

**PREVALENCE, PATTERN, AND FACTORS OF SUBSTANCE ABUSE AMONG
MEDICAL STUDENTS IN UNIVERSITY OF BENIN, BENIN CITY, EDO STATE,
NIGERIA**

BY

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BACHELOR IN MEDICINE AND BACHELOR IN SURGERY (MBBS) DEGREE IN
THE UNIVERSITY OF BENIN, BENIN CITY**

DECLARATION

We hereby declare that this research project titled “Prevalence, Pattern, and Factors of Substance Abuse Among Medical Students in University of Benin, Benin City, Edo State, Nigeria” was conducted under supervision and has not been submitted in part or in full for any purpose.

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CERTIFICATION

This is to certify that this research study titled “**PREVALENCE, PATTERNS, FACTORS OF SUBSTANCE ABUSE AMONG MEDICAL STUDNETS IN UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA**” was conducted by **IJEOMA CATHERINE NWAODUA** with matriculation number **MED1807438**, **JEFFERY AGBONOSA OBANOR** with matriculation number **MED1807439**, **EMMANUEL OHUE** with matriculation number **MED1807452**, and **OHONBAMU PHILLIPA ODUWARE** with matriculation number **MED1807451** under the supervision of Prof. A. R. Isara in the Department of Public Health and Community Medicine, College of Medical Sciences, University of Benin as part of the requirements for the award of Bachelor of Medicine, Bachelor of Surgery (MBBS) degree.

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LIST OF ABBREVIATIONS

GHQ-12:	General Health Questionnaire (12-item)
IBM-SPSS:	International Business Machine- Statistical Package for Social Sciences
NPA:	New Psychoactive Substance
PSS-10:	Perceived Stress Scale
SDUQ:	Student Drug Use Questionnaire
SSA:	Sub-Saharan Africa
SUDs:	Substance Use Disorder
UNIBEN:	University of Benin
UNODC:	United Nations Office on Drugs and Crime
WHO:	World Health Organization

DEFINITION OF TERMS

Pharmacological Cognitive Enhancement

It refers to the use of any psychoactive drug to enhance cognition concerning attention, concentration, or memory by a healthy individual without any form of impairment

Psychoactive Substance

It refers to a chemical substance that fundamentally alters neurobiology to induce a transient shift in perception, mood, and consciousness

Psychoactive Substance

It refers to a chemical substance that fundamentally alters neurobiology to induce a transient shift in perception, mood, and consciousness

Substance Abuse/Use

It refers to the persistent and harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs.

Substance Use Disorder

A clinical condition characterized by a problematic pattern of substance use leading to significant impairment or distress.

ABSTRACT

Introduction: The consumption of psychoactive substance remains a significant global health challenge, particularly among young adults in tertiary institutions. Medical students occupy a uniquely precarious position due to the rigorous cognitive and emotional demands of their training. In Nigeria, national drug use prevalence has surged beyond the global average, with synthetic drugs and new psychoactive substances becoming increasingly accessible in southern urban centers like Benin City.

Objectives: The aim of the study was to assess the prevalence, pattern and perceived factors associated with substance use among medical students at the University of Benin.

Methodology: A descriptive cross-sectional study was conducted among undergraduate medical students (200-level – 600-level) at the University of Benin. A systematic random sampling technique was employed to select the sample size. Data were collected using a structured, self-administered questionnaire adapted from the WHO Student Drug Use Questionnaire (SDUQ) and the General Health Questionnaire (GHQ-12). Analysis was performed using IBM SPSS version 27.

Results: A total of 298 respondents participated (100% response rate). Alcohol was the most prevalent substance, with a lifetime usage of 63.4% and a past 30-day prevalence of 5.8%. Tobacco/nicotine had a lifetime prevalence of 14.1%, while current opioid use was reported by 2.7% of respondents. Significant associations were found between alcohol use and academic level (highest in 300-level), monthly allowance, and marital status. Furthermore, alcohol and stimulants were significantly associated with psychological distress ($p= 0.024$ and $p= 0.036$, respectively), with 82.0% of current stimulant users exhibiting distress.

Conclusion: Substance use is highly prevalent among medical students at the University of Benin, primarily serving as a functional coping mechanism to manage intense academic

workloads and systemic rigors rather than recreational purposes. The findings highlight a critical need for institutions to transition from punitive measures towards a wellness-oriented framework, incorporating confidential counselling and curriculum restructuring to mitigate student stress and promote healthier learning environments.

Keywords: Substance Abuse, Medical Students, Prevalence, University of Benin, Psychological Distress.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

The persistent and harmful consumption of psychoactive substances remains a defining public health crisis of the 21st century.¹ These substances include legal agents such as alcohol and tobacco, as well as illicit narcotics like cannabis and cocaine, all of which fundamentally alter neurobiology to induce a transient shift in perception, mood, and consciousness.² While this phenomenon affects all demographics, its prevalence is increasingly concentrated among young adults within tertiary institutions, where medical students occupy a uniquely precarious position. The journey through medical training is notoriously rigorous, often demanding extreme cognitive output and emotional resilience. Consequently, the reliance on psychoactive substances often transitions from recreational curiosity to a perceived functional necessity, leveraged either to enhance academic performance or to mitigate the psychological toll of a high-pressure environment.^{3,4} Globally, the medical education system is regarded as a high-stress incubator. Research indicates that the transition from preclinical to clinical years often triggers an escalation in substance use, as students begin to grapple with the ethical and emotional complexities of patient care alongside heavy academic curricula.⁴

There is a rising trend of "pharmacological cognitive enhancement," characterized by the misuse of prescription stimulants like methylphenidate or modafinil to sustain a prolonged study period.² This pattern is seen across Sub-Saharan Africa (SSA), where a study was done that revealed that 44.2% of medical students use at least one psychoactive substance during their training.^{4,5} In the SSA region, the stress of medical school is frequently compounded by socio-economic instabilities, which significantly heighten the risk of developing maladaptive coping mechanisms.^{3,6}

In the Nigerian context, the landscape of substance use is evolving rapidly. The 2018 United Nations Office on Drugs and Crime (UNODC) report established a national prevalence rate of 14.4% for drug use among the general population which was three times the global average.⁷ There is, however, recent data which suggests that these figures have surged, particularly in southern urban centers where synthetic drugs and "new psychoactive substances" (NPS) have become more accessible.⁸ For Nigerian medical students, the traditional pressures of medical school are intensified by contemporary challenges, including economic inflation, insecurity, and the competitive "brain drain" culture. Across various Nigerian universities, it was noticed that the social use of alcohol and tobacco frequently precedes the use of more potent substances like cannabis, tramadol, and codeine-containing syrups.⁹

The University of Benin (UNIBEN) serves as a major training institution in the South-South region of Nigeria, drawing a diverse student population within the unique socio-cultural environment of Edo State. Within this context, the College of Medical Sciences operates as a demanding academic environment where students navigate a complex mix of rigorous professional training and evolving social dynamics. In this setting, the interplay among academic workload, peer influence, and individual psychological health shapes the daily experience of the student body. The pattern of substance use and the specific environmental triggers found within the institution reflect the broader challenges that future healthcare providers face as they navigate the stressors inherent in their formative years of medical training.

