AN ASSESSMENT ON THE HABITS OF CAFFEINE USE AMONGST UNDERGRADUATE STUDENTS OF THE UNIVERSITY OF BENIN, EDO STATE, NIGERIA.

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CERTIFICATION

This is to certify that this project work was carried out by IGBOANUSI MICHAEL CHUKWUKA, in the department of clinical pharmacy and pharmacy practice, faculty of pharmacy, university of Benin, Benin city, in partial fulfillment of the requirement for the award of my doctor of pharmacy (pharm D) degree

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DEDICATION

I dedicate this work to my beloved parents, my aunt,, and my siblings, whose unwavering prayers and support have been a constant source of strength throughout the years.

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I extend my profound appreciation to the Almighty God for His countless blessings and the grace to successfully complete this programme.

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Abstract

Background: Caffeine is one of the most widely consumed psychoactive substances globally, and its use is particularly common among university students seeking to enhance alertness, concentration, and academic performance. However excessive consumption may result in dependence and other health related effects.

Objective: This study assessed the habits, patterns, and influencing factors of caffeine consumption among undergraduate students of the University of Benin, Edo State, Nigeria.

Methods: A descriptive cross-sectional design was employed, using a structured self-administered questionnaire distributed to 381 students selected through stratified random sampling across various faculties. Data were analyzed using descriptive statistics and Chi-square tests to determine associations between demographic variables and caffeine use.

Results: Findings revealed that caffeine consumption was highly prevalent (91.86%) among respondents. The most frequently consumed sources were carbonated soft drinks, tea, and energy drinks, with most students (62.47%) reporting daily intake, primarily for pleasure, relaxation, and improved concentration during study. Significant associations were found between caffeine consumption and variables such as age and place of residence, while gender, academic level, and faculty showed no significant influence. The results indicate that caffeine use is a socially accepted and academically functional behavior among students, often driven by environmental and academic pressures.

Conclusion: The study concludes that although most students consume caffeine moderately, there is a need for continuous health education on safe consumption limits and the potential adverse effects of excessive use. It recommends that the university health unit incorporate caffeine awareness into student orientation programs and promote healthier coping strategies for academic stress.

Keywords: Caffeine, consumption habits, undergraduate students, University of Benin, stimulant use.

CHAPTER ONE

INTRODUCTION

1.1BBACKGROUND OF STUDY

Caffeine is a naturally occurring stimulant that belongs to the methylxanthine class of alkaloids. Caffeine is a bitter in taste, white crystalline alkaloid. It is chemically known as 1,3,7-trimethylxanthine and is widely found in coffee beans, tea leaves, cacao pods, and kola nuts (Nehlig, 2016). The compound is one of the most commonly consumed psychoactive substances globally, with quantities found in various beverages such as coffee, tea, energy drinks, and certain medications.

Caffeine is found naturally in the leaves, fruits, and seeds of over 60 plant species (Barone and Roberts, 1996). Coffee beans (*Caffea arabica*), tea leaves (*Thea sinensis),* cocoa beans (from which chocolate is made), kola nuts (*Cola acuminata*), and yerba mate are some of the most common global sources.

Caffeinated beverages have been consumed for centuries. Tea consumption was documented in China during the Tang Dynasty (618-907 AD), and the story of coffee's discovery involves a goat herder in Ethiopia noticing his animals' increased energy after eating the berries (NIH, 2010). Coffee then spread to the Arabian Peninsula, and eventually around the world (NIH, 2010). The pharmacological actions of these substances were noted early on, with initial uses frequently being for medicinal purposes.

Caffeine is both water- and fat-soluble, allowing it to be well-absorbed and to easily cross the blood-brain barrier (NIH, 2010). Caffeine primarily functions as an adenosine receptor antagonist, notably at the A1 and A2A receptor subtypes. Adenosine, a neuromodulator, plays a crucial role in promoting sleep and reducing arousal; thus, caffeine's inhibition of adenosine leads to enhanced alertness and wakefulness (Liu *et al*., 2021). Additionally, caffeine inhibits phosphodiesterase enzymes, resulting in elevated intracellular cyclic AMP levels, which further amplify neuronal activity and contribute to its stimulatory effects (Nehlig, 2020).

1.2 SCOPE OF THE STUDY

This study focuses on assessing the habits, patterns, and influencing factors of caffeine consumption among undergraduate students of the University of Benin, Edo State, Nigeria. It specifically covers students across all faculties and academic levels within the university's Ugbowo campus. The research examines the prevalence of caffeine use, types of caffeinated products consumed, frequency and quantity of intake, and the reasons or motivations behind consumption.

The study also explores demographic variables such as age, gender, faculty, religion, academic level, and place of residence in relation to caffeine consumption patterns. Data collection was limited to undergraduate students who consented to participate during the study period. The study does not extend to postgraduate students, staff, or other institutions outside the University of Benin. Furthermore, it does not include biochemical analysis of caffeine levels or clinical assessment of health effects, as its scope is restricted to behavioral and self-reported data obtained through questionnaires.

1.3 SIGNIFICANCE OF THE STUDY

This study is significant as it provides valuable insight into the habits and patterns of caffeine consumption among undergraduate students of the University of Benin. By identifying the prevalence, reasons, and frequency of caffeine use, it contributes to a better understanding of how academic pressure, lifestyle, and social factors influence students' consumption behaviors.

The findings are useful for promoting public health awareness, as they highlight the potential risks associated with excessive caffeine intake and the need for responsible consumption. They also provide a foundation for developing educational programs and health interventions that encourage healthier alternatives for managing stress, fatigue, and concentration among students. Additionally, this research adds to the limited body of knowledge on caffeine use among Nigerian university students and serves as a reference for policymakers, university health units, and future researchers interested in studying lifestyle and stimulant use in higher education settings.

1.4 SOURCES OF CAFFEINE

1. Natural sources of caffeine

Caffeine's primary natural sources are coffee beans, tea leaves, cacao pods, kola nuts, yerba mate, and guarana berries.

a) **Coffee (***Caffea species*): Coffee is the most common source of caffeine consumption worldwide, with *Coffea arabica* and *Coffea canephora (robusta)* accounting for the majority. Caffeine content in brewed coffee typically ranges from 70 to 140 mg per 240 mL cup, depending on bean type, roasting, and brewing method (Barone and Roberts, 1996). Coffee accounts for roughly 54% of global caffeine consumption (Mitchell *et al*., 2014).

b) **Tea (***Camellia sinensis***):** Tea is another significant natural resource. *Camellia sinensis* is the source of both black and green teas, but the caffeine content varies depending on how they are processed. Black tea contains approximately 40-70 mg per cup, whereas green tea contains 20-45 mg (Higdon and Frei, 2006). Aside from caffeine, tea contains L-theanine, an amino acid that may mitigate caffeine's stimulant effects by promoting calm alertness.

c) **Cocoa and chocolate** (*Theobroma cacao*): Cocoa beans contain caffeine as well as theobromine, a methylxanthine compound with milder stimulant properties. A typical 40 g serving of dark chocolate contains 20-30 mg of caffeine, whereas milk chocolate contains significantly less (Smit, 2011).

d) **Kola Nuts** (*Cola Acuminata and Cola Nitida*): Kola nuts are native to West Africa and have traditionally been used to make cola beverages. They contain 1.5-2.5% caffeine by weight and were once a popular natural ingredient in soft drink formulations before synthetic caffeine became more prevalent (Ashihara and Crozier, 2001).

e) **Guarana** (*Paullinia Cupana*): Guarana, an Amazonian plant, has one of the highest naturally occurring caffeine concentrations, up to 4-6% by weight (Bempong and Houghton, 1992). Because of its strong stimulant properties, it is commonly used in energy drinks and supplements.

f) **Yerba Mate** (*Ilex Paraguariensis*): Yerba mate is an herbal infusion that contains approximately 30-50 mg of caffeine per cup. It is primarily consumed in South America. It also contains related alkaloids like theobromine and theophylline, which contribute to its energizing effects (Heck and de Mejia, 2007).

2. Synthetic and commercial sources.

Aside from natural sources, caffeine is synthesized and added to a variety of commercial products, including soft drinks, energy drinks, dietary supplements, and medications (Temple *et al*., 2017).

a) Soft drinks and energy drinks: Soft drinks, such as cola, contain about 30-50 mg of caffeine per 355 mL, whereas energy drinks can contain 80-300 mg per serving and are frequently combined with guarana, taurine, and B-vitamins to boost alertness. (Reissig *et al.,* 2009)

b) Drugs and supplements: Caffeine is commonly found in analgesics, cold remedies, and weight-loss products, where it acts as an adjuvant to improve drug efficacy or metabolism (Nehlig, 2016). Caffeine and paracetamol combinations, for example, are commonly used to treat headaches and migraines.

1.5 BENEFICIAL EFFECTS OF CAFFEINE ON HEALTH

1. RESPIRATORY BENEFITS

Clinical studies have shown that caffeine can cause short-term improvements in lung function. Welsh *et al*., (2010) discovered in the Cochrane Database of Systematic Reviews that caffeine consumption resulted in small but measurable improvements in airway function up to four hours later. Caffeine has been shown to improve forced expiratory volume in one second (FEV_1) and mid-expiratory flow rates in individuals with asthma, indicating a mild bronchodilator effect. Caffeine's bronchodilating properties may temporarily relieve symptoms of bronchoconstriction, such as wheezing and shortness of breath. Welsh *et al*., (2010) concluded that, while caffeine cannot replace traditional asthma medications, it may slightly improve respiratory performance and influence the interpretation of lung function tests if consumed prior to testing. Therefore, clinicians are advised to consider recent caffeine intake when interpreting spirometry results.

Caffeine also stimulates the respiratory center in the brainstem, increasing the desire to breathe (Nehlig, 2018). This effect may be beneficial in conditions involving respiratory depression, such as apnea of prematurity, where caffeine citrate is a well-established therapeutic agent for promoting breathing in premature infants (Schmidt *et al*., 2006). The drug improves ventilation and lowers the frequency of apneic episodes, demonstrating caffeine's clinical importance in respiratory medicine.

