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APPRAISAL OF KNOWLEDGE ON THE CONSEQUENCES OF OVERCONSUMPTION OF SOME STIMULANTS BY UNDERGRADUATE STUDENTS IN A TERTIARY INSTITUTION IN SOUTH-SOUTH GEOPOLITICAL REGION IN NIGERIA

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Abstract

This study is based on an "appraisal of knowledge of consequences of overconsumption of stimulants by nursing students in Federal University Otuoke, Bayelsa state. The interest is directed towards finding a lasting solution to curb overconsumption of stimulants. Stimulant overconsumption among students is a growing concern due to its potential adverse effects on academic performance, as well as physical and mental health. The level of knowledge among nursing students about the consequences of overconsumption of stimulants and some identifiable factors associated with their knowledge level were assessed. A cross-sectional study was conducted using a self-administered questionnaire among 254 nursing students of Federal University Otuoke. The questionnaire measured knowledge of stimulant effects, sources of information, attitudes, and usage patterns. Data analysis revealed that the majority of students had moderate knowledge of stimulant effects. Sources of information included textbooks, lectures, and peers. Positive attitudes towards stimulants were associated with higher usage rates, year of study, and perceived stress levels were also significantly correlated with knowledge levels. The findings underscore the need for comprehensive education programs on stimulants tailored to nursing students. Addressing the potential risks and consequences of overconsumption.

Keywords: Knowledge; Attitudes; Stimulant Consumption; Health Risks; Nursing Students.

Introduction

Stimulants are central nervous system (CNS) agents that increase activity in the CNS (Medical News Today, 2023). The rate of consumption of stimulants by adolescents, college/university students to be precise, is a high rate and must not necessarily be involved with the use of stimulating drugs such as nicotine, amphetamines, and cocaine as such drugs are not allowed in the premises of this institution. However, there are also other forms of stimulating substances that are within reach of purchase and consumption by students, especially caffeine, which may or may not be carbonated and may also contain sugar or other sweeteners, herbal extracts, and amino acids. In Nigeria, various brands of energy drinks are available, including Red Bull, Power Horse, and Power Fist, among others. The most common forms of caffeinated beverages or energy drinks commonly purchased in this institution are Predator, Fearless, Monster Energy Drinks, Bullet, and Super Command. It has been reported that energy drinks have energizing effects, with the effect being strongest 30 to 60 minutes after consumption and lasting for at least 90 minutes. Stimulating beverages, including coffee, tea, energy drinks, and certain soft drinks, are widely consumed across the globe for their stimulating effects, primarily due to their caffeine content. Caffeine a naturally occurring alkaloid, acts as a central nervous system stimulant that temporarily wards off drowsiness and restores alertness (Nehlig, 2016). Its popularity, especially among young adults such as University students, is largely attributed to its perceived benefits, including improved concentration, enhanced academic performance, and increase energy levels (Mahmood et al., 2020). In academic environments, particularly within healthcare-related fields such as nursing, students often experience high levels of academic and clinical stress. This pressure may lead to unhealthy coping mechanisms, including the overconsumption of stimulating beverages (Liguori & Robinson, 2020). Studies have shown that nursing students, due to the demanding nature of their curriculum and clinical responsibilities, frequently resort to stimulating beverages as a means of combating fatigue, staying awake during extended study sessions, and managing the physical and emotional stress associated with their profession (Alshahrani & Al Shahrani, 2019). While moderate consumption of caffeine may offer certain cognitive and mood-enhancing benefits, excessive intake has been associated with a range of adverse health consequences. These include insomnia, tachycardia, anxiety, gastrointestinal disturbances, and increase risk of dependency (Juliano & Griffiths, 2017). Moreover, overuse of caffeinated energy drinks, in particular, has been linked to more severe outcomes such as cardiovascular complications and neuropsychiatric effects (Higgins et al., 2018). Given that nursing students are future health providers expected to model healthy lifestyle behaviours and educate patients on health risk, it is essential that they possess adequate knowledge regarding the potential consequences of excessive caffeine consumption. Despite the ubiquity of stimulating beverages consumption in this demographic, limited studies have focused on assessing the depth of knowledge nursing students hold about its possible adverse effects. An appraisal of this knowledge is necessary to inform educational interventions aimed at promoting healthier consumption patterns and safeguarding the well-being of nursing students (Ali et al., 2020). This research, therefore, seeks to evaluate the awareness and understanding of the consequences associated with overconsumption of stimulants among nursing students, providing

insights that may guide future health promotion strategies within academic institutions.

Materials and methods

Population of the study

The population for this study consisted of nursing students from the 2023/2024 academic session in Federal University Otuoke, Bayelsa State, Nigeria.