1.2. STATEMENT OF THE PROBLEM

Substance use among young people is a growing public health concern across West Africa and SSA more broadly. A recent systematic review and meta-analysis of West African studies found high and heterogeneous prevalence estimates for commonly used substances, including

alcohol (44%), kola nut (39%), tramadol (30%) and codeine (11%), emphasizing peer influence, easy availability and socioeconomic pressures as major drivers among youths.¹² In SSA more generally, pooled estimates place lifetime, 12-month and current prevalence of any substance use among young people at approximately 21%, 18%, and 15% respectively.⁶ These regional patterns suggest that university students, who are typically concentrated young adults experiencing intense academic, social, and developmental pressures, constitute a population at measurable risk. Medical students, face unique psychological, academic, and clinical stressors that may predispose them to substance use at rates equal to or higher than the general university population.¹¹

National and institution-level studies in Nigeria show wide variability in prevalence estimates among tertiary students and particularly among medical students, reflecting real differences in population dynamics and measurement tools. Reported prevalence of alcohol and psychoactive substance use among medical students ranges widely, from low single digits in some surveys to more than 40% in others.^{3,13} An institution-specific study at the University of Benin (UNIBEN) reported that 40% of sampled undergraduates admitted to using drugs other than those required for medical reasons, with alcohol, marijuana and cigarettes being the most frequently used substances.¹⁴ However, although this provides an important baseline picture, it does not reflect the current situation among medical students whose pressures, responsibilities and access pathways differ significantly from the general student population. Contemporary, cohort-specific data focusing on medical students at UNIBEN are lacking, creating a gap in understanding the true magnitude of the problem within this critical training group.

Patterns of substance use among students are also evolving, with shifting profiles of commonly used substances and changing motivations. Alcohol, stimulants, such as including caffeine tablets and tramadol cannabis, and codeine-containing syrups remain among the

most frequently reported substances among youths in West Africa.¹² Evidence from Nigeria, including a study done among medical students in the Niger Delta region, showed that psychoactive substance use frequently co-occurs with depressive symptoms and that major motivations include stress relief, enhancement of exam performance, social acceptance and peer reinforcement.³ At UNIBEN, the 2022 survey identified alcohol as the most frequently abused substance, with peer pressure, academic difficulties and desire for social approval reported as major drivers.¹⁴ These findings suggest that students may be using substances as maladaptive coping strategies in the face of academic and emotional stress.

Understanding risk factors for substance use is equally important. Systematic reviews across SSA highlight individual-level factors (stress, performance pressure, emotional distress), interpersonal influences (peer use, family behaviors), and structural conditions (easy availability, weak enforcement of drug regulations, limited recreational outlets) as strong determinants of student substance use.^{6,12} Local evidence from UNIBEN similarly points to peer influence (about 51% agreement) and academic stress (roughly 47%) as principal perceived antecedents.⁹ However, medical students experience additional pressures unique to their training, including exposure to patient suffering, long clinical hours, sleep disruption, and the ethical burdens of clinical responsibility, which may produce risk profiles not captured by previous general undergraduate studies. Without institution-specific measurement of perceived drivers within the medical cohort, prevention strategies may miss key stressors and remain poorly targeted.

Attitudes and beliefs toward persons with substance use disorders (SUDs) represent another critical dimension of the problem. Health-professional trainees' attitudes strongly influence their future clinical behavior, empathy levels, and willingness to offer evidence-based treatment. International evidence shows that significant proportions of medical students hold stigmatizing or moralistic views toward people who use drugs, and that such attitudes

negatively affect patient engagement and treatment outcomes.^{3,6} Cluster-analytic work demonstrates that groups of medical students fall into distinct attitudinal profiles ranging from highly stigmatizing moralists to more empathetic, inclusive, and these differences have practical implications for designing educational interventions.⁶ Despite this, little contemporary evidence exists in Nigeria regarding medical students' attitudes toward SUDs, leaving a gap in understanding how stigma and treatment pessimism may influence both help-seeking among peers and future clinical practice.

Failure to urgently address substance abuse among medical students at UNIBEN risks severe and cascading consequences across multiple levels. At the individual level, unchecked use is linked to a higher incidence of mental health disorders like depression, anxiety, and burnout, alongside impaired cognition, reduced concentration, and academic decline. This often results in increased absenteeism and a diminished capacity for emotional regulation.³ These individual impairments directly threaten institutional and professional standards. Academically, substance abuse erodes integrity and can compromise patient safety during clinical training. Professionally, impaired students are at high risk of becoming impaired physicians, leading to long-term dependence, medical errors, and reduced career longevity. Furthermore, the normalization of substance use within the student body creates a cyclical problem, where new students adopt these behaviors, perpetuating a culture that can erode the institution's reputation and accreditation status. This issue also has a critical impact on future healthcare. Stigmatizing attitudes cultivated among trainees undermine the care for patients with substance use disorders, perpetuating mistrust and poor health outcomes.^{3,15} Within the broader regional context of rising tramadol and codeine misuse, institutional inaction leaves UNIBEN vulnerable to escalating public-health crises and regulatory challenges.