2. NEUROPROTECTIVE AND COGNITIVE BENEFITS

Caffeine is a non-selective antagonist of adenosine A_1 and A_2A receptors, which prevents adenosine-induced neuronal inhibition and promotes increased neuronal activity (Fredholm *et al*., 1999). Blocking A_2A receptors has been linked to reduced neuroinflammation, oxidative stress, and neuronal apoptosis, all of which play a role in neurodegenerative diseases (Chen *et al*., 2010).

Furthermore, caffeine regulates dopaminergic signaling, which contributes to its beneficial effects in conditions like Parkinson's disease (Xu *et al*., 2010).

Caffeine improves alertness, reaction time, attention, and memory, primarily by stimulating the central nervous system. Regular moderate consumption is linked to improved working memory and executive function, particularly during times of fatigue or sleep deprivation (McLellan *et al*., 2016). According to functional neuroimaging studies, caffeine increases activity in brain regions responsible for attention and memory processing (Koppelstaetter *et al*., 2008). These findings indicate that caffeine improves cognitive performance immediately and may have long-term cognitive benefits.

Epidemiological and experimental studies suggest that caffeine consumption may reduce the risk of Alzheimer's disease (AD) and Parkinson's disease (PD). Longitudinal cohort studies report that habitual coffee or caffeine intake is associated with a significantly lower incidence of AD and PD in later life (Eskelinen and Kivipelto, 2010; Ross *et al*., 2000). Moderate caffeine consumption in aging populations has been linked to improved cognitive preservation and slower mental decline (Santos *et al*., 2010). Its antioxidant and anti-inflammatory properties could help to maintain neuronal integrity and vascular health.

3. PAIN MANAGEMENT BENEFITS

According to clinical studies, caffeine acts as an analgesic adjuvant, which means it improves the efficacy of other pain-relieving medications. Derry *et al*., (2014) discovered that combining caffeine (typically 100-130 mg) with standard doses of common analgesics significantly increased the number of participants who experienced meaningful pain relief when compared to the analgesic alone. The greatest improvement was seen in headache, dental pain, and postpartum pain. According to the proposed mechanism, caffeine may improve the absorption or

bioavailability of co-administered analgesics or act synergistically on pain-modulating pathways (Laska *et al*., 1984).

Caffeine's vasoconstrictive effects on cerebral blood vessels make it especially effective in treating migraines and tension headaches (Nehlig, 2018; Lipton *et al*., 2017). During migraine attacks, cerebral vasodilation occurs, and caffeine's ability to counteract this dilation helps to alleviate symptoms. Furthermore, caffeine is an active ingredient in several migraine-specific medications, including Ergotamine-caffeine and Paracetamol-aspirin-caffeine combinations, which increase the speed and intensity of analgesic effects (Lipton *et al*. 2017).

4. PHYSICAL PERFORMANCE ENHANCER BENEFITS

Caffeine is one of the most extensively researched and widely used ergogenic aids (substances that improve physical performance). It is widely used by athletes, military personnel, and people who want to improve their endurance and alertness. Caffeine is recognized by the International Olympic Committee (IOC) and the World Anti-Doping Agency (WADA) as a legal performance-enhancing compound in moderate doses due to its well-documented physiological benefits (Spriet, 2014).

Caffeine has been shown to significantly improve aerobic endurance, including time to exhaustion and exercise capacity. (Costill *et al*., 1978) This ergogenic effect is thought to be the result of increased energy utilization and a lower perception of effort. A subsequent meta-analysis by (Ganio *et al*., 2009) confirmed that caffeine consumption (3-6 mg/kg) improves endurance performance in trained and recreational athletes. Caffeine boosts mental alertness, reaction time, and focus during prolonged or strenuous activity (McLellan *et al*., 2016). This makes it particularly useful for sports that require sustained attention or complex motor

coordination. The reduced perception of effort and pain during exercise allows athletes to perform at higher intensities for longer periods of time (Doherty and Smith, 2005).

5. MENTAL PERFORMANCE ENHANCER BENEFITS

Caffeine is well known for its stimulative effects on mental alertness, attention, and cognitive performance. It is the most commonly consumed psychoactive substance worldwide, acting primarily on the central nervous system (CNS) to improve mental performance and reduce fatigue (Nehlig, 2010). It improves cognition across a variety of activities, including sustained attention, reaction time, working memory, and executive function.

Caffeine is especially effective for improving sustained attention and vigilance. Smith, (2002) found that moderate caffeine consumption (40-300 mg) significantly improves reaction time, sustained attention, and accuracy in tasks that require prolonged concentration. These effects are particularly pronounced in sleep-deprived individuals, where caffeine can temporarily restore alertness and reduce errors (McLellan *et al*., 2016). Research has shown that caffeine may enhance certain aspects of memory function, particularly working memory and memory consolidation. Koppelstaetter *et al*., (2008) used functional MRI to show that caffeine increases activation in brain areas associated with memory, such as the prefrontal cortex. Additionally, Borota *et al*., (2014) reported that post-learning caffeine intake improved long-term memory consolidation in humans, suggesting caffeine's role in supporting memory retention.

Caffeine has also been shown to boost mood, motivation, and cognitive endurance by reducing mental fatigue. Lieberman *et al*., (2002) found that caffeine improves mood, vigilance, and psychomotor performance during long-term military operations involving sleep deprivation and

stress. These findings support caffeine's use in occupational and academic settings where mental endurance and alertness are essential.

1.6 NEGATIVE IMPLICATIONS OF CAFFEINE

1. SLEEP DISTURBANCES

Caffeine's relationship with sleep disruption has been well documented in both experimental and epidemiological studies, demonstrating that even moderate caffeine consumption can impair sleep quality, duration, and onset latency, particularly when consumed later in the day (Roehrs and Roth, 2008).

Recent research has extended these mechanistic insights to real-world sleep outcomes. For example, a 2022 controlled laboratory study discovered that even a single dose of caffeine altered electroencephalography (EEG) markers of sleep, including decreased slow-wave activity, under constant dark conditions (Wang & Deboer, 2022). Daily ecological-momentary assessment studies show a bidirectional relationship: higher caffeine intake predicts poorer self-reported sleep quality that night and decreased alertness the next day; poor sleep predicts higher next-day caffeine consumption (Killgore *et al*., 2023).

2. CARDIOVASCULAR EFFECTS

Caffeine is one of the most widely consumed stimulants in the world, but growing evidence suggests that excessive and frequent consumption may pose cardiovascular risks even in healthy people (Kagathara *et al*., 2024).

In a study of healthy young adults, consuming caffeine and taurine resulted in changes in cardiovascular autonomic control and increased heart rate variability indices, indicating greater sympathetic dominance (Çalışkan, 2024). Furthermore, a study presented at American college of

cardiology (ACC) Asia 2024 found that chronic consumption of more than 400 mg/day resulted in delayed heart rate and blood pressure recovery after exercise, as well as higher resting values in otherwise healthy participants (Kagathara *et al*., 2024). Although moderate caffeine consumption in healthy adults may not pose a significant cardiovascular risk, the evidence suggests caution when consumed in large quantities, frequently, or in conjunction with exercise, hypertension, or other cardiovascular vulnerabilities. Clinicians should consider caffeine consumption when assessing cardiovascular risk, particularly in patients with high blood pressure or arrhythmias.

3. ANXIETY AND DEPENDENCE

Caffeine is widely consumed for its alerting effects, but emerging evidence highlights its anxiogenic potential as well as its capacity for dependence and withdrawal. Caffeine's stimulation of the central nervous system, through adenosine receptor antagonism and increased catecholamine release, can cause heightened arousal, jitteriness, and panic-like symptoms. Caffeine (400-750 mg) caused panic attacks in approximately 51% of panic disorder patients, compared to 1.7% of healthy controls (Klevebrant and Frick, 2022).

Beyond anxiety, caffeine use can develop into a pattern characterized by tolerance, craving, withdrawal, and continued use despite harm, all of which meet many criteria for dependence. A 2024 cross-sectional study found that caffeine use disorder (CUD) scores were positively correlated with caffeine intake (~461 mg/day) and anxiety, depression, and stress levels (Bodur *et al*., 2024). Headaches, irritability, depression, and anxiety are common withdrawal symptoms that appear within 12-24 hours and can last for up to a week (Zheng, 2023). The risk for anxiety and dependence increases with higher caffeine dose and more frequent use. Given the ubiquity of

caffeine consumption, the anxiogenic and dependence risks are significant for vulnerable groups—such as adolescents, individuals with anxiety or panic disorder, and high-dose energy-drink users. Clinicians should screen caffeine intake when assessing anxiety symptoms or substance use patterns.

4. GASTROINTESTINAL EFFECTS

Caffeine stimulates gastric acid and gastrin secretion and has been linked to increased gut motility, particularly colonic motor activity (Nehlig, 2022). One of the most consistent findings is that caffeine and coffee consumption promotes bowel movements. This is demonstrated by an increase in colonic motor activity soon after ingestion. For example, a meta-analysis discovered that drinking caffeinated beverages after colorectal surgery significantly reduced the time to first bowel movement and solid food intake (Kang & Yan, 2024). Thus, caffeine may accelerate GI transit.

According to recent research, moderate caffeine and coffee consumption may benefit gut microbiota composition by increasing the abundance of Firmicutes and Actinobacteria, decreasing Bacteroidetes, and improving microbiome diversity (Saygili *et al*., 2024). However, excessive consumption has been linked to reflux disorders or worsening of GI symptoms (Saygili *et al*., 2024).

Caffeine can cause epigastric discomfort, heartburn, nausea, and altered bowel habits in sensitive people (Elavarasi, 2024). The magnitude of these effects can vary depending on the rate of consumption, timing (particularly on an empty stomach), underlying GI disease, and metabolic differences.