Table 1: Population of the nursing students

Year of Program	Number of Registered Students
First year	140
Second year	135
Third year	145
Total	420

Sample size

The sample size is determined using Taro Yamane's formula for calculating sample size. Taro Yamane, a mathematical statistician, developed a statistical formula for calculating the size of a sample about the population under study, allowing inferences and conclusions drawn from the survey to be generalized to the entire population from which the sample was derived. The Taro Yamane's statistical formula is stated as follows:

$$n = N / (1 + Ne^2)$$

n = Corrected sample size

N = Population size (420)

e = margin of error, e= 0.05

Applying the formula:

$$n = N / (1 + Ne^2)$$

$$n = 420 / (1 + 420 \times 0.05^2)$$

$$n = 420 / (1 + 420 \times 0.0025)$$

$$n = 420 / (1 + 1.05)$$

$$n = 420 / (2.05)$$

$$n = 204.88$$

Thus, the sample size of 204.88 respondents was obtained using the above formula.

Sampling Technique

The sampling technique used in this study was the stratified sampling technique, which involved dividing the target population into homogeneous sub-groups or strata and then applying the method of simple random sampling to each subgroup.

Table 2: Sample size for various sub-groups/ strata

Level	Number of students	Strata/ sub-group	Percentage
Second	140	$(254/699) \times 170 = 62$	$62/254 \times 100 = 24\%$

year			
Third year	135	$(254/699) \times 135 = 49$	$49/254 \times 100 = 19\%$
Fourth-year	145	$(254/699) \times 144 = 52$	$52/254 \times 100 = 21\%$
Total	420	205	100%

After the strata or sub-group was obtained, permission was obtained from the Dean of the faculty of health science. Nursing students were then picked from each level by simple random sampling and proportionately until the desired sample size of 254 nursing students was attained. This guaranteed that extra students were picked from levels with more students. Similarly, the proportionate percentage of students in each level was used to determine the number of participants within each level. Simple random numbers were assigned to all nursing students from the class registers, and using the table of random numbers, the nursing students were selected for inclusion in the study until the desired percentage was found in each level.

Instrument for Data Collection

A self-administered questionnaire will be used to collect data on the following variables:

- Demographics (e.g., age, gender, year of study)
- Knowledge of the consequences of stimulants using a multiple-choice question about the effect of stimulants on the body
- Sources of information about the stimulants
- Attitudes towards stimulants
- Use of stimulants

Validity of instrument

The constructed questionnaire was subjected to screening by the project supervisor for validity. The validator considered the questionnaire alongside the objectives of the study and research questions to ensure that the items in the question actually provided the information they were intended for and were suitable for administration. Appropriate changes that were recommended by the validator and the professional expert were made before being approved for distribution.

Reliability of Instrument

For this study, the reliability will be confirmed using a test-retest method. A small trial group of 20 medical students, excluding nursing students, was used to determine the reliability of the instrument. Reliability is the capacity of the instrument to measure what it is meant to measure consistently; that is, the consistency of the instrument. It is the absence of variation in measurement.

Methods for Data Collection

The method of data collection for the study "Appraisal of knowledge of the consequences of overconsumption of stimulants by nursing students of Federal University Otuoke, Bayelsa state was a self-administered questionnaire. Permission was obtained from the Dean of the Faculty, and a letter of proposal was developed by the researcher and signed by the Dean. An explicit explanation of the research topic was provided to the respondents to obtain their consent. Questionnaires were distributed among

nursing students who were randomly selected and willing to participate. This was given face-to-face after verbal consent was obtained, and there was room to answer questions posed by the respondents to avoid error. A total of 250 questionnaires were distributed. The administration of the questionnaires took place over 14 days, from November 6th to November 21st, 2025, lasting an hour each day. This method is a suitable choice for this study because it is both efficient and cost-effective, allowing researchers to collect data from a large number of participants.

Methods of Data Analysis

Descriptive statistics were used to present the data obtained from Sections A, B, C, D, and E. The data were described using data analysis tools, including frequency distribution tables and percentages. Additionally, inferential statistical analytical procedures, including the chi-square test, were used to draw out relationships between variables, and the level of significance was set at 5% (0.05). Spearman's rank order correlation was used to test the reliability of the questionnaire.

Ethical Consideration

During this study, permission to collect data was requested and obtained from the Dean of the Faculty. Permission was also obtained verbally from the various course representatives in the Nursing department before distributing questionnaires to the nursing students.

Consent was obtained from each respondent who made the selection criteria and was also informed of the purpose of the study. Voluntary participation of the respondents was ensured by informing them that they were free to withdraw from the study at any time without penalty or refuse to take part if they wished to do so.

Results

The statistics are presented in frequencies, tables, and percentages. Relationships between variables were identified using percentages.

