

Topic: Survey on Relationship Between Caffeine Consumption and Mental Health Factors.

Dear Respondent,

Thank you for participating in this survey. Your responses will be kept confidential and will only be used for research purposes.

- For Each Question Please Circle the Answers

Table 1. Demographic Information

Questions	Responses
Age	1. 18-29 2. 30-39 3. 40-49 4. 50-60
Gender	1. Female 2. Male
Occupation	1. Student 2. Faculty 3. Other Please Specify _____
Place of residence	1. Homestay 2. Student Hostel 3. Faculty Flat 4. Shared Flat 5. Personal residence
Education Level	1. Primary / Secondary 2. Higher secondary 3. Hons. 4. Master's / PhD
BMI	1. Height = 2. Weight =
Exercise	1. Never 2. Sometimes 3. Regularly
Smoking	1. Never 2. Past 3. Current
Monthly expenditure on caffeine products	1. Less than 400 Tk 2. 400 Tk 3. 600 Tk 4. 800 Tk

Table 2. Frequency of Caffeine Consumption

Caffeine Intake	Never	Once a month	Once/Twice a week	Most days (3-6 Days)	Every day
1. How often did you drink coffee?	0	1	2	3	4
2. How often did you drink tea?	0	1	2	3	4
3. How often did you drink cola?	0	1	2	3	4
4. How often did you drink energy drinks?	0	1	2	3	4

Table 3. Amount of consumption

Questions	Responses
5. How many cups of coffee do you consume on an average day?	
6. How many cups of tea do you consume on an average day?	
7. How many cans of cola do you consume on an average day?	
8. How many cans of energy drinks do you consume on an average day?	

Table 4. Types of caffeinated Products

Questions	Responses
9. What types of coffee do you consume usually?	a. Black coffee b. Milk coffee c. Strong or normal (choose any) d. Other _____ Please specify
10. What types of tea do you consume usually?	a. Green tea b. Herbal tea c. Milk tea d. Black tea/Raw tea
11. What types of cola do you consume usually?	a. Coca-cola b. Pepsi c. Mojo d. Other _____ Please Specify
12. What types of energy drinks do you consume usually?	a. Speed b. Tiger c. Gear d. Other _____ Please Specify

• **Impacts of caffeine consumption on mental health (Insomnia and Depression)**

For each question please Circle the number that best describes your answer.

Insomnia Problem	None	Mild	Moderate	Severe	Very Severe
13. Difficulty falling asleep (ঘুমিয়ে পরতে সমস্যা)	0	1	2	3	4
14. Difficulty staying asleep (ঘুমিয়ে থাকতে সমস্যা)	0	1	2	3	4
15. Problems waking too early (তাড়াতাড়ি ঘুম থেকে উঠতে সমস্যা)	0	1	2	3	4

16. How Satisfied/Dissatisfied are you with your current sleep pattern?

Very Satisfied Satisfied Moderately Satisfied Dissatisfied Very Dissatisfied
0 1 2 3 4

17. How Noticeable to others do you think your sleep problem is in terms of impairing the quality of your life?

Not at all Noticeable A Little Somewhat Much Very Much
Noticeable
0 1 2 3 4

18. How Worried/Distressed are you about your current sleep problem?

Not at all Worried A Little Somewhat Much Very Much Worried
0 1 2 3 4

19. To what extent do you consider your sleep problem to Interfere with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.) Currently?

Not at all Interfering A Little Somewhat Much Very Much
Interfering
0 1 2 3 4

Depression Problem	Not at all	Several days	More than half the days	Nearly every day
20. Little interest or pleasure in doing things	0	1	2	3
21. Feeling down, depressed or hopeless	0	1	2	3
22. Trouble falling asleep, staying asleep or sleeping too much	0	1	2	3
23. Feeling tired or having little energy	0	1	2	3
24. Poor appetite or overeating	0	1	2	3
25. Feeling bad about yourself or that you're a failure or have let yourself or your family down	0	1	2	3
26. Trouble concentrating on things, such as reading the newspaper or prepare study materials	0	1	2	3
27. Moving or speaking so slowly that other people could have noticed. Or the opposite being so restless that you have been moving around a lot more than usual	0	1	2	3
28. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Appendix 3: Plagiarism Report

Thesis

ORIGINALITY REPORT

9%

SIMILARITY INDEX

6%

INTERNET SOURCES

5%

PUBLICATIONS

2%

STUDENT PAPERS

PRIMARY SOURCES

1

M Marthoenis, M Jannah. "Excessive caffeine use and its consequence on mental illness: a cross-sectional study in Indonesia", IOP Conference Series: Earth and Environmental Science, 2024

Publication

1%

2

www.mdpi.com

Internet Source

1%

3

Obaidullah Alimyar, Aimal Nahiz, Abdul Wahid Monib, Abdul Qadeer Baseer et al. "Coffea plant (Caffeine): Examining its Impact on Physical and Mental Health", European Journal of Medical and Health Research, 2024

Publication

1%

4

www.scilit.net

Internet Source

<1%

5

agris.fao.org

Internet Source

<1%

6

digitalcommons.wku.edu

Internet Source

<1%