5. PREGNANCY CONCERNS

Caffeine consumption during pregnancy is common, but new research suggests several potential risks for both the mother and the developing fetus. Because maternal caffeine clearance slows during pregnancy, the fetus may be exposed to higher effective concentrations for longer periods (World Health Organization, 2023). Current international guidelines recommend limiting maternal caffeine intake to <200 mg/day, with some organizations cautioning against exceeding 300 mg/day due to increased risk of fetal growth restriction (World Health Organization, 2023).

A dose-response meta-analysis discovered that maternal caffeine consumption during pregnancy is significantly associated with an increased risk of pregnancy loss: each 100 mg/day increase in caffeine was linked to a roughly 7% higher risk of miscarriage or stillbirth (Greenwood *et al*., 2023). An NIH study found that infants born to mothers who consumed ~50 mg/day of caffeine had smaller fetal sizes (Grantz, 2021). In addition to loss and growth restriction, caffeine exposure in utero may have an impact on long-term child development. Children whose mothers consumed more caffeine during pregnancy were shorter in early childhood (Gleason *et al*., 2022).

Because caffeine crosses the placenta and the fetus lacks the metabolic machinery to handle it effectively, caution is warranted. Obstetric clinicians should include caffeine screening as part of prenatal counselling, emphasising that even “moderate” intake may carry risk, especially in the first trimester. A prudent approach is to minimise caffeine intake and offset any potential harm by focusing on overall healthy maternal nutrition and lifestyle.

1.7 DIETARY VARIATIONS AND GLOBAL CONSUMPTION OF CAFFEINE

Caffeine consumption patterns vary greatly around the world, influenced by dietary habits, cultural traditions, geographic availability, and socioeconomic status. It is estimated that 80-90% of adults worldwide consume caffeine on a daily basis, primarily through coffee, tea, soft drinks, and energy drinks (Heckman *et al*., 2010). The amount and source of caffeine consumption vary by region and are influenced by both traditional practices and modern commercial trends.

Coffee remains the most common source of caffeine in many Western countries, whereas tea is more popular in Asia, the Middle East, and parts of Africa (Mitchell *et al*., 2014). Cultural preferences, economic factors, and product availability heavily influence the primary caffeine sources in each region.

Over the last two decades, energy drinks, caffeinated soft drinks, and supplements have become major caffeine sources, particularly among adolescents and young adults (Temple *et al*. 2017). These beverages, which frequently contain synthetic caffeine and herbal extracts such as guarana, can deliver caffeine doses greater than 200-300 mg per serving (Reissig *et al*., 2009). Marketing strategies aimed at youth and athletes have resulted in a global increase in caffeine consumption beyond traditional dietary sources.

1.8 HABITS OF CAFFEINE USE AMONG UNIVERSITY STUDENTS

Caffeine consumption is extremely common among university students worldwide, and it is an integral part of their daily study and social routines. Prevalence estimates vary by region: cross-sectional surveys typically report that 70-95% of university students consume caffeine in some form (coffee, tea, soft drinks, energy drinks, or caffeine-containing supplements), with many students using caffeine on a daily basis to manage academic workloads and daytime sleepiness (Kharaba *et al*., 2022; Riera-Sampol *et al*., 2022).

The primary sources vary by country and culture. Coffee is the most popular beverage in many Western countries, particularly among older students, while tea and soft drinks are still popular in parts of Asia and Africa. Energy drinks and ready-to-consume caffeinated products are particularly popular among younger undergraduates, and they are associated with higher per-serving caffeine exposures (Protano *et al*., 2023; Di Martino *et al*., 2024). Students frequently use caffeine during study sessions, early mornings, late nights, and exam periods for reasons such as staying awake, improving concentration, coping with academic stress, and socializing (Di Martino *et al*., 2024; Pulla *et al*., 2024). Many students report consuming multiple sources throughout the day (e.g., morning coffee + afternoon tea + evening energy drink), which increases cumulative intake and the risk of sleep disruption.

Research indicates that approximately 40-45% of undergraduates consume energy drinks, which is associated with poorer sleep, increased daytime dysfunction, and higher caffeine intake (Protano *et al*., 2023; Kaldenbach *et al*., 2024). Even occasional consumption of energy drinks has been linked to disturbed sleep in large population samples, demonstrating that these products have a significant impact on student health. While many students recognise short-term benefits (alertness, mood), knowledge gaps exist about safe dose thresholds and adverse effects. Withdrawal symptoms (headache, irritability, sleep problems) and tolerance are commonly reported. Study interventions and educational campaigns targeting safe caffeine use, sleep hygiene and alternatives for managing academic stress have been recommended by authors of recent surveys.

Caffeine consumption varies by gender, academic discipline, and geography. Several studies have found that males consume more coffee/tea in some regions but females consume more in

others; medical and health-science students frequently report higher use, particularly during exam periods (Jamal & Abu Hasan, 2024; Pulla *et al*., 2024). Caffeine use among university students is widespread, multi-faceted, and frequently exacerbated by academic pressures. Energy drink consumption and multi-product use raise total intake and risks (sleep disruption, dependence). Universities should consider incorporating caffeine awareness into student health programs (education on dose limits, timing, and healthier coping strategies), and future research should focus on longitudinal tracking of intake patterns and health outcomes.

1.9 FACTORS INFLUENCING THE HABITS OF CAFFEINE USE AMONGST UNIVERSITY STUDENTS

1. Perceived need for alertness and concentration

Caffeine products (coffee, tea, soft drinks, energy drinks, and supplements) are commonly used by university students around the world to increase or maintain alertness and concentration. Academic demands (lectures, long study sessions, late-night revision, and exams), combined with irregular sleep and part-time work, create a perceived need for pharmacological or beverage-based stimulants to stay awake and mentally focused. This perceived need is consistently reported as the primary motivation for caffeine consumption in student populations across continents (Kharaba *et al*., 2022; Protano *et al*., 2023).

According to surveys of university and college students, staying awake and improving concentration are among the most common reasons they choose caffeinated products. According to representative cross-sectional studies and student surveys, 60% to 90% of students use "staying awake to study" or "improving concentration" as their primary motivation (Di Martino *et al*., 2024). These motivations are especially strong during high-demand academic periods like

midterms and final exams, when consumption frequency and quantity increase significantly (Di Martino *et al*., 2024).

2. Stress, academic pressure and exam-related consumption

Caffeine consumption among university students has been consistently linked to academic pressure and stress, with many students relying on caffeine-containing products to boost alertness, improve concentration, and deal with the mental and physical demands of college. The university environment frequently exposes students to long study hours, irregular sleep patterns, and heavy coursework, leading to reliance on caffeine as a coping mechanism (Khalil and Antoun, 2020; Di Martino *et al*., 2024).

Caffeine consumption increases during periods of high academic stress, particularly examinations. Students frequently use caffeine to combat fatigue and extend study sessions during exams. (Khalil and Antoun 2020) found that caffeine consumption among university students increased significantly during exam periods, indicating that caffeine is used as a short-term performance enhancer. Similarly, (Di Martino *et al*. 2024) found that students' caffeine consumption fluctuated significantly during academic pressure, emphasizing its perceived role in workload management and concentration.

3. Addiction and habit formation

Habit formation is defined as repeated behaviour cued by context (e.g., morning lecture, late-night study) that becomes automatic with time. Dependence (or caffeine use disorder, as some studies define it) includes physiological tolerance and withdrawal, as well as behavioural characteristics such as unsuccessful attempts to reduce use and continued use despite negative consequences (StatPearls, 2023). Caffeine is culturally acceptable and widely available, but

among university students, it frequently becomes a habitual and, in some cases, addictive behavior. To sustain and amplify use, habit formation and caffeine dependence features (tolerance, withdrawal, continued use despite harm) interact with the student environment — academic pressure, irregular sleep, social norms, and easy access to high-caffeine products (Kharaba *et al*., 2022).

University life provides strong contextual cues (late-night studying, exam weeks, social study sessions) that, when combined with caffeine's reinforcing effects, strengthen stimulus-response habits. Stress, sleep loss, and perceived performance needs hasten this learning: students report increasing use during high-demand periods, reinforcing the belief that caffeine is required for functioning (Di Martino *et al*., 2024; Kharaba *et al*., 2022).

4. Peer influence, marketing and advertising

University students are immersed in dense social networks and commercial environments where peer behaviour, targeted marketing, and advertising all influence the consumption of caffeine-containing beverages. These social and commercial drivers frequently interact, creating norms that normalise frequent and sometimes high-dose caffeine consumption among students (Smith, 2021). Peers and close social groups have a strong influence on students' caffeine use. According to observational and survey studies, students are more likely to consume caffeinated beverages if their friends do so, if consumption is part of study or social rituals (e.g., "study-with-coffee" sessions), or if peers explicitly recommend specific products for staying alert (Nguyen *et al*., 2022). Peer modelling influences not only the decision to start using caffeine, but also patterns such as frequency, timing (late-night study sessions), and product mix (for example, combining coffee with energy drinks). Social identity and the desire to belong (particularly in first-year cohorts) amplify peer effects (Garcia & Patel, 2023).

Commercial marketing influences perceptions of efficacy, safety, and social acceptance. Beverage companies and supplement brands use multi-channel campaigns to promote alertness, academic performance, and lifestyle appeal (Collins *et al*., 2021). Energy-drink marketing, in particular, uses messaging that connects high-intensity performance (study marathons, late-night gaming) with product use; packaging and formulation (high sugar, high caffeine, novel flavors) are specifically designed to appeal to young adults (Hernandez *et al*., 2022). Promotional offers (buy-one-get-one, student discounts) and point-of-sale visibility on and near campuses help to increase trial and repeat purchases.

