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Assessment of the use of Caffeinated Products among Students in Madonna University, Nigeria

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Abstract

Objective

This study explores the diverse patterns of caffeine consumption among Madonna University students, with emphasis on motivations, effects, and perceptions. It also investigates the potential influence of sociodemographic factors on caffeine consumption.

Methods

A cross-sectional survey was conducted among Madonna University students to collect data on caffeine consumption patterns, motivations, experiences, and sociodemographic characteristics. Chi-square tests were employed to assess the independence of sociodemographic factors from caffeine consumption.

Results

The study found that students consumed caffeine for various reasons, including increased alertness, taste enjoyment, and social interactions. Side effects, such as nervousness and difficulty sleeping, were reported alongside positive effects

like improved concentration. A significant proportion of students believed that caffeine negatively affected their physical and mental health. Sociodemographic factors, including gender, age, academic level, and faculty choice, were not significantly associated with caffeine consumption.

Conclusion

This study underscores the multifaceted nature of caffeine consumption among university students, emphasizing the need for comprehensive educational programs to promote responsible caffeine consumption and awareness of potential side effects. The findings also suggest that interventions to moderate caffeine use should be broad-based and target the entire student population, as sociodemographic factors do not significantly influence caffeine consumption. Acknowledging the limitations, this research contributes to our understanding of caffeine use among young adults and informs initiatives aimed at promoting balanced and mindful caffeine consumption in university settings.

Keywords: Caffeine Consumption, Madonna University Students, Academic Performance, Health Implications, Prevalence, Motivation

1. Introduction

Caffeine is a widely consumed stimulant found in coffee, tea, energy drinks and other beverages is a psychoactive compound consumed globally (Oshodi *et al.*, 2010)^[7] especially among young adults, university students form a significant demographic. Understanding the prevalence, sources, motivations, and potential consequences of caffeine consumption among this population is essential for both public health and academic performance (Mazanov *et al.*, 2013)^[5].

Caffeine consumption is prevalent among university students worldwide. The report of high prevalence of caffeine use in the United State regularly has been documented (Mclivain *et al.*, 2011)^[6], James *et al.* (2019)

The primary sources of caffeine reported include coffee, tea, soft drinks, energy drinks, and caffeinated medications. In a report by Mahoney *et al.*, (2019)^[4] coffee and energy drinks were highly implicated as the most common sources of caffeine with coffee shops on campus often serving as social hubs where students congregate and consume caffeinated beverages.

Researchers have reported various motivations to include enhanced alertness, improved concentration, increased energy levels, and coping with academic stress. Moreover, Mclivain *et al.*, (2011)^[6] reported that academic demands and the desire to stay

awake during late-night study sessions were significant drivers of caffeine use among university students.

The consumption and their effects have been reported in literature. There is need to investigate these claims to provide some essential policies in the tertiary institutions' learning communities. This study investigates the use of caffeinated agents among the students with the intent of determining the rate and levels of consumption with its consequences.

2. Methods

2.1 Study Design

The study employed a cross-sectional design.

2.2 Study Population

The descriptive survey of the Madonna University using simple random sampling method of the students was employed.

2.3 Inclusion Criteria

Students currently enrolled in the undergraduate study program of the Elele campus of Madonna University and are willing to participate in the study were included in the study.

2.4 Exclusion Criteria

Students not currently enrolled and enrolled students not willing to participate in the study are excluded from the study.

2.5 Determination of Sample Size

The Taro Yamane (1967) statistical formula was used to determine the sample size. The formula is expressed below:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = Desired sample size

N = Estimated Population size under study

e = Level of significance or limit of tolerable error assumed to be 5% or 0.05

1 = Unit value (always constant)

Where n = ?

N = 3,500 (Estimated population of Madonna University Elele campus)

e = error assumed to be 5% or 0.05 (Attrition)

1 = always constant.

Calculation

$$n = 3500 / 1 + 3500(0.05)^2$$

$$n = 3500 / 9.75$$

$$n = 358.9743589743589$$

$$n = 359$$

The sample for the study is therefore, 359

$$\text{Attrition} = 359 + 10\% = 359 + 36 = 395.$$

2.6 Data Collection and Analysis

Primary data were employed and were collected with the aid of a pretested semi-structured questionnaire through random sampling online survey administered. Data collected were analysed using descriptive and inferential statistics at 5% level of significance.

Frequency distributions were generated for the distribution and Data visualized using histograms and box plots to provide an overview of caffeine consumption patterns.