Table 3: Demographics of respondents

Variables	Options	Frequency	Percentage (100%)
Age	16-18	111	42
	19-21	60	27
	22-24	73	31
	25-above	6	4
	Total	250	104
Gender	Female	211	80
	Male	42	20
	Other	Nil	0
	Total	253	100
Year of Study	Second year	62	24
	Third year	49	19
	Fourth-year	52	21
	Fifth year	91	36
	Total	254	100
Duration of study per day	Less than 2 hours	38	15
		102	40
	2-4 hours	63	25

5-6 hours	51	20
More than 6 hours	254	100
Total		

Findings from Table 3 show that out of 254 respondents, 112 (45%) were aged 16-18, 59 (23%) were aged 19-21, 77 (30%) were aged 22-24, and 6 (2%) were aged 25 and above. Of the 210 respondents, 83% (210) were female, and 17% (44) were male. The academic level of the students revealed that 62 (24%) were in the 2nd year, 49 (19%) were in the 3rd year, 52 (21%) were in the 4th year, and 91 (36%) were in the 5th and final year. The duration of study per day is 38 (15%) for less than 2 hours, 102 (40%) for 2-4 hours, 63 (25%) for 5-6 hours, and 51 (20%) for more than 6 hours.

Table 4: Percentage analysis of the level of awareness on the effects of over-consuming stimulant.

Items	Variables	Frequency	Percentage
How familiar are you with the health risks associated with overconsumption of caffeinated drinks?	Very familiar	50	20%
	familiar	120	47%
	Somewhat familiar	84	33%
	Not familiar		
Which of the following do you consider a stimulant	Coffee	230	91%
	Energy drinks	200	79%
	Tea	150	59%
	Soft drinks	100	39%
	Chocolate	50	20%
	None of the above	Nil	Nil
What is the recommended maximum daily intake of caffeine for adults	Less than 200mg	20	8%
	200-400mg	100	39%
	500-600mg	30	12%
	I don't know	104	41%
Do you know the symptoms of overconsumption of caffeine	Somewhat	150	59%
	Enough	50	20%
	I don't know	54	21%

Table 4 shows that 120 (47%) are familiar with the health risks associated with overconsumption of caffeine. 230 (91%) Coffee was the most considered stimulant by the respondents, while chocolate 50 (20%) was the least considered. 104 (41%) respondents do not know the recommended maximum daily intake required of adults, and 150 (59%) respondents somewhat know the symptoms of overconsumption of caffeine.

Table 5: Percentage analysis of personal consumption habits

Item	Variable	Frequency	Percentage
How often do you consume caffeinated drinks	Never	20	8%
	Occasionally	80	32%
	Frequently	100	39%
	Daily	54	21%

What type of caffeinated drinks do you usually consume	Coffee	100	39%
	Energy drinks	180	71%
	Tea	120	47%
	Soft drinks	50	20%
	Other		
How many cups or servings of caffeinated beverages do you consume per day	None	20	8%
	1-2 cups/bottles	100	39%
	3-4 cups/bottles	80	32%
	More than 4 cups/ bottles	54	21%
What is your main reason for consuming caffeinated drinks	Stay awake	150	59%
	Energy	80	32%
	Habit	50	20%
	Social reasons	30	12%
	Other	14	6%

Table 5 shows that 100 (39%) frequently consume caffeine, while a majority of 180 (71%) consume energy drinks, and more than 100 (39%) consume Coffee. 100 (39%) consume about 1-2 cups/ bottles of caffeinated beverages per day, and 150 (59%) consume these caffeinated products to stay awake.

What is the health status of those who overconsume stimulants compared with those who take it occasionally or not at all.

Table 6: Percentage analysis of the attitude and awareness of stimulating beverages

Items	Variables	Frequency	Percentage
Do you believe you consume more caffeinated drinks than is recommended	Strongly agree	50	20%
		10	4%
	Somewhat agree	110	43%
	Disagree	84	33%
	I don't know		
Are you aware of the potential long-term health effects of overconsumption of caffeine	Completely aware	100	39%
		80	32%
	Somewhat aware	74	29%
	Not aware		
Have you experienced any of the following symptoms after consuming caffeinated drinks	Most of the time	80	32%
	All the time	20	8%
	Sometimes	40	16%
	Not at all	114	45%
Do you think there is enough awareness among nursing students regarding the risks of caffeine overconsumption	Strongly agree	70	28%
		10	4%
	Somewhat agree	100	39%
	Disagree	74	29%
	I don't know		

Table 6 shows that 110 (43%) disagree with the idea of overconsuming caffeine over the recommended limit. In comparison, 100 (39%) are well aware of the potential long-term effects of overconsuming caffeine, and the majority, 114 (45%) of the respondents are asymptomatic to the consumption of caffeine regardless of their frequency of consumption and 100 (39%) disagree with the notion that there is enough awareness amongst the nurses regarding the risks of overconsumption.