5. Accessibility and availability

The accessibility and availability of caffeinated products are significant predictors of student caffeine use. Easy on-campus access (canteens, coffee shops, vending machines, campus stores), extended hours of operation, low prices, and widespread retail/online availability all lower consumption barriers and encourage frequent, sometimes high-dose use (Oliveira, 2024; Rozman, 2021).

Retail vendors, campus coffee outlets provide 24/7 or extended-hours access to caffeinated beverages, making it simple for students to obtain stimulants during late-night study sessions or between classes. Where retail availability is high, students report greater daily consumption and more multi-product use (coffee + energy drinks + sodas).

6. Cultural and social trends

Caffeine consumption among university students is strongly influenced by cultural and social trends that extend far beyond basic pharmacology. Over the last decade, the global rise of café

culture, the growth of energy-drink markets, the prevalence of social media and influencer marketing, and changing academic lifestyles (late-night studying, "all-nighters," and a culture that values productivity) have created social environments in which frequent and sometimes high-dose caffeine use is normalized among students (Riera-Sampol *et al*., 2022).

Social media sites normalise the use of products and magnify cultural trends. Significant company-generated and user-generated promotion of caffeinated products, especially energy drinks, across student-friendly platforms is revealed by empirical analyses of social media marketing (Ayoub *et al*., 2023). Also, Modern cafés and branded coffee chains increasingly function as “third places” for students — spaces used for focused study, group work and socialising outside home and formal campus buildings.

1.10 STATEMENT OF PROBLEM

Caffeine's stimulant effect, combined with its ubiquity, makes it common and accessible; as a result, it is frequently used by university students, particularly during exam periods, to help them stay awake and study. Caffeine is typically consumed in large amounts throughout the day in the hopes of remaining awake for an extended period of time; however, this practice may result in tolerance and withdrawal symptoms. Sudden discontinuation can cause withdrawal symptoms such as headache, fatigue, irritability, and impaired cognitive performance (Juliano and Griffiths, 2004).

Students' attitudes toward caffeine are frequently influenced by their perceived benefits and societal norms. However, limited research has been conducted relating to the habit of caffeine use among Nigerian students. This study seeks to explore the habits and practices of caffeine use among students of the University of Benin, Nigeria. The research will examine students' habits

towards caffeine and assess their actual use behaviors. Understanding these factors is critical for developing targeted educational interventions that promote healthy lifestyle choices minimize potential health risks associated with excessive caffeine consumption.

1.11 JUSTIFICATION FOR THE STUDY

1. Vulnerability among University Students

University students are a distinct population with heavy academic workloads, irregular sleep patterns, and lifestyle stressors that frequently encourage caffeine consumption. Many students consume caffeine to improve alertness, concentration, and endurance during times of academic stress (Kharaba *et al*., 2022). Investigating their caffeine consumption habits is therefore critical for understanding the behavioural and physiological responses that accompany this coping mechanism.

2. Health Consequences of Excessive Caffeine Intake

Although moderate caffeine consumption can boost alertness, excessive consumption has been linked to negative health outcomes such as insomnia, anxiety, cardiovascular palpitations, gastrointestinal irritation, and potential dependence (Protano *et al*., 2023). Understanding students' caffeine habits aids in the identification of risky consumption patterns and supports health education strategies aimed at promoting safe limits and raising awareness about potential side effects.

3. The Impact of Global Coffee and Energy Drink Culture.

The global increase in coffee consumption, energy drink marketing, and social media promotion has had a significant impact on young adults' perceptions and behaviours regarding caffeine (Ayoub *et al*., 2023). University students are particularly targeted by advertisements that link

caffeine consumption to productivity, success, and social acceptance. Studying their habits reveals how such external factors influence consumption behaviour across different regions.

4. **Public Health and Policy Relevance**

Data from this study can help university health authorities, educators, and policymakers design interventions to reduce caffeine-related health risks and improve student well-being. Findings will also contribute to developing institutional guidelines that promote balanced dietary and sleep habits while discouraging excessive stimulant use.

5. **Contribution to Local Context**

There is limited empirical data on caffeine consumption patterns among university students in developing countries such as Nigeria and other parts of Africa. This study will therefore fill a significant knowledge gap, providing baseline information that future researchers can build upon. It also supports the global academic effort to understand behavioural health factors among young adults.

1.12 Research Objectives

1.12.1 General Objective

To assess the habits, patterns, and influencing factors of caffeine consumption among undergraduate students of the University of Benin.

1.12.2 Specific Objectives

1. To determine the prevalence and frequency of caffeine consumption among undergraduate students of the University of Benin.
2. To identify the common sources of caffeine (such as coffee, tea, soft drinks, and energy drinks) consumed by students.
3. To examine the reasons or motivations for caffeine use among students, including perceived need for alertness, taste and pleasure or other social and academic influences.
4. To investigate demographic factors (such as age, gender, faculty, and level of study) that may influence patterns of caffeine use.

CHAPTER TWO

METHODS

2.1 STUDY SETTING

The study was conducted at the University of Benin (UNIBEN), Ugbowo, Benin City, Edo State. The University of Benin (UNIBEN) was established in 1970 and gained full university status in 1971. It has since developed into a major center for teaching, research and innovation. The University has an estimated population of over 77,000 students with two campuses (Ugbowo campus and Ekehuan campus). The University offers programs across 16 Faculties, including Agriculture, Arts, Basic medical sciences, Dentistry, Education, Engineering, Environmental sciences, Law, Life sciences, Medicine, Management sciences, Pharmacy, Physical sciences, Social sciences, Veterinary medicine and Institute of Education (other services). University of Benin possesses a tertiary health care facility; a 550 bed University of Benin Teaching Hospital (UBTH). The accessibility, social trends and availability of caffeinated beverages and food among the student population in the University made them suitable for this study. The urban and diverse academic environment of UNIBEN provided an ideal setting to evaluate habits of caffeine use. Findings from this setting could be generalized to other tertiary institutions in similar urban environments across Nigeria.

2.2 STUDY DESIGN

The study employed a descriptive cross-sectional observational design to assess the habits of caffeine use among undergraduate student in the University of Benin, Edo state, Nigeria.

2.3 STUDY POPULATION

The study population for this study consisted of all male and female undergraduate students enrolled in the University of Benin situated in Ugbowo campus, Benin City, Edo-state.

2.4 SAMPLE SIZE DETERMINATION

The study sample was drawn from both male and female undergraduate students aged 16years and above. The population of student at the study period was 40,528 (N=40,528). The sample size for this study was calculated using the Cochran's formula as stated thus;

$n_0 = (Z^2 \times p \times (1-p))/E^2$

Where:

- n_0= initial sample size for an infinite population
- Z = 1.96 (Z-score corresponding to 95% confidence level)
- p = 0.5 (Estimated proportion to provide maximum variability, most conservative)
- E = 0.05 (Margin of error)

Substituting the values;

$n_0= (1.96^2 \times 0.5 \times (1-0.5))/0.05^2$

$n_0= (3.8416 \times 0.5 \times 0.5))/0.025$

$n_0= 0.9604/0.0025$

$n_0= 384$

Applying the finite population correction for N=40,528

$n= n_0 / [1 + ((n_0 – 1)/N)]$

$n= 384/ [1 + ((384 – 1) / 40,528)]$

n= 381 participants

Therefore, the required sample size was 381 participants.

2.5 DATA COLLECTION

A self-structured questionnaire, based on the study objectives and relevant literature was used as the primary data collection instrument. The questionnaire was adapted from previous studies on caffeine consumption among university students (Landrum, 1992; Ágoston *et al*., 2018; Bühler *et al*., 2014) and modified to suit the study population at the University of Benin containing 17 items. This questionnaire was distributed to the University of Benin students during various gatherings. The questionnaire included two sections; Section A will obtain socio-demographics information including age, sex, faculty, religion, residence. Section B will assess the habits of caffeine use. Data collected was conducted manually by self-administration of questionnaire with strict attention to accuracy and confidentiality in order to protect participants' information throughout the process.

2.6 SAMPLING TECHNIQUE

The study employed a stratified random sampling to select participant from the student population in the University of Benin. The population was divided into strata based on faculties to ensure representation across the different academic units, proportional samples were then randomly selected from each stratum to reach the total sample size of 381 participants. This method minimized sampling bias and ensure that the sample accurately reflected the diversity within the student population.

2.7 INCLUSION CRITERIA:

1. All Undergraduate students from the University of Benin.
2. Students who consented to participate in the study.
3. Students who were available and accessible for data collection.

2.8 EXCLUSION CRITERIA:

1. Students unwilling to participate or provide consent for the study.
2. Students with cognitive and communication disparities that prevented them from participating.

2.9 ETHICAL COMMITTEE APPROVAL

Ethical approval for the study was sought from the Ethical Committee of the Faculty of Pharmacy, University of Benin to ensure compliance with ethical standards for research involving human subjects.

Informed consent was obtained from all participants, highlighting that participation was voluntary, confidentiality was maintained, and participants could withdraw from the study at any time without facing any repercussions. Extra measures were taken to safeguard the privacy and anonymity of participants during data collection and analysis.

2.10 DATA ANALYSIS

The collected data was coded and entered into a Microsoft excel spreadsheet, then analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics was done and results were represented as frequencies and percentages. Cross tabulations were performed where applicable to explore relationships between variables such as age, faculty, academic level, religion, gender and habits of use.

Chi-square test was applied to test for associations between categorical variables at a significance level of $p < 0.05$. Results were presented using tables to enhance clarity and facilitate interpretation where needed. Findings were discussed in relation to existing literature and the objectives of the study.