Taken together, the documented regional burden, evolving patterns of substance use, lack of contemporary medical-student-specific data at UNIBEN, and significant clinical and

educational risks make it essential to conduct an updated study. Comprehensive measurement of prevalence, use patterns, risk factors, and attitudes toward SUDs among medical students is urgently required to inform interventions, curricular reforms, and student support systems that reduce harm and promote healthier learning environments.^{12,16}

1.3. JUSTIFICATION OF THE STUDY

This study is justified at the public health, institutional, curricular, and professional levels, providing a necessary evidence base for targeted interventions within the University of Benin. Although substance use has been studied among UNIBEN undergraduates, there is still no current evidence specifically focused on the medical student population, whose pressures and exposures are distinct.¹¹ A contemporary prevalence estimate rooted in this specific context is therefore essential. Medical students experience unique challenges, including intense examinations, prolonged study hours, emotionally demanding clinical postings, and high expectations for academic performance, which may place them at disproportionate risk. Existing regional data show substantial heterogeneity in prevalence estimates across institutions, reinforcing the conclusion that local measurements are more reliable than extrapolation.¹²

Understanding the patterns, sources, and motivations of substance use within the medical student community is equally crucial. Evidence across West Africa highlights tramadol and codeine as emerging substances of misuse, alongside persistent use of alcohol, cannabis, and stimulants.¹² Motivations such as stress relief, peer influence, and cognitive enhancement appear frequently across studies.³ However, motivations among medical students may differ from those of the general undergraduate population due to their exposure to clinical environments, medical knowledge, and access to prescription drugs. By identifying the actual substances used, where students obtain them, and why they use them, the university can

create tailored interventions, collaborate with regulatory authorities, and build targeted counselling and mentorship programs that address the true drivers of use.

Documenting perceived risk factors among medical students will enhance early identification and prevention strategies. In SSA, factors such as academic stress, peer influence, and widespread availability consistently appear as predictors of student substance use.^{6,12} University of Benin's previous findings confirm these influences,¹⁴ but the medical student population warrants focused assessment due to distinctive pressures, including night calls, clinical failures, a competitive culture, sleep deprivation, and fragmented support systems. Understanding how these students perceive their risk environment will enable the university to design supportive interventions, such as stress-management workshops, peer-support systems, and confidential early-warning programs for students at risk of misuse.

At a broader institutional level, UNIBEN serves as a major training hub for the South-South region, and the well-being of its medical students directly influences the quality of healthcare delivery in Edo State and beyond. Local data will support evidence-driven decisions in student affairs, curriculum design, mental health services, and campus health policy. At the national level, findings may contribute to Nigeria's ongoing efforts to curb tramadol and codeine misuse, reduce youth substance exposure, and incorporate addiction education into medical training.

1.4 AIM AND OBJECTIVES

1.4.1 GENERAL AIM

To assess the prevalence, pattern and perceived factors of substance use among medical students in University of Benin with aim of formulating evidence-based intervention.

1.4.2 SPECIFIC OBJECTIVES

1. To determine the prevalence of substance, use among medical students in university of Benin
2. To identify the pattern of substance, use among medical students in university of Benin
3. To assess the perceived factors contributing to substance use among medical students in university of Benin.

CHAPTER TWO

LITERATURE REVIEW

The body of research surrounding substance abuse among medical students has expanded significantly as global health curricula have become more rigorous. Current literature indicates a complex relationship between medical training and the consumption of psychoactive substances, shifting from traditional alcohol-centric studies to studies focused on pharmacological neuroenhancers and prescription misuse. This chapter provides a thematic and empirical review of literature regarding the prevalence, patterns, and contributing factors of substance use among this cohort, with a specific focus on the Nigerian context and the University of Benin (UNIBEN).

This review is structured to address the specific objectives of this study by examining the global and local prevalence of substance use to establish the magnitude of the problem, specific patterns of use, including the types of substances favored and the frequency of consumption, and multi-dimensional factors ranging from individual psychological traits to socio-environmental influences that drive substance-seeking behavior among medical students.

2.1 PREVALENCE OF SUBSTANCE USE AMONG MEDICAL STUDENTS.

A cross-sectional study was conducted in 2024 on knowledge and prevalence of substance abuse among undergraduate students at the University of Benin, Nigeria. The study employed a multistage sampling to select a representative sample from across different faculties (Arts, Engineering, Law, Life Sciences, and Medicine). A total of 771 respondents participated, and data were collected using a self-administered questionnaire. Findings revealed that the lifetime prevalence of substance use was 44.4%, recent prevalence was 68.1%. The study utilized a structured, pre-tested questionnaire, ensuring the data collected on drug use was

reliable. The limitation of the study was that it was not done exclusively on medical students.¹⁷

A descriptive cross-sectional, multi-institutional study was conducted in 2019 to assess substance use among tertiary institution students at three Buea institutions: the University of Buea, the Catholic University Institute of Buea, and the Higher Institute of Management Studies in Cameroon. The study employed a convenience sampling design; a total of 625 students participated (response rate 96.1%), and data were collected using a self-administered questionnaire adapted from the WHO model core questionnaire. The findings revealed that the lifetime prevalence of substance use was 89.9%, with past-year prevalence of 77% and current prevalence (past 30 days) of 61.6%. The strengths of this study included the high response rate, multi-institutional design, and use of WHO-based standardized questionnaires. Limitations included convenience sampling and self-reported data.¹⁸

Another descriptive cross-sectional study was conducted in 2021 to determine the prevalence and associated factors of substance abuse among medical students in Gandaki Medical College Teaching Hospital, Nepal. Data were collected using a modified online version of the Health Professional Questionnaire. The findings showed, lifetime prevalence of alcohol use was 58%, cigarette smoking was 21.9%, and illegal drug abuse was 13.7%. The study's strengths included the use of a validated instrument and a comprehensive assessment of both prescription and illegal drugs. However, limitations included a low response rate, potentially due to COVID-19 restrictions, a single-center design limiting generalizability, and potential response bias given the sensitive nature of the topic.¹⁹

2.2 PATTERNS OF SUBSTANCE USE AMONG MEDICAL STUDENTS IN UNIVERSITY OF BENIN.

A cross-sectional study was conducted in 2020 to identify substance abuse among medical students at the College of Medicine, University of Lagos. The participants were selected

randomly, and data were collected using combined self-reported questionnaire data with biological validation through urine screening using BIOEASY™ immunoassay Multi-Drug Test Cards among 150 medical students, of whom 52 submitted urine samples. Findings revealed tramadol being the most commonly abused substance (4.4%), followed by ecstasy (3.0%) and cannabis (3.0%), while other substances included benzodiazepines (2.2%), barbiturates (2.2%), amphetamines (2.2%), morphine (1.5%), cocaine (1.5%), methamphetamine (1.5%), and methadone (1.5%). Age of initiation peaked at 15 years (4.4%), the oral route was most preferred (14.8%), and 3.7% reported using multiple drugs simultaneously, with frequency ranging from once daily (3.7%) to thrice daily (0.7%).²⁰