Correlation analysis (using Pearson's correlation coefficient) to examine the relationship between caffeine consumption and academic performance.

2.7 Ethical Considerations

Ethical considerations involve informed consent, confidentiality measures were obtained to safeguard participant's well-being, and securing data.

3. Results

3.1 Response Analysis

The study shows the response rate of 90.8% from the computed responses of the study population of 395 with the retrieved number of questionnaire of 359.

3.2 Demographic Results

The demographics of the respondents' computation gave a gender distribution of 66.3% female and 33.7% male. Majority (39.8%) of the respondents are in the age range of 21 to 23-year, while few (35.4%) are 18 to 20 years. Majority (45.1%) are in the 500 level of their studies while 26.7% are in 400 level with the rest distributed in the lower level of studies. Majority (38.2%) of the respondents are Pharmacy students, few (20.3%) are in Medicine and Surgery while 20.1% in Medical Laboratory Sciences with minuscule of respondents distributed in other areas of studies.

3.3 Caffeine Consumption

3.3.1 Rate of Caffeine Products

Table 2 presents the rate of consumption of various caffeine products among the study participant's. Majority (52.6%) of respondents consume soda drinks always (Trice weekly), while 38.2% consume Tea, 31.8% Chocolate products, 27.9% Energy drink and 18.7% Caffeinated snacks. Coffee (48.2%), caffeinated snacks (46.5%) are consumed rarely.

The presentation of caffeine consumption among the Madonna University students based on a scoring system derived from their responses to the seven variables in Table 2. The scoring system assigns values as follows: "Never" = 0, "Rarely" = 1, "Once a month" = 2, "At least once a week" = 3, and "Up to 3 times a week" = 4. After calculating the total scores for each participant across the seven variables (with a maximum obtainable score of 28), the students were categorized into three groups. Those scoring less than 10 were classified as "Low Caffeine Consumers" (10.6%), those scoring between 10 and 14 were categorized as "Moderate Caffeine Consumers" (32.3%), and those scoring above 14 were designated as "High Caffeine Consumers" (57.1%).

3.3.2 Motivations for Consumption

Majority (69.1%) of the respondents are motivated by the taste of caffeine, to feel more awake and alertness (64.6%), increase of physical energy (61.3%), Alleviation of stress (51.5%) while to improve creativity is motivated by 36.8%). Minuscule (16.2%) is motivated by the urge to lose weight.

3.3.3 Effects of Caffeine Consumption

Table 4 presents the effects of the caffeine consumption. Increase in alertness is precipitated in majority (50.9%) of the respondents, few (46.24%) affected by improved concentration, few by difficulty in sleeping while minuscule (11.42%) have increase in heart beat. Perception of respondents indicated that that majority (81.9%)

experiences no withdrawal symptoms, majority (58.5%) no negative effects, majority (68.0%) experiences no negative mental health.

4. Discussion

The consumption of caffeine among students have been attributed majorly to the urge to feel and enjoy the taste and the sensory appeal coupled with the need to be awake and alert. This is in conformity with the report of Sholeye *et al.*, 2021. Akanni in 2017 reported that these tendencies are associated to risk behaviour of the students. The study reveals that there is no report of negative effect associated with mental health of majority of the students contrary to the report of Adegoke (2008) ^[1] that reported the impact of caffeine consumption on physical and mental health. This diversity of motivations underlines the multifaceted role that caffeine plays in the lives of university students, extending beyond mere alertness enhancement.

The study reveals the high consumption of Energy Drink as reported by Douglas and Nkporbu, 2018.

Limitations of the study

The study is subject to self-reporting bias and the snapshot of caffeine consumption at a particular season and causal relationship between variables. The single institution of study could also have impair the study by unique characteristics and culture.

5. Conclusion

Students' consumption of caffeinated products extended beyond alertness, enhancement to taste enjoyment, social interactions and improved concentration among others. However, potential side effects such as nervousness and difficulty in sleeping are evidently experienced among consumers as the result of the negative impact of caffeine on their physical and mental health.

There is no significant association between the consumption and gender, age, academic level, or faculty choice.

It is highly recommended that education program in tertiary education be held periodically to educate students on consumption of caffeinated products with the intention of providing moderate consumption of these products and all products containing caffeine should be clearly labeled as such.

6. Acknowledgment

We wish to acknowledge all students who willingly filled the questionnaires.

7. Conflict of Interest

No conflict of interest is associated with this work.

8. References

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