CHAPTER THREE

RESULTS

Table 3.1: Demographic characteristics of respondent

Out of the 381 respondents, 201 (52.76 %) were male, while 180 (47.24 %) were female. Most respondents were within the 16–20 years (49.87 %) and 21–25 years (46.72 %) age categories. There was even distribution spread across the various academic disciplines. The largest proportion of respondents were in the 200 level (39.37 %). The majority of respondents identified as Christians (90.55 %) and most students lived off-campus (73.49 %)

Table 3.1: Demographic characteristics of respondent

Demographic Factors	Frequency (n)	Percentage (%)
Gender		
Male	201	52.76%
Female	180	47.24%
Age (years)		
16-20	190	49.87%
21-25	178	46.72%
26-30	10	2.62%
30 and above	3	0.79%
Faculty		
Agriculture	24	6.30%
Arts	24	6.30%
Basic Medical Sciences	24	6.30%
Dentistry	24	6.30%
Education	24	6.30%
Engineering	24	6.30%
Environmental Sciences	24	6.30%
Institute of Education	23	6.04%
Law	24	6.30%
Life Science	23	6.04%
Medicine	24	6.30%
Management Science	23	6.04%
Pharmacy	24	6.30%

Table 3.1: Demographic characteristics of respondent

Demographic Factors	Frequency (n)	Percentage (%)
Physical Science	24	6.30%
Social Science	24	6.30%
Veterinary Medicine	24	6.30%
Academic Level		
100 level	21	5.51%
200 level	150	39.37%
300 level	40	10.50%
400 level	112	29.40%
500 level	52	13.65%
600 level	6	1.58%
Religion		
Christian	345	90.55%
Muslim	34	8.92%
Traditional	2	0.52%
Residence		
Off-Campus	280	73.49%
On-Campus	101	26.51%

Table 3.2: Habits of Caffeine use

A large majority of respondents, 350 (91.86%). The respondents reported multiple sources of caffeine. The most common were carbonated drinks (Coca-Cola, Pepsi) consumed by 208 (54.59%). Caffeine use was primarily justified by respondents for taste and pleasure (54.07%), relaxation (28.87%), energy (27.82%), and concentration when studying (25.98%). The daily consumption pattern shows that 238 students (62.47%) consumed caffeine once daily, A majority of respondents, 250 (65.62%), reported consuming one cup, bottle, or can daily. 44.36% of respondents preferred the afternoon, followed by evening (25.20%), night (25.20%), and morning (23.10%). 91.34% out of the 381 respondents reported that they could go 2–3 days without caffeine. 135 (35.43%) respondents admitted experiencing an urge or craving to consume caffeinated beverages.

Table 3.2: Habits of Caffeine use

	Response	
Questions	**Yes (%)**	**No (%)**
Do you consume Caffeinated beverage?	350 (91.86%)	31 (8.14%)
What are your preferred caffeinated beverages?		
Coffee	99 (25.98%)	282 (74.02%)
Tea	149 (39.11%)	232 (60.89%)
Energy drinks (Fearless, monster, predator)	132 (34.65%)	249 (65.35%)
Carbonated drinks (Coca-Cola, Pepsi)	208 (54.59%)	173 (45.41%)
What are the reasons for consuming carbonated beverages?		
Taste and Pleasure	206 (54.07%)	175 (45.93%)
Headache	15 (3.94%)	366 (96.06%)
Increased alertness	63 (16.54%)	318 (83.46%)
Concentrate when studying	96 (25.98%)	285 (74.02%)
Energy	106 (27.82%)	275 (72.18%)
Relaxation	110 (28.87%)	271 (71.13%)
How often do you consume caffeinated beverages in a day?		
Once	238 (62.47%)	143 (37.53%)
Two-Three times	49 (12.86%)	332 (87.14%)
More than three times	19 (4.99%)	362 (95.01%)
None	75 (19.69%)	306 (80.31%)
How often do you consume caffeinated beverage in a week?		
Once	74 (19.42%)	307 (80.58%)
Twice	92 (24.15%)	289 (75.85%)
Three times	85 (22.31%)	296 (77.69%)

Table 3.2: Habits of Caffeine use

	Response	
Questions	**Yes (%)**	**No (%)**
More than three times	82 (21.52%)	299 (78.48%)
None	48 (12.60%)	333 (87.40%)
How many bottles/cups/cans of caffeinated beverages do you consume a day?		
One	250 (65.62%)	131 (34.38%)
Two	51 (13.39%)	330 (86.61%)
Three	10 (2.63%)	371 (97.37%)
More than three	6 (1.57%)	375 (98.43%)
None	64 (16.80%)	317 (83.20%)
Which part of the day do you prefer to take caffeinated beverages?		
Morning	88 (23.10%)	293 (76.90%)
Afternoon	169 (44.36%)	212 (55.64%)
Evening	96 (25.20%)	285 (74.80%)
Night	96 (25.20%)	285 (74.80%)
Could you go 2-3 days without caffeinated beverages?	348 (91.34%)	33 (8.66%)
Do you experience the urge to consume caffeine?	135 (35.43%)	246 (64.57%)
What problems have you experienced after suddenly stopping caffeine intake?		
Poor concentration	4 (1.05%)	377 (98.95%)
Depressed mood	8 (2.10%)	373 (97.90%)
Fatigue	44 (11.55%)	337 (88.45%)
Headache	7 (1.84%)	374 (98.16%)
Low energy	14 (3.68%)	367 (96.32%)

Table 3.2: Habits of Caffeine use

	Response	
Questions	**Yes (%)**	**No (%)**
Anxiety	14 (3.68%)	367 (96.32%)
Nausea	6 (1.57%)	375 (98.43%)

Table 3.3: Association between demographic factors and consumption of caffeine.

The study found no significant relationship between age and caffeine consumption ($\chi^2 = 3.468$, $p = 0.325$). The study found no significant gender differences in caffeine consumption ($\chi^2 = 0.003$, $p = 0.9564$). There was no discernible correlation between faculty and caffeine use ($\chi^2 = 17.322$, $p = 0.300$). There was a statistically significant correlation between caffeine consumption and academic level ($\chi^2 = 12.186$, $p = 0.0323$). There was no statistically significant correlation between caffeine intake and religion ($\chi^2 = 4.921$, $p = 0.0854$). Lastly, there was no significant correlation between caffeine consumption and where students lived ($\chi^2 = 1.331$, $p = 0.249$).

Table 3.3: Association between demographic factors and consumption of caffeine.

Demographic factors	Yes (%)	No (%)	Chi-Square Value (χ^2)	P-Value
Age				
16-20 years	178 (93.68%)	12 (6.32%)	3.468	0.3250
21-25 years	161 (90.45%)	17 (9.55%)		
26-30 years	8 (80%)	2 (20%)		
31 and above	3 (100%)	0		
Gender				
Male	184 (91.54%)	17 (8.46%)	0.003	0.9564
Female	166 (92.22%)	14 (7.78%)		
Faculty				
Agriculture	21 (87.50%)	3 (12.50%)	17.322	0.3000
Arts	24 (100%)	0		
Basic Medical Sciences	20 (83.33%)	4 (16.67%)		
Dentistry	22 (91.67%)	2 (8.33%)		
Education	21 (87.50%)	3 (12.50%)		
Engineering	22 (91.67%)	2 (8.33%)		
Environmental Science	21 (87.50%)	3 (12.50%)		
Institute of Education	21 (91.30%)	2 (8.70%)		
Law	24 (100%)	0		
Life Science	22 (95.65%)	1 (4.35%)		
Medicine	20 (83.33%)	4 (16.67%)		
Management Science	20 (86.96%)	3 (13.04%)		
Pharmacy	24 (100%)	0		

Table 3.3: Association between demographic factors and consumption of caffeine.

Demographic factors	Yes (%)	No (%)	Chi-Square Value (χ^2)	P-Value
Physical Science	21 (87.50%)	3 (12.50%)		
Social Science	24 (100%)	0		
Veterinary Medicine	23 (95.83%)	1 (4.17%)		
Academic Level				
100 Level	21 (100%)	0	12.186	0.0323
200 Level	140 (93.33%)	10 (6.67%)		
300 Level	40 (100%)	0		
400 Level	96 (85.71%)	16 (14.29%)		
500 Level	47 (90.38%)	5 (9.62%)		
600 Level	6 (100%)	0		
Religion				
Christian	317 (91.88%)	28 (8.12%)	4.921	0.0854
Muslim	32 (94.12%)	2 (5.88%)		
Traditional	1 (50%)	1 (50%)		
Residence				
Off-Campus	254 (90.71%)	26 (9.29%)	1.331	0.2486
On-Campus	96 (95.05)	5 (4.95%)		

Table 3.4: Association between demographic factors and weekly consumption of caffeine

There was a significantly correlation between weekly caffeine intake and age ($\chi^2 = 23.217$, $p = 0.0259$). Male and female students showed no significant relationship in weekly caffeine consumption ($\chi^2 = 7.012$, $p = 0.1353$). There was a lack of a significant relationship between faculty and weekly caffeine consumption ($\chi^2 = 51.705$, $p = 0.7684$) There was no statistically significant relationship between faculties and academic level ($\chi^2 = 24.217$, $p = 0.2330$). The relationship between religion and caffeine consumption frequency was not significant ($\chi^2 = 4.876$, $p = 0.7707$). Weekly caffeine consumption was statistically significantly correlated with residence ($\chi^2 = 10.022$, $p = 0.0401$).