An institution-based cross-sectional study was conducted in 2023 to evaluate how social drug usage affects students' performance at Africa Medical College in Addis Ababa, Ethiopia. A stratified sampling technique was used to select 173 graduating students, and data were collected using a pretested structured questionnaire. The findings revealed alcohol was the most used social drug (41.8%), followed by khat (40.7%), and cigarettes (12.1%). Current use patterns showed alcohol at 50.6%, khat at 34.1%, and cigarettes at 11.8%. Regarding frequency and quantity of use, among the 91 users, 36.3% used substances weekly, 35.2% daily, 22% occasionally, 4.2% monthly, and 2.2% every two weeks. Duration of use varied considerably: 36.3% had used it for more than 4 years, 25.3% for 3-4 years, 24.2% for 1-2 years, and 14.3% for less than one year. This indicates that a substantial proportion of students had established long-term substance use patterns.²¹

A cross-sectional study was conducted in 2023 to assess the prevalence of substance abuse and its impact among medical students at Sri Siddhartha Medical College in Karnataka, India. A purposive sampling technique was employed, and 301 undergraduate students were selected from the population. The data were collected using a semi-structured pretested questionnaire; findings showed alcohol being the most commonly abused substance (19.3%),

followed by tobacco (4%) and drugs (0.3%), while 4.7% reported using all forms of substances concurrently. Among alcohol users, vodka was the most popular choice (8%), followed by whiskey (7.3%) and beer (5.6%), with 1.7% consuming alcohol 2-3 times weekly and 1% reporting daily consumption, while drug users reported marijuana as the most popular substance (9%), with 2.7% using frequently and 6.3% using rarely. The primary reasons for initiation were curiosity (15.6%), stress (5.3%), and peer pressure (2%). The study, by distinguishing between various substances, allows for substance-specific intervention strategies.²²

2.3 PERCEIVED FACTORS CONTRIBUTING TO SUBSTANCE USE AMONG MEDICAL STUDENTS IN UNIVERSITY OF BENIN.

A cross-sectional descriptive study was conducted in 2023 to determine the prevalence and psychosocial determinants of substance use at the College of Medicine, University of Nigeria, Enugu. A simple random sampling technique was used to select 300 clinical medical students, and data were collected using a structured self-administered questionnaire adapted from the WHO student drug-use guidelines. The study found that among users, academic stress was reported by 71.7%, peer influence by 48%, and sleep disruption by 42% as motivators for use. Male students and older age groups were significantly more likely to report substance use ($p < 0.05$). Strengths of the study include a clearly defined medical student population and structured instruments covering multiple psychosocial determinants, while limitations involve its cross-sectional design, which prevents causal inference, and reliance on self-reported data, which may underreport actual use.²³

A descriptive cross-sectional study was conducted in 2025 to investigate the factors contributing to substance abuse among students at Kaimosi Friend University (KAFU) in Kenya using a stratified random sampling technique. A total of 350 undergraduate students were selected. Data were collected using a structured questionnaire adapted from the National

Authority on Drug Abuse, Kenya (NACDA). The findings identified a complex interplay of psychological, social, and environmental factors, with 65% of students reporting frequent stress, and half of the respondents admitted to using substances to cope. Over half of the surveyed students (55%) reported having friends who used drugs, and 45.1% reported being encouraged by Peers to try substances. Easy access to drugs was reported at 60% as another factor, and 50% pointed to the glorification of drug use in the media as an influencing factor.²⁴

In 2024, a cross-sectional study was conducted in India to assess 421 medical students to determine the prevalence of substance use and associated psychosocial determinants. The study employed a structured, self-administered questionnaire incorporating the Perceived Stress Scale (PSS-10) and the WHO Alcohol, Smoking and Substance Involvement Screening Test (WHO-ASSIST). Findings revealed that 21.4% of students reported current or past use of psychoactive substances, predominantly alcohol, tobacco, and cannabis. Academic stress was reported by 62% of users, sleep deprivation by 54%, hostel living by 31%, and peer influence and curiosity by 28%. Strengths of this study include the use of validated instruments and a comprehensive psychosocial assessment, while limitations involve self-reporting, which may underreport substance use, and its cross-sectional design, which limits causal inference.²⁵

CHAPTER THREE

METHODOLOGY

3.1 STUDY AREA

This **study was** conducted at the University of Benin, located in Benin City, Edo State, Nigeria, which was established in 1970 as the Midwest Institute of Technology and later renamed the University of Benin.²⁶ The University of Benin is a federal tertiary institution and one of the leading universities in southern Nigeria. The institution houses the College of Medical Sciences, which provides undergraduate and postgraduate training in various health-related disciplines.

The undergraduate medical program at the College of Medical Sciences leads to the award of the Bachelor of Medicine and Bachelor of Surgery (MBBS) degree and spans six academic years. The program is structured into preliminary, pre-clinical, and clinical phases, incorporating lectures, laboratory sessions, and hospital-based clinical rotations. At the time of the study, the total medical student population at the undergraduate program at the College of Medical Sciences was approximately 1,360 students.

3.2. STUDY DESIGN

A descriptive cross-sectional study design **was adopted** for this study.

3.3. STUDY POPULATION

The study population consists of undergraduate medical students enrolled in the MBBS programme at the University of Benin.