Behavioural impact due to stimulant overconsumption

Table 7: Percentage analysis of the behavioural impact of stimulant overconsumption

Items	Variables	Frequency	Percentage
Have you ever tried to reduce your consumption of caffeinated drinks	Sometimes	51	20%
	Considered it	181	71%
	Never felt the need	23	9%
If you tried to reduce your intake, what prompted the decision	Health-related	30	12%
	Side effects	20	8%
	Social	10	4%
	environmental reasons	10	4%
	Other	20	8%
Do you believe the consumption of caffeinated drinks affects your academic performance	Positively	52	20%
	Negatively	30	12%
	No effect	121	47%
	I don't know	51	21%

Table 7 shows that 180 (71%) of respondents have considered reducing their consumption of caffeine due to health-related reasons 30 (12%), side effects from consumption 20 (8%), social reasons 10 (4%), environmental reasons 10 (4%) and other such as financial reasons 20 (8%) and finally 120 (47%) respondents believe that there are no significant changes to their academic performance.

Conclusion

Stimulants are substances that increase alertness, attention, and energy by enhancing the activity of the central nervous system. Caffeine, a common stimulant, is naturally found in over 60 plant species, including coffee beans, tea leaves, and cacao pods. (WHO, 2022.).

Findings from this study have shown that the majority of the participants (n=248, %=98%) were ages 16 to 24 years and were more female nursing students (n= 210, %=83%), with the highest number of respondents coming from 5th year (n=36, %=36%) and most of all the respondents reading within the time frame of 2 to 4 hours in a day (40%). The majority of the respondents are somewhat familiar (n=120, 47%) with the health risks associated with overconsumption of caffeine. Coffee (n=230, %=91%) was the most considered stimulant by the respondents, (n=104, %=41%) are not aware of the recommended maximum daily intake required of adults, and (n=150, 59%) are somewhat aware of the

symptoms of overconsumption. The study shows that nursing students of Madonna University do not have a standard level of knowledge on caffeine and stimulant consumption, which goes with the study from Ali Haider Mohammed et al. (2022), knowledge, consumption patterns, and adverse effects of energy drinks among Asian population which states that awareness ought to be raised by adopting regulations or policies to regulate the sales and warning labels of energy drinks. Caffeine is frequently consumed (n=100, 39%), with energy drinks (n=100, 39%) being consumed more than the other options given, with the same number who consume about 1-2 cups/bottles of energy drink per day and (n=150, 59%) take caffeinated products to stay awake. The results of these findings contradict those of a study by Nour A. Elsahoury et al. (2021), which examined energy drink consumption, knowledge, and self-reported effects among university students in Jordan. The consumption of energy drinks was moderate among university students. The majority (n=110, 43%) disagree with the idea of overconsuming caffeine over the recommended limit, but (n=100, 39%) are well aware of the potential long-term effects of overconsuming caffeine while (n=114, 45%) of the respondents are asymptomatic to the side effects of caffeine consumption. (n=100, 39%) disagree with the notion that there is enough awareness of the risks of overconsumption. According to the study by Byung Hun Lee et al. (2020), caffeine consumption and its related symptoms in university students, significant features of caffeine-related symptoms should be considered in primary care practice. The majority of the respondents (n=180, 71%) have considered reducing their consumption of caffeine due to health-related problems, and 120 (47%) respondents believe that there are no significant changes to their academic performance. Caffeinated beverages are commonly consumed by nursing students for their stimulant properties, aiding in alertness and combating fatigue. However, the overconsumption of these beverages poses significant health risks, including cardiovascular issues, anxiety, sleep disorders and potential dependence. This study was designed to appraise the knowledge of nursing students regarding the consequences of excessive caffeine intake, identify their consumption patterns, and recommend strategies for promoting healthier habits. The findings are expected to inform educational programs and institutional health promotion initiatives, equipping nursing students with the knowledge required for both personal well-being and professional health education responsibilities.

Conclusion

This study underscores the importance of addressing lifestyle behaviours such as caffeine consumption within the nursing student population. The anticipated outcomes will reveal whether knowledge gaps exist concerning the health risks of excessive stimulant intake and how consumption patterns align with this knowledge. As future health professionals, nursing students must be adequately informed about the potential consequences of overconsumption to safeguard their health and effectively counsel patients. The study highlights the need for continuous health education, supportive institutional policies, and wellness initiatives aimed at promoting safe and responsible consumption of caffeinated beverages.

Conflict of Interest

The authors declare no conflict of interest

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