Table 3.4: Association between demographic factors and weekly consumption of caffeine

Demographic factors	Once (%)	Twice (%)	Thrice (%)	More than three times (%)	None (%)	Chi-Square Value (χ^2)	P-Value
Age							
16-20 years	36 (18.95%)	46 (24.21%)	38 (20%)	52 (27.37%)	18 (9.47%)	23.217	0.0259
21-25 years	36 (20.22%)	45 (25.28%)	42 (23.60%)	30 (16.85%)	25 (14.04%)		
26-30 years	2 (20%)	1 (10%)	4 (40%)	0	3 (30%)		
31 and above	0	0	1 (33.33%)	0	2 (66.67%)		
Gender							
Male	42 (20.90%)	45 (22.39%)	52 (25.87%)	35 (17.41%)	27 (13.43%)	7.012	0.1353
Female	32 (17.78%)	47 (26.11%)	33 (18.33%)	47 (26.11%)	21 (11.67%)		
Faculty							
Agriculture	7 (29.17%)	4 (16.67%)	5 (20.83%)	5 (20.83%)	3 (12.50%)	51.705	0.7684
Arts	4 (16.67%)	9 (37.5%)	4 (16.67%)	7 (29.17%)	0		
Basic Medical Sciences	6 (25%)	6 (25%)	3 (12.50%)	3 (12.50%)	6 (25%)		
Dentistry	1 (4.17%)	7 (29.17%)	8 (33.33%)	6 (25%)	2 (8.33%)		
Education	2 (8.33%)	9 (37.5%)	3 (12.50%)	7 (29.17%)	3 (12.50%)		
Engineering	6 (25%)	3 (12.50%)	6 (25%)	4 (16.67%)	5 (20.83%)		
Environmental Science	4 (16.67%)	6 (25%)	4 (16.67%)	6 (25%)	4 (16.67%)		
Institute of Education	4 (17.39%)	5 (21.74%)	6 (26.09%)	6 (26.09%)	2 (8.70%)		
Law	4 (16.67%)	8 (34.78%)	7 (29.17%)	2 (8.33%)	3 (12.50%)		
Life Science	4 (17.39%)	6 (26.09%)	6 (26.09%)	6 (26.09%)	1 (4.35%)		

Table 3.4: Association between demographic factors and weekly consumption of caffeine

Demographic factors	Once (%)	Twice (%)	Thrice (%)	More than three times (%)	None (%)	Chi-Square Value (χ^2)	P-Value
Medicine	7 (29.17%)	5 (20.83%)	4 (16.67%)	2 (8.33%)	6 (25%)		
Management Science	3 (13.04%)	3 (13.04%)	4 (17.39%)	10 (43.48%)	3 (13.04%)		
Pharmacy	5 (20.83%)	6 (25%)	6 (25%)	4 (16.67%)	3 (12.50%)		
Physical Science	6 (25%)	3 (12.50%)	7 (29.17%)	6 (25%)	2 (8.33%)		
Social Science	6 (25%)	5 (20.83%)	7 (29.17%)	4 (16.67%)	2 (8.33%)		
Veterinary Medicine	5 (20.83%)	7 (29.17%)	5 (20.83%)	4 (16.67%)	3 (12.50%)		
Academic Level							
100 Level	5 (23.81)%	5 (23.81%)	7 (33.33%)	4 (19.05%)	0	24.217	0.2330
200 Level	34 (22.67%)	30 (20%)	30 (20%)	40 (26.67%)	16 (10.67%)		
300 Level	5 (12.50%)	12 (30%)	12 (30%)	9 (22.5%)	2 (5%)		
400 Level	20 (17.86%)	29 (25.89%)	22 (19.64%)	21 (18.75%)	20 (17.86%)		
500 Level	10 (19.23%)	13 (25%)	13 (25%)	8 (15.38%)	8 (15.38%)		
600 Level	0	3 (50%)	1 (16.67%)	0	2 (33.33%)		
Religion							
Christian	66 (19.13%)	85 (24.64%)	77 (22.32%)	74 (21.45%)	43 (12.46%)	4.876	0.7707
Muslim	8 (23.53%)	7 (20.59%)	8 (23.53%)	7 (20.59%)	4 (11.76%)		
Traditional	0	0	0	1 (50%)	1 (50%)		
Residence							
Off-Campus	56 (20%)	66 (23.57%)	62 (22.14%)	53 (18.93%)	43 (15.36%)	10.022	0.0401
On-Campus	18 (17.82%)	26 (25.74%)	23 (22.77%)	29 (28.71%)	5 (4.95%)		

Table 3.5: Association between demographic factors and number of cup/bottles/cans of caffeinated drinks consumed in a day

Age in relation to the number of cup, can, bottle of caffeinated beverages consumed daily were found to be significantly correlated by the study ($\chi^2 = 22.73$, $p = 0.029$). There was no significant relationship between gender and the number of caffeinated drinks consumed daily ($\chi^2 = 5.14$, $p = 0.273$). The association between faculty and caffeine consumption was not statistically significant ($\chi^2 = 64.22$, $p = 0.341$). There was also no significant association between academic level and number of caffeinated drinks consumed daily ($\chi^2 = 28.66$, $p = 0.091$). Religion showed no significant relationship with daily caffeine consumption ($\chi^2 = 9.87$, $p = 0.276$). A significant relationship was found between students' residence and caffeine consumption levels ($\chi^2 = 11.64$, $p = 0.039$).

Table 3.5: Association between demographic factors and number of cup/bottles/cans of caffeinated drinks consumed in a day

Demographic factors	Once (%)	Two (%)	Three (%)	More than three times (%)	None (%)	Chi-Square Value (χ^2)	P-Value
Age							
16-20 years	134 (70.53%)	22 (11.58%)	4 (2.11%)	2 (1.05%)	28 (14.74%)	22.73	0.029
21-25 years	109 (61.24%)	28 (15.73%)	6 (3.37%)	4 (2.25%)	31 (17.42%)		
26-30 years	6 (60%)	1 (10%)	0	0	3 (30%)		
31 and above	1 (33.33%)	0	0	0	2 (66.67%)		
Gender							
Male	131 (65.17%)	31 (15.42%)	3 (1.49%)	2 (1%)	34 (16.92%)	5.14	0.273
Female	119 (66.11%)	20 (11.11%)	7 (3.89%)	4 (2.22%)	30 (16.67%)		
Faculty							
Agriculture	18 (75%)	1 (4.17%)	0	1 (4.17%)	4 (16.67%)	64.22	0.341
Arts	15 (62.50%)	3 (12.5%)	2 (8.33%)	0	4 (16.67%)		
Basic Medical Sciences	17 (70.82%)	0	0	0	7 (29.17%)		
Dentistry	15 (62.50%)	6 (25%)	1 (4.17%)	0	2 (8.33%)		
Education	18 (75%)	3 (12.5%)	0	0	3 (12.5%)		
Engineering	14 (58.33%)	5 (20.83%)	0	0	5 (20.83%)		
Environmental Science	15 (62.50%)	4 (16.67%)	1 (4.17%)	0	4 (16.67%)		
Institute of Education	14 (60.87%)	6 (26.09%)	1 (4.35%)	0	2 (8.70%)		
Law	15 (62.50%)	2 (8.33%)	0	3 (12.5%)	4 (16.67%)		
Life Science	19 (82.61%)	2 (8.70%)	0	0	2 (8.70%)		

Table 3.5: Association between demographic factors and number of cup/bottles/cans of caffeinated drinks consumed in a day

Demographic factors	Once (%)	Two (%)	Three (%)	More than three times (%)	None (%)	Chi-Square Value (χ^2)	P-Value
Medicine	15 (62.50%)	2 (8.33%)	0	1 (4.17%)	6 (25%)		
Management Science	10 (43.48%)	7 (30.43%)	2 (8.70%)	1 (4.35%)	3 (13.04%)		
Pharmacy	16 (66.67%)	0	2 (8.33%)	0	6 (25%)		
Physical Science	14 (58.33%)	6 (25%)	0	0	4 (16.67%)		
Social Science	18 (75%)	2 (8.33%)	0	0	4 (16.67%)		
Veterinary Medicine	17 (70.83%)	2 (8.33%)	1 (4.17%)	0	4 (16.67%)		
Academic Level							
100 Level	15 (71.43%)	2 (9.52%)	0	0	4 (19.05%)	28.66	0.091
200 Level	106 (70.67%)	20 (13.33%)	2 (1.33%)	0	22 (14.67%)		
300 Level	26 (65%)	5 (12.5%)	2 (5%)	3 (7.5%)	4 (10%)		
400 Level	64 (57.14%)	16 (14.29%)	5 (4.46%)	3 (2.68%)	24 (21.43%)		
500 Level	36 (69.23%)	7 (13.46%)	1 (1.92%)	0	8 (15.38%)		
600 Level	3 (50%)	1 (16.67%)	0	0	2 (33.33%)		
Religion							
Christian	225 (65.22)	45 (13.04%)	10 (2.90%)	6 (1.74%)	59 (17.10%)	9.87	0.276
Muslim	25 (73.53%)	5 (14.71%)	0	0	4 (11.76%)		
Traditional	0	1 (50%)	0	0	1 (50%)		
Residence							
Off-Campus	178 (63.57%)	36 (12.86%)	7 (2.50%)	5 (1.79%)	54 (19.29%)	11.64	0.039
On-Campus	72 (71.29%)	15 (14.85%)	3 (2.97%)	1 (0.99%)	10 (9.90%)		

CHAPTER FOUR

DISCUSSION

Out of the 381 respondents, 201 (52.76 %) were male, while 180 (47.24 %) were female. This near-equal distribution indicates a well-balanced representation of both genders in the study. Most respondents were within the 16–20 years (49.87 %) and 21–25 years (46.72 %) age categories, while a few were aged 26–30 years (2.62 %) or above 30 years (0.79 %). This age pattern reflects the typical undergraduate population in Nigeria, where students are mostly young adults.

All sixteen faculties of the University were represented, with faculties such as Agriculture, Arts, Basic Medical Science, Dentistry, Education, Engineering, Environmental Science, Law, Medicine, Pharmacy, Veterinary Medicine, Physical and Social Sciences each recorded 6.30 %, while Life Sciences, Institute of Education, and Management Sciences had slightly lower proportions (6.04 %). This even distribution demonstrates that the sample was well spread across the various academic disciplines, ensuring a comprehensive representation of the university population. Such balanced faculty representation helps in exploring whether caffeine use is discipline-specific or a generalized behavioural pattern across students (Ajaero *et al*., 2021)

The largest proportion of respondents were in the 200 level (39.37 %), followed by 400 level (29.40 %), 500 level (13.65 %), 300 level (10.50 %), 100 level (5.51 %), and 600 level (1.58 %).