3.4 SELECTION CRITERIA

3.4.1 INCLUSION-CRITERIA

Students who have completed at least one full session of medical school

3.5 SAMPLE SIZE DETERMINATION

The sample **size was** calculated using Cochran's formula for prevalence studies.²⁷

$$n_0 = \frac{Z^2 Pq}{d^2}$$

Where:

n_0 = Minimum sample size fulfilment

Z = 1.96 (corresponding to a 95% confidence level)

p = Estimated proportion/prevalence of substance use in the population.

q = 1-p.

d = Degree of precision set at 0.05 confidence interval

For this study, p was assumed to be 65% (0.65), based on a descriptive cross-sectional study done in Ogun State, Nigeria on prevalence, pattern, and associated factors of psychoactive substance among medical students of fifth and sixth year of Olabisi Onabanjo university Ogun state.²⁸

Substituting the values into the formula:

$$q = 1 - 0.65$$

$$q = 0.35$$

$$n_0 = (1.96^2 \times 0.65 \times 0.35) / (0.05^2)$$

$$n_0 = 349.58$$

When the population size is less than 10,000, the finite population correction formula is applied.

$$n = n_0 / (1 + ((n_0 - 1) / N))$$

Where:

N = Eligible population size (2001-6001)

i.e., total population of students in medical school (1,360) - 100 level excluded from study

$$(n = 283)$$

$$= 1,077 \text{ students}$$

$$n_o = 349.58$$

Substituting the values:

$$n = 349.58 / (1 + (349.58 / 1,077))$$

$$n = 349.58 / 1.32$$

$$n \approx 264.83$$

Minimum sample size required: 265 students

To account for potential nonresponse during data collection, a 10% adjustment was applied.

$$n_f = n / (1 - n_r)$$

$$n = 265$$

$$n_f = 265 / (1 - 0.1)$$

$$n_f = 265 / 0.9$$

$$n_f = 294.44$$

The final calculated sample size for the study is 295 students.

3.6 SAMPLING TECHNIQUE

A systematic random sampling technique **was** employed to select participants for this study among medical students in the College of Medical Sciences at the University of Benin.

The total enrollment of medical school is 1,360 students. However, 100-level students ($n=283$) were excluded from the study population because they had not completed a full academic session. Therefore, the study population (N) consists of 1,077 students across the 200-600 levels.

The study population **was** first stratified according to academic level, specifically 200-level to 600-level medical students at the School of Medicine, University of Benin.

Each academic level (200, 300, 400, 500, and 600 level) constituted a separate stratum. The eligible population of medical students from 200 level to 600 level **was** 1,077 students. Using

the calculated sample size of 295 students, proportionate allocation was used to determine the number of respondents to be selected from each academic level.

The proportional allocation was calculated using the formula:

$$n_i = (N_i / N) \times n$$

Where:

n_i = number of students to be selected from each academic level

N_i = total number of students in each academic level

N = total population of all eligible medical students (2001-6001)

n = calculated sample size

PROPORTIONATE SAMPLE ALLOCATION:

Academic Level	Population (N_i)	Sample Allocation (n_i)
200	231	63
300	192	53
400	322	88
500	167	46
600	165	45
STUDY POPULATION (N)	1,077	295

After proportional allocation had been completed, systematic random sampling was then used to select individual participants within each academic level. A sampling frame consisting of the list of all registered students in each class was obtained from the class representatives.

The sampling interval (K) was determined using the formula:

$$K = N / n$$

Where:

K_{th} = sampling interval

N = Population of each level

n = Allocated sample size for that level

So, in calculation the k_{th} value for 200L

$$K = 231/63$$

$$K = 3.66$$

The k_{th} value for 200L is 4.

After the k_{th} value was obtained, a random starting number between 1 and k_{th} was first selected by balloting, after which every k_{th} student on the class list was selected until the required number of respondents for each academic level was obtained.

In cases where a selected student declined to participate or was unavailable during data collection, the next eligible student on the list was selected to maintain the required sample size.

3.7 DATA MANAGEMENT

3.7.1 DATA COLLECTION

Data was collected using a structured self-administered questionnaire.

3.7.2 DATA COLLECTION INSTRUMENT

Data was collected using a structured, self-administered questionnaire adapted from validated substance use surveys, including the WHO Student Drug Use Questionnaire (SDUQ), which

was used to assess the prevalence and pattern of substance use,²⁹ and the General Health Questionnaire (GHQ-12), which **was** used for the assessment of psychological distress.³⁰ The questionnaire captured:

Section A: social demographic and economic data

Section B: Environmental factors

Section C: Prevalence and patterns of substance use

Section D: Psychological Health Assessment

3.7.3 PRETESTING

To check the tool's reliability and validity, a **pretest was** conducted among 20 medical students from Benson Idahosa University, Benin City, Edo State. Necessary corrections **were** made after evaluating the clarity and reliability of the instrument.

3.7.4 DATA COLLECTION PROCEDURE

Data **was** collected using a quantitative method through self-administered questionnaires, which **were** distributed between lectures and clinical postings, and collected immediately after completion.

3.7.5 DATA ANALYSIS

The data for the study **were** collected and entered into IBM Statistical Package for Social Sciences (IBM – SPSS) Statistics software version 27.³⁰

Before analysis, the dataset **was** cleaned and cross-checked for errors, missing values, and inconsistencies. Appropriate coding **was** assigned to all variables, and data **were** verified to ensure accuracy.

The analysis **was** conducted in two stages: descriptive analysis and inferential analysis.

Descriptive statistics **were** used to summarize the socio-demographic characteristics of respondents, prevalence, and patterns of substance use among medical students.

Inferential statistics using bivariate analysis **were** performed to examine the association between independent variables and substance use among medical students. Chi-square (χ^2) test **was** used to determine the relationship between categorical variables such as: Academic level, gender, age group, and substance use

All statistical tests **were** conducted at a 95% confidence level, and a p-value of less than 0.05 ($p < 0.05$) **was** considered statistically significant.

Psychological distress among respondents **was** determined by their responses to the 12-item General Health Questionnaire (GHQ-12). Each item was scored using the binary (GHQ) method, where the two least symptomatic responses were assigned a score of 0 and the two most symptomatic responses were assigned a score of 1. The least possible score was 0, while the highest possible score was 12. A total score of 3 or less was graded as no psychological distress, while a total score of 4 or greater was graded as the presence of psychological distress³¹.

3.7.6 DATA PRESENTATION

Results **were** presented using tables, charts, and graphs for easy interpretation.

3.8 ETHICAL CONSIDERATION

Ethical clearance for this study was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital with protocol number **(ADM/E 22/A/VOL.VII/14865491272122)** before the commencement of data collection. In addition, permission **was** obtained from the Provost of the College of Medical Sciences, University of Benin, to conduct the study among medical students.

Before administration of the questionnaire, informed consent **was** obtained from each participant. To ensure privacy, no name or identifiable information **was** required on the questionnaires, and all data collected **was** handled with confidentiality.

3.9 STUDY LIMITATIONS

This study **had** several limitations. First, the cross-sectional design limited the ability to establish causal relationships between perceived factors and substance use among medical students. Second, data **were** collected using self-reported questionnaires, which **were** influenced by recall bias and social desirability bias, potentially leading to underestimation of substance use behaviors. Third, the **study was** conducted at a single institution, which limited the generalizability of the findings to other medical schools in Nigeria. Additionally, variations in participants' understanding of questionnaire items and their willingness to disclose their substance use affected the accuracy and completeness of the data collected.