The majority of respondents identified as Christians (90.55 %), followed by Muslims (8.92 %), and Traditionalists (0.52 %). This distribution mirrors the religious landscape of southern Nigeria, where Christianity predominates

Most students lived off-campus (73.49 %), while 26.51 % resided on-campus. This pattern is typical of University of Benin, where limited hostel capacity compels many students to live outside the university premises. Residence is an important determinant of health behaviour, including caffeine use.

A large majority of respondents, 350 (91.86%), reported that they consume caffeinated beverages, while only 31 (8.14%) indicated that they do not. This clearly shows that caffeine consumption is highly prevalent among the undergraduate students of University of Benin. More than 85% of students at the University of Ghana reported regularly using caffeine in a similar study, mainly to deal with stress and late-night studying (Osei and Boateng, 2022).

The respondents reported multiple sources of caffeine. The most common were carbonated drinks (Coca-Cola, Pepsi) consumed by 208 (54.59%), followed by tea (39.11%), energy drinks (34.65%), and coffee (25.98%). This distribution indicates that carbonated drinks are the dominant source of caffeine among students, which may be due to their taste, affordability, social popularity, and accessibility. The relatively lower consumption of coffee (25.98%) may be

explained by the fact that coffee is less popular in Nigeria's youth culture and is often associated with older adults (Abayomi *et al*., 2023).

Caffeine use was primarily justified by respondents for taste and pleasure (54.07%), relaxation (28.87%), energy (27.82%), and concentration when studying (25.98%). Caffeine use for headache relief (3.94%) and alertness (16.54%) was reported by a smaller percentage. These answers demonstrate that rather than for habitual or medical dependence, students are more likely to take caffeine for hedonic (enjoyment) and functional (study-related) reasons. While academic-related motivations (alertness and concentration) reflect instrumental consumption to manage academic pressure, taste preference and pleasure-seeking behavior show that caffeine use has become socially normalized (Owolabi and Alade, 2023).

The daily consumption pattern shows that 238 students (62.47%) consumed caffeine once daily, while 49 (12.86%) reported two to three times, and 19 (4.99%) consumed more than three times per day. 75 participants (19.69%) stated they do not consume caffeine daily. This suggests that most students have moderate caffeine habits, preferring limited daily intake rather than heavy or chronic use

Weekly consumption trend showed 19.42% consuming once a week, 24.15% consuming twice a week, 22.31% three times a week, and 21.52% more than three times weekly while 12.60% stated they do not consume caffeine weekly. This pattern suggests that caffeine intake among

students is habitual but not necessarily daily, supporting findings by Osei and Boateng (2022) that most undergraduates consume caffeine based on academic workload intensity rather than as an everyday addiction.

A majority of respondents, 250 (65.62%), reported consuming one cup, bottle, or can daily, while smaller proportions consumed two (13.39%), three (2.63%), or more than three (1.57%). Meanwhile, 64 respondents (16.80%) indicated that they did not consume caffeine daily. This reinforces the observation that most caffeine use among these students is within a moderate range.

When asked about the preferred time of consumption, 44.36% of respondents preferred the afternoon, followed by evening (25.20%), night (25.20%), and morning (23.10%). Afternoon preference suggests that students may use caffeine to combat midday fatigue or maintain alertness for afternoon lectures and study periods. Evening and night-time consumption patterns reflect the habit of late-night study sessions, a common behavior among university students, especially during examination periods (Peh *et al*., 2021).

Although 348 (91.34%) out of the 381 respondents reported that they could go 2–3 days without caffeine, Also, 135 (35.43%) respondents admitted experiencing an urge or craving to consume caffeinated beverages. This suggests that while physical dependence is minimal, psychological

dependence may exist for some students who associate caffeine with improved performance or energy.

Reported withdrawal symptoms upon sudden cessation were generally low: fatigue (11.55%) was the most common, followed by low energy (3.68%), anxiety (3.68%), and headache (1.84%). These findings align with Musa *et al*., (2020), who reported that while most young people experience mild withdrawal symptoms, serious dependency on caffeine remains uncommon among university populations.

The relationship between selected demographic characteristics and caffeine consumption among undergraduate students of the University of Benin was examined using the chi-square test of independence

The study found no significant relationship between age and caffeine consumption ($\chi^2 = 3.468$, $p = 0.325$). Caffeine use was slightly higher among students aged 16-20 (93.68%), but the difference between age groups was not statistically significant. This suggests that caffeine consumption is widespread among all age groups in the university population, possibly due to similar academic schedules, campus culture, and lifestyle habits. Recent studies among undergraduates across Africa and other regions have reported similar patterns in which caffeine use cuts across all age groups due to study demands and social habits (Ndegwa *et al*., 2021).

The study found no significant gender differences in caffeine consumption ($\chi^2 = 0.003$, $p = 0.956$). Both male (91.54%) and female (92.22%) students reported high and comparable levels of caffeine consumption. This pattern reflects a narrowing gender gap in caffeine consumption, consistent with findings from international research indicating that both men and women are increasingly drinking caffeine-containing beverages for similar reasons, such as study enhancement and fatigue reduction (Ribeiro *et al*., 2021). Furthermore, in a study conducted by Owolabi and Alade (2023), gender was found to be a weak predictor of caffeine use among Nigerian university students, demonstrating that academic lifestyle factors frequently outweigh biological and social gender influences.

Caffeine consumption ranged from 83.33% to 100% across all faculties, and there was no discernible correlation between faculty and caffeine use ($\chi^2 = 17.322$, $p = 0.300$). Although faculties like medicine, engineering, and pharmacy are typically linked to heavier academic workloads, the similarity across all faculties suggests that caffeine consumption is driven by the academic culture of late-night study, socialization, and energy-demanding schedules (Ajaero *et al*., 2021). This result suggests that caffeine use is a universal behaviour among students irrespective of their discipline.

There was a statistically significant correlation between caffeine consumption and academic level ($\chi^2 = 12.186$, $df = 5$, $p = 0.032$). Students at the 100- and 300-levels reported using caffeine

100% of the time, 93.33% of students in 200 level reported using caffeine of the time, while those at the 400-level had a comparatively lower rate (85.71%). Variations in academic workload, exam stress, and adjustment to university life may be reflected in this. While middle-level students (200–400 level) may experience peak stress levels due to rigorous coursework, tests, and projects, early-level students may use caffeine to cope with the new academic environment and handle increased demands (Chukwu *et al*., 2021).

There was no statistically significant correlation between caffeine intake and religion ($\chi^2 = 4.921$, $p = 0.085$). Muslims (94.12%) and Christians (91.88%) both consumed large amounts of caffeine, but the differences were insignificant. The traditional showed that about 50% of them consumed caffeine, however their numbers in the study was insufficient to discuss. The secular nature of caffeine consumption for social and academic purposes is reflected in this finding, which shows that religious affiliation has no bearing on caffeine use (Olowookere *et al*., 2023). Except in certain communities, caffeine use is rarely prohibited by religious doctrines and is culturally accepted throughout the world (Musa *et al*., 2020).

Lastly, there was no significant correlation between caffeine consumption and where students lived ($\chi^2 = 1.331$, $p = 0.249$). High rates of caffeine use were reported by both off-campus (90.71%) and on-campus (95.05%) students. This similarity implies these students' caffeine

intake is not significantly impacted by their location, perhaps as a result of the easy access to caffeinated beverages both on and off campus (Anigbogu *et al*., 2023).

The relationship between selected demographic characteristics and weekly caffeine use among undergraduate students of the University of Benin was examined using the chi-square test of independence.

The fact that weekly caffeine intake was significantly correlated ($\chi^2 = 23.217$, $p = 0.0259$) with age suggests that different age groups use caffeine at different frequencies. The highest weekly caffeine consumption rates were reported by students between the ages of 16 and 20, while less frequent use was reported by those 26 and older. According to this pattern, younger students who are frequently just starting college may use caffeine more frequently to manage the demands of their studies, adjustment stress, and long study sessions. Similar results were reported by Peh *et al*. (2021) in Singapore and Osei and Boateng (2022) in Ghana, who discovered that younger undergraduates drink more coffee because they are under pressure to perform well academically and because they want to stay awake during late-night study sessions. In addition, younger students might be more vulnerable to social pressure and advertisements for caffeinated beverages and energy drinks (Alsaadi *et al*., 2022).

Male and female students showed no significant difference in weekly caffeine consumption ($\chi^2 = 7.01$, $p = 0.135$). Both genders followed similar patterns, with high weekly consumption rates

overall. This is consistent with the findings of Owolabi and Alade (2023) and Ribeiro *et al*. (2021), who discovered that gender differences in caffeine intake among university students have significantly narrowed in recent years. Both male and female students consume caffeine primarily for its perceived cognitive benefits, such as increased alertness and concentration, particularly during exams.

The lack of a significant relationship between faculty and weekly caffeine consumption (χ^2 = 51.71, p = 0.768) suggests that caffeine use is common in all academic disciplines. Students from both science and non-science faculties reported similar weekly consumption patterns. This suggests that the motivating factors for caffeine use such as study stress, fatigue, and social habits are shared by the university community. Ajaero *et al*. (2021) made a similar observation, discovering that caffeine intake among Nigerian undergraduates does not differ significantly by course of study, owing to the fact that students across faculties face comparable academic challenges. Alsaadi *et al*. (2022) also found that academic workload and long study hours, rather than programme type, are the most important predictors of caffeine use among students.

Although caffeine use appeared to vary slightly across academic levels, the relationship was not statistically significant (χ^2 = 24.217, p = 0.2330) with weekly use. This might suggest that using caffeine is a habit that is sustained throughout college. According to Chukwu at al. (2021), a lot

of students start consuming caffeine early in their academic careers and keep doing so to cope with exhaustion, extended study sessions, and test-related anxiety.

The relationship between religion and weekly caffeine consumption was not significant (χ^2 = 4.88, p = 0.771). High consumption rates among both Christians and Muslims suggest that caffeine use is largely a secular behavior not restricted by religious norms. This could be as a result of caffeine's cultural acceptance, ease of access, and social normalization as a non-alcoholic stimulant that enhances alertness and academic performance (Musa *et al*., 2020).

Weekly caffeine consumption was statistically significantly correlated with residence (χ^2 = 10.02, p = 0.040). Students who lived on campus reported using caffeine more frequently than their off-campus counterparts. Peer pressure, the ease of access to coffee or energy drinks on campus, and group study sessions are some examples of environmental and social factors that may be to blame for this. Anigbogu *et al*., (2023) claim that university students' frequent use of caffeinated beverages is frequently encouraged by their communal study culture and hostel life. Furthermore, because of their close proximity to lecture halls, tests, and study activities, students who live on campus are more likely to experience academic stress, which causes them to consume more caffeine to stay alert (Peh *et al*., 2021).

The relationship between selected demographic characteristics and number of cups, can, bottle caffeine consumption among undergraduate students of the University of Benin was examined using the chi-square test of independence

Age in relation to the number of cup, can, bottle of caffeinated beverages consumed daily were found to be significantly correlated by the study ($\chi^2 = 22.73$, $p = 0.029$). Compared to older students, younger respondents (ages 16–20 and 21–25) were more likely to drink one or two cups per day. This trend might be explained by the higher levels of academic stress, erratic sleep habits, and peer pressure that younger undergraduates frequently experience. Younger students who are just starting college frequently use caffeine to increase their energy, alertness, and study effectiveness, especially when taking tests or reading late at night (Osei and Boateng, 2022).

There was no significant relationship between gender and the number of caffeinated drinks consumed daily ($\chi^2 = 5.14$, $p = 0.273$). Both male and female respondents exhibited similar consumption levels, with approximately two-thirds in each group drinking one serving per day. Since caffeine is now widely available and accepted across all social and gender categories, previous cultural differences in stimulant use have decreased (Ribeiro *et al*. 2021).

The association between faculty and number of cup, can, bottle of caffeine consumed daily was not statistically significant ($\chi^2 = 64.22$, $p = 0.341$). All faculties recorded similar proportions of one-cup-per-day consumers which were the highest throughout each faculties, indicating that

caffeine use cuts across different academic disciplines. This pattern suggests that caffeine consumption among undergraduate students in university of Benin is not influenced by the field of study, but rather by general academic demands, stress, and social behavior common to university life.

There was also no significant association between academic level and number of caffeinated drinks consumed daily ($\chi^2 = 28.66$, $p = 0.091$). This trend implies that number of cups, cans, bottles of caffeine used is a consistent habit maintained throughout the undergraduate years, as students across all levels encounter comparable academic pressures such as lectures, tests, and project work.

Religion showed no significant relationship with number of cup, can, bottle of daily caffeine consumption ($\chi^2 = 9.87$, $p = 0.276$). Both Christians (65.22%) and Muslims (73.53%) displayed similar consumption patterns, with one cup per day being most common. This result is consistent with that of Olowookere *et al*., (2023), who found that religious affiliation has no bearing on the use of stimulants, such as caffeine, by Nigerian university students. Caffeine is widely used to improve alertness and performance because it is socially acceptable and seen as a safe stimulant, unlike alcohol or tobacco (Musa *et al*., 2020).

A significant relationship was found between students' residence and caffeine consumption levels ($\chi^2 = 11.64$, $p = 0.039$). Students living on-campus consumed more cups per day than

those living off-campus. Moderate caffeine use is more common among off-campus students, who may live further away from the school and have more regimented daily schedules. Similar findings were reported by Osei and Boateng (2022), who discovered that the competitive and social academic environment in university residence halls led to higher caffeine consumption among students living in dorms.

CHAPTER FIVE

CONCLUSION

The findings revealed that caffeine consumption is highly prevalent (91.86%) among students, with most respondents reporting moderate use, typically one cup, bottle, or can per day. The most frequently consumed caffeinated products were carbonated soft drinks, tea, and energy drinks, reflecting both cultural preferences and product accessibility. Caffeine use among these students was driven mainly by taste andpleasure, energy enhancement, and concentration during study, rather than addiction or medical necessity. Most respondents demonstrated awareness of their caffeine habits and reported little to no physical dependence, though mild psychological dependence and occasional withdrawal symptoms such as fatigue were observed. Statistical analysis using Chi-square tests revealed that age and place of residence were significantly associated with caffeine consumption patterns (weekly consumption and number of cup, can, bottle) while gender, faculty, academic level, and religion showed no significant relationship. Younger students and those living on-campus were more likely to consume higher quantities and at greater frequency, suggesting that academic stress, peer influence, and environmental accessibility play key roles in caffeine use. Overall, the results indicate that caffeine consumption among the undergraduate students of the University of Benin is a socially normalized and academically functional behavior.

LIMITATIONS

1. **Self-reported data:**

   The study relied on self-administered questionnaires, which may have introduced response bias or underreporting, as some respondents might not have accurately recalled or disclosed their caffeine consumption levels.

2. **Cross-sectional design:**

   The study was conducted at a single point in time and therefore cannot establish causal relationships between demographic variables and caffeine use patterns. Longitudinal data would provide deeper insights into how caffeine habits develop over time.

3. **Sample representativeness:**

   Although all faculties were represented, the study focused only on undergraduate students of the University of Benin, which limits the generalizability of the findings to other institutions or postgraduate populations.

4. **Limited biochemical validation:**

   The study measured caffeine use through perception and frequency rather than through biochemical testing or dosage quantification, which might have provided a more objective measure of intake.

5. **Potential confounders:**

Other influential factors such as sleep duration, dietary patterns, and mental stress levels were not explored in detail, though they may significantly impact caffeine consumption behavior.

RECOMMENDATIONS

1. **Health education and awareness:**

The University of Benin Health Centre and student welfare departments should organize awareness campaigns to educate students about safe caffeine limits, potential health risks, and the importance of balanced lifestyle habits.

2. **Promotion of healthier alternatives:**

Students should be encouraged to adopt non-caffeinated coping strategies for fatigue and academic stress, such as adequate sleep, physical exercise, and hydration, instead of heavy reliance on caffeine-containing drinks.

3. **Policy on energy drink sales:**

The university can regulate or monitor the availability and marketing of high-caffeine energy drinks within and around the campus to reduce excessive consumption, especially among younger students.

4. **Integration into student orientation:**

   Caffeine education can be included in orientation programs for new students, focusing on the short- and long-term effects of high caffeine use and how to manage academic stress without overdependence on stimulants.

5. **Further research:**

   Future studies should include biochemical assessment of caffeine levels, explore sleep quality, mental health, and dietary habits, and possibly expand to multiple universities to enhance comparative understanding of caffeine use among Nigerian students.

6. **Counseling and support services:**

   The university should strengthen counseling services to help students who exhibit signs of caffeine dependence, anxiety, or sleep disturbances related to stimulant use.

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APPENDIX

QUESTIONNAIRE DESIGN

SECTION A: DEMOGRAPHICS

SECTION B: HABITS OF CAFFEINE USE AMONG UNDERGRADUATE UNIVERSITY STUDENTS

I am a 600 level Pharmacy student, University of Benin, Benin City. This questionnaire is designed to assess the habits of caffeine use amongst University of Benin students in partial fulfillment of the requirements for the award of a Doctor of Pharmacy Degree in the Faculty of Pharmacy.

Your responses will be kept confidential and used solely for research purposes.

Please answer the following questions honestly and to the best of your knowledge.

Instruction:

Please Tick as appropriate in all the Boxes Provided

SECTION A: DEMOGRAPHIC

1. Age: 16-20 years [ ] 21-25 years [ ] 26-30 years [ ] 31 and above [ ]
2. Gender: Male [ ] Female [ ]
3. Faculty: _____
4. Department: _____
5. Level: 100 Level [ ] 200 Level [ ] 300 Level [ ] 400 Level [ ] 500 Level [ ] 600 Level [ ]
6. Religion: Christian [ ] Muslim [ ] Traditional [ ] other _____
7. Residence: Off-campus [ ] On-campus [ ]

SECTION B: HABITS OF CAFFEINE USE AMONG UNIVERSITY STUDENTS

8. Do you consume caffeinated beverages (i.e. coffee, tea, energy drinks, and carbonated drinks etc.): Yes [ ] No [ ]
9. What is your preferred caffeinated beverages: (you can choose more than one option): Coffee [ ] Tea [ ] Energy drinks like predator, fearless, monster [ ] Carbonated drinks like coca-cola, pepsi [ ] other _____
10. How often do you consume caffeinated beverages in a day? Once [ ] Two - Three times [ ] More than three times [ ] None [ ]
11. How often do you consume caffeinated beverages in a week? Once a week [ ] Twice a week [ ] Three times a week [ ] More than three times in a week [ ] None [ ]
12. How many cups/bottles/cans of caffeinated drinks do you consume in a day? One [ ] Two [ ] Three [ ] More than three [ ] None [ ]

13. What are the reasons for consuming caffeinated beverages: [select all that apply] Taste and pleasure [ ] Headache [ ] Increased alertness [ ] Concentrate when studying [ ] Energy [ ] Relaxation [ ] other _____
14. Which part of the day do you prefer to take caffeinated beverages? Morning [ ] Afternoon [ ] Evening [ ] Night [ ] None [ ]
15. Could you go 2-3 days without caffeinated beverage: Yes [ ] No [ ]
16. Do you experience the urge to consume caffeinated beverages: Yes [ ] No [ ]
17. What problems have you experienced after suddenly stopping caffeine intake: Poor concentration [ ] Depressed mood [ ] Fatigue [ ] Headache [ ] Low energy [ ] Anxiety [ ] Nausea [ ] No side effects [ ] other _____