CHAPTER FOUR

RESULTS

A total of two hundred and ninety-eight (298) respondents participated in this study, with all questionnaires retrieved, giving a response rate of 100%. The results are presented as follows:

Section A: Socio-demographic characteristics

Section B: Prevalence and patterns of substance abuse among respondents

Section C: Factors contributing to substance use among respondents

Section D: Psychological Health Assessment (GHQ-12)

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency (n=298)	Percent
Age in Years		
16 – 20	128	43.0
21 – 24	137	46.0
≥ 25	33	11.0
Mean age ± SD = 21.3 ± 2.9		
Sex		
Male	184	61.7
Female	114	38.3
Marital Status		
Single	294	98.7
Married	4	1.3
Religion		
Christianity	288	96.6
Islam	8	2.7
African Traditional Religion	1	0.3
Atheist	1	0.3
Ethnicity		
Benin	102	34.2
Esan	53	17.8
Igbo	40	13.4
Yoruba	26	8.7
Etsako	25	8.4
Urhobo	19	6.4
Isoko	11	3.7
Ijaw	8	2.7
Itsekiri	5	1.7
Akwa Ibom	4	1.3
Hausa	2	0.7
Others*	3	1.0
Academic Level		
200 level	63	21.1
300 level	57	19.1
400 level	82	27.5
500 level	51	17.1
600 level	45	15.1
Monthly Allowance (Naira)		
< 50,000	114	38.3
50,000 – 100,000	143	48.0
101,000 – 200,000	26	8.7
> 200,000	15	5.0
Living Arrangement		
Hostel	195	65.4
Rented accommodation	77	25.8
With parents/guardians	26	8.7

*Others = Jukun, Mafa, Tiv

The participants' ages ranged from 16 to 37 years, with a mean age of 21.3 ± 2.9 years. The majority at 137 (46.0%) were between 21–24 years, followed by 128 (43.0%) aged 16–20 years, and 33(11.1%) aged 25 years and above. Males at 184 (61.7%) were more than

females, 114 (38.3%). Almost all respondents were single, 294 (98.7%), while only 4 (1.3%) were married. The dominant religion was Christianity, at 288 (96.6%), followed by Islam at 8 (2.7%), with African Traditional Religion and Atheism each accounting for 0.3%. In terms of academic level, 63 (21.1%) were at the 200 level, 57 (19.1%) were at the 300 level, 82 (27.5%) were at the 400 level, 51 (17.1%) were at the 500 level, and 45 (15.1%) were at the 600 level. The most represented ethnic group was Benin at 102 (34.2%), followed by Esan at 53 (17.8%) and Igbo at 40 (13.4%). Regarding financial status, the highest proportion of students at 148 (48.0%) received a monthly allowance between 50,000 – 100,000 Naira, followed by 114 (38.3%) who received less than 50,000 Naira. The majority of respondents, 195 (65.4%), resided in university hostels, while 77 (25.8%) lived in rented accommodation and 26 (8.7%) lived with parents or guardians.

Table 2A: Prevalence and patterns of substance abuse among respondents

Variables	Frequency (n=298)	Percent
Lifetime usage of alcohol		
Yes	189	63.4
No	109	36.6
Used alcohol in the last 12 months		
Yes	120	40.3
No	178	59.7
Used alcohol in the last 30 days		
Yes	47	15.8
No	251	84.2
Frequency of alcohol use (n=189)		
Daily	5	2.6
Weekly	20	10.6
Occasionally	164	86.8
Lifetime usage of tobacco/nicotine		
Yes	42	14.1
No	256	85.9
Used tobacco/nicotine in the last 12 months		
Yes	34	11.4
No	264	88.6
Used tobacco/nicotine in the last 30 days		
Yes	25	8.4
No	273	91.6
Frequency of tobacco/nicotine usage (n=42)		
Daily	8	19.0
Weekly	7	16.7
Occasionally	27	64.3
Lifetime usage of Stimulants		
Yes	146	49.0
No	152	51.0
Used stimulants in the last 12 months		
Yes	113	37.9
No	185	62.1
Used stimulants in the last 30 days		
Yes	61	20.5
No	237	79.5
Frequency of stimulant usage (n=146)		
Daily	14	9.6
Weekly	35	24.0
Occasionally	97	66.4
Lifetime usage of opioids		
Yes	16	5.4
No	282	94.6
Used opioids in the last 12 months		
Yes	10	3.4
No	288	96.6
Used opioids in the last 30 days		
Yes	8	2.7
No	290	97.3
Frequency of Opioid usage (n=16)		
Daily	6	37.5
Weekly	2	12.5
Occasionally	8	50.0

Alcohol emerged as the most prevalent substance, with a lifetime usage of 189 (63.4%), which decreased to 120 (40.3%) in the last 12 months and 47 (15.8%) for current usage within the last 30 days. Among the 189 students with lifetime alcohol use, the vast majority reported occasional use at 164 (86.8%), followed by 20 (10.6%) who used it weekly and 5 (2.6%) who reported daily use. Tobacco and nicotine products recorded a lifetime prevalence of 42 (14.1%), with 34 (11.4%) reporting use in the last 12 months and 25 (8.4%) within the last 30 days. Frequency of use among this group was predominantly occasional, at 27 (64.3%), while 8 (19.0%) used it daily and 7 (16.7%) reported weekly use. Stimulants were reported by nearly half the cohort: 146 (49.0%) lifetime users, 113 (37.9%) in the last 12 months, and 61 (20.5%) current users. Of the 146 stimulant users, 97 (66.4%) used them occasionally, 35 (24.0%) weekly, and 14 (9.6%) daily. Finally, opioids showed the lowest prevalence with 16 (5.4%) lifetime users, 10 (3.4%) 12-month users, and 8 (2.7%) current users. Among the opioid users, 8 (50.0%) reported occasional usage, while 6 (37.5%) used it daily and 2 (12.5%) used it weekly.

Table 2B: Prevalence and patterns of substance abuse among respondents contd.

Variables	Frequency (n=298)	Percent
Lifetime usage of sedatives		
Yes	19	6.4
No	279	93.6
Used sedatives in last 12 months		
Yes	12	4.0
No	286	96.0
Used sedatives in last 30 days		
Yes	7	2.3
No	291	97.7
Frequency of Sedative usage (n=19)		
Daily	3	15.8
Weekly	4	21.1
Occasionally	12	63.2

From the study, 19 (6.4%) students reported lifetime usage of sedatives, while 279 (93.6%) participants had never used them. Prevalence showed a downward trend across more recent timeframes, with 12 (4.0%) respondents reporting sedative use in the last 12 months and 7 (2.3%) reporting use in the last 30 days. Among the 19 individuals who reported usage, the majority used sedatives occasionally, accounting for 12 (63.2%) of that group. Weekly usage was reported by 4 (21.1%) students, while 3 (15.8%) indicated they used sedatives daily.

Table 3: Sociodemographic characteristics and alcohol use in the last 12 months

Variables	Used alcohol in the last 12 Months		Chi-Square	p-value
	Yes (n=120) Freq (%)	No (n=178) Freq (%)		
Age in Years				
16 – 20	60 (46.9)	68 (53.1)	4.358	0.113
21 – 24	47 (34.3)	90 (65.7)		
≥ 25	13 (39.4)	20 (60.6)		
Sex				
Male	72 (39.1)	112 (60.9)	0.259	0.611
Female	48 (42.1)	66 (57.9)		
Academic Level				
200 level	31 (49.2)	32 (50.8)	14.215	0.007*
300 level	32 (56.1)	25 (43.9)		
400 level	26 (31.7)	56 (68.3)		
500 level	19 (37.3)	32 (62.7)		
600 level	12 (26.7)	33 (73.3)		
Marital Status				
Single	116 (39.5)	178 (60.5)	6.014**	0.026*
Married	4 (100.0)	0 (0.0)		
Religion				
Christianity	114 (39.6)	174 (60.4)	5.106**	0.079
Islam	6 (75.0)	2 (25.0)		
Traditional	0 (0.0)	1 (100.0)		
Atheist	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	35 (30.7)	79 (69.3)	14.496	0.002*
50,000 – 100,000	59 (41.3)	84 (58.7)		
101,000 – 200,000	15 (57.7)	11 (42.3)		
> 200,000	11 (73.3)	4 (26.7)		
Living Arrangement				
With parents/guardians	8 (30.8)	18 (69.2)	2.103	0.349
Hostel	84 (43.1)	111 (56.9)		
Rented accommodation	28 (36.4)	49 (63.6)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were identified for academic level, marital status, and monthly allowance. Regarding academic level ($p = 0.007$), the prevalence of alcohol use was highest among 300-level students, with 32 (56.1%), followed by 200-level students, with 31 (49.2%), while the lowest prevalence was observed among 600-level students, with 12 (26.7%). Marital status also showed a significant association ($p = 0.026$), with all married students 4 (100.0%) reporting alcohol use in the last 12 months compared to 116 (39.5%) of single students. Monthly allowance showed a highly significant relationship ($p = 0.002$), with the proportion of alcohol users increasing as allowance levels rose, peaking at 73.3% among

those receiving more than 200,000 Naira. No significant associations were found for age ($p = 0.113$), sex ($p = 0.611$), religion ($p = 0.079$), or living arrangement ($p = 0.349$). Notably, the proportion of females reporting alcohol use 48 (42.1%) was slightly higher than that of males 72 (39.1%). Additionally, students residing in hostels had a higher frequency of use, with 84 (43.1%), than those in rented accommodation, 28 (36.4%), or living with parents, 8 (30.8%). Although not statistically significant, a high proportion of students practicing Islam 6 (75.0%) reported using alcohol compared to those practicing Christianity 114, 39.6%.

Table 4: Sociodemographic characteristics and alcohol use in the last 30 days

Variables	Used alcohol in Last 30 Days		Chi-Square	p-value
	Yes (n=47) Freq (%)	No (n=251) Freq (%)		
Age in Years				
16 – 20	24 (18.8)	104 (81.3)	2.165	0.339
21 – 24	17 (12.4)	120 (87.6)		
≥ 25	6 (18.2)	27 (81.8)		
Sex				
Male	24 (13.0)	160 (87.0)	2.695	0.101
Female	23 (20.2)	91 (79.8)		
Academic Level				
200 level	2 (3.2)	61 (96.8)	32.052	<0.001*
300 level	22 (38.6)	35 (61.4)		
400 level	9 (11.0)	73 (89.0)		
500 level	6 (11.8)	45 (88.2)		
600 level	8 (17.8)	37 (82.2)		
Marital Status				
Single	43 (14.6)	251 (85.4)	21.652**	0.001*
Married	4 (100.0)	0 (0.0)		
Religion				
Christianity	42 (14.6)	246 (85.4)	10.847**	0.006*
Islam	5 (62.5)	3 (37.5)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	7 (6.1)	107 (93.9)	25.331**	<0.001*
50,000 – 100,000	24 (16.8)	119 (83.2)		
101,000 – 200,000	8 (30.8)	18 (69.2)		
> 200,000	8 (53.3)	7 (46.7)		
Living Arrangement				
With parents/guardians	3 (11.5)	23 (88.5)	0.709	0.701
Hostel	30 (15.4)	165 (84.6)		
Rented accommodation	14 (18.2)	63 (81.8)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were observed for academic level, marital status, religion, and monthly allowance. Regarding academic level ($p < 0.001$), the 300 level students reported the highest prevalence of current alcohol use at 22 (38.6%), whereas the 200 level students had the lowest at 2 (3.2%). All married respondents 4 (100.0%) reported alcohol use in the last 30 days compared to 43 (14.6%) of single respondents, which was a statistically significant difference ($p = 0.001$). Religion also showed a significant association ($p = 0.006$), with 5 (62.5%) of students practicing Islam reporting current alcohol use compared to 42 (14.6%) of those practicing Christianity. Monthly allowance demonstrated a highly

significant relationship ($p < 0.001$), with usage rates increasing as allowances rose: from 7 (6.1%) among those receiving less than 50,000 Naira to 8 (53.3%) among those receiving more than 200,000 Naira. No significant associations were found for age ($p = 0.339$), sex ($p = 0.101$), or living arrangement ($p = 0.701$). Notably, the prevalence of current alcohol use among females with 23 (20.2%) was higher than that among males 24 (13.0%), though this difference did not reach statistical significance. Similarly, students living in rented accommodation 14 (18.2%) and hostels 30 (15.4%) showed higher usage rates than those living with parents or guardians with 3 (11.5%)

Table 5: Sociodemographic characteristics and tobacco/nicotine use in the last 12 months

Variables	Used Tobacco/Nicotine in Last 12 Months		Chi-Square	p-value
	Yes (n=34) Freq (%)	No (n=264) Freq (%)		
Age in Years				
16 – 20	17 (13.3)	111 (86.7)	1.407	0.495
21 – 24	15 (10.9)	122 (89.1)		
≥ 25	2 (6.1)	31 (93.9)		
Sex				
Male	18 (9.8)	166 (90.2)	1.259	0.262
Female	16 (14.0)	98 (86.0)		
Academic Level				
200 level	2 (3.2)	61 (96.8)	39.745	<0.001*
300 level	20 (35.1)	37 (64.9)		
400 level	6 (7.3)	76 (92.7)		
500 level	3 (5.9)	48 (94.1)		
600 level	3 (6.7)	42 (93.3)		
Marital Status				
Single	32 (10.9)	262 (89.1)	5.974**	0.066
Married	2 (50.0)	2 (50.0)		
Religion				
Christianity	30 (10.4)	258 (89.6)	9.814**	0.028*
Islam	4 (50.0)	4 (50.0)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	6 (5.3)	108 (94.7)	11.666**	0.006*
50,000 – 100,000	19 (13.3)	124 (86.7)		
101,000 – 200,000	4 (15.4)	22 (84.6)		
> 200,000	5 (33.3)	10 (66.7)		
Living Arrangement				
With parents/guardians	2 (7.7)	24 (92.3)	0.390	0.823
Hostel	23 (11.8)	172 (88.2)		
Rented accommodation	9 (11.7)	68 (88.3)		

* Statistically significant ** Fisher's Exact Test

Statistical significant associations were found for academic level, religion, and monthly allowance. Regarding academic level ($p < 0.001$), the prevalence of tobacco/nicotine use was notably higher among 300 level students with 20 (35.1%) than in any other group, with 200 level students reporting the lowest usage rate at 2 (3.2%). Religion also showed a significant association ($p = 0.028$), where 4 (50.0%) of students practicing Islam reported using tobacco or nicotine compared to 30 (10.4%) of those practicing Christianity. Furthermore, monthly allowance demonstrated a significant relationship ($p = 0.008$), with usage rates generally increasing as allowances rose; students receiving more than 200,000

Naira had the highest prevalence at 5 (33.3%), while those receiving less than 50,000 Naira had the lowest at 6 (5.3%). No significant associations were observed for age ($p = 0.495$), sex ($p = 0.262$), marital status ($p = 0.066$), or living arrangement ($p = 0.823$). Interestingly, while not statistically significant, tobacco/nicotine use was higher among females at 16 (14.0%) than males at 18 (9.8%). Additionally, a higher proportion of married respondents at 2 (50.0%) reported use compared to single respondents 32 (10.9%). In terms of living arrangements, students in hostels at 23 (11.8%) and rented accommodation at 9 (11.7%) showed slightly higher usage rates than those living with parents or guardians at 2 (7.7%).

Table 6: Sociodemographic characteristics and tobacco/nicotine use in the last 30 days

Variables	Used tobacco/nicotine in Last 30 days		Chi-Square	p-value
	Yes (n=25) Freq (%)	No (n=273) Freq (%)		
Age in Years				
16 – 20	12 (9.4)	116 (90.6)	0.418	0.811
21 – 24	11 (8.0)	126 (92.0)		
≥ 25	2 (6.1)	31 (93.9)		
Sex				
Male	10 (5.4)	174 (94.6)	5.463	0.019*
Female	15 (13.2)	99 (86.8)		
Academic Level				
200 level	0 (0.0)	63 (100.0)	43.733**	<0.001*
300 level	17 (29.8)	40 (70.2)		
400 level	3 (3.7)	79 (96.3)		
500 level	2 (3.9)	49 (96.1)		
600 level	3 (6.7)	42 (93.3)		
Marital Status				
Single	23 (7.8)	271 (92.2)	9.134**	0.037*
Married	2 (50.0)	2 (50.0)		
Religion				
Christianity	21 (7.3)	267 (92.7)	18.658**	0.006*
Islam	4 (50.0)	4 (50.0)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	2 (1.8)	112 (98.2)	11.774**	0.011*
50,000 – 100,000	17 (11.9)	126 (88.1)		
101,000 – 200,000	3 (11.5)	23 (88.5)		
> 200,000	3 (20.0)	12 (80.0)		
Living Arrangement				
With parents/guardians	2 (7.7)	24 (92.3)	0.074	0.964
Hostel	16 (8.2)	179 (91.8)		
Rented accommodation	7 (9.1)	70 (90.9)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were observed for sex, academic level, marital status, religion, and monthly allowance. Regarding sex, females had a significantly higher prevalence of current tobacco/nicotine use at 15 (13.2%) compared to 10 (5.4%) among males ($p = 0.019$). There was a highly significant association with academic level ($p <$

0.001), with the 300 level students reporting the highest current usage rate at 17 (29.8%), while 200 level students reported no use at all. Marital status also showed a significant difference ($p = 0.037$), as 2 (50.0%) of married respondents reported current use compared to 23 (7.8%) of single respondents. Religion was another significant factor ($p = 0.006$), where 4 (50.0%) of students practicing Islam reported current tobacco/nicotine use compared to 23 (7.3%) of those practicing Christianity. Monthly allowance demonstrated a significant relationship ($p = 0.011$), with the highest prevalence of use at 3 (20.0%) found among students receiving more than 200,000 Naira, while the lowest at 2 (1.8%) was found among those receiving less than 50,000 Naira. No statistically significant associations were found for age ($p = 0.811$) or living arrangement ($p = 0.964$).

Table 7: Sociodemographic characteristics and stimulant use in the last 12 months

Variables	Used stimulants in last 12 months		Chi-Square	p-value
	Yes (n=113) Freq (%)	No (n=185) Freq (%)		
Age in Years				
16 – 20	54 (42.2)	74 (57.8)	1.769	0.413
21 – 24	48 (35.0)	89 (65.0)		
≥ 25	11 (33.3)	22 (66.7)		
Sex				
Male	75 (40.8)	109 (59.2)	1.650	0.199
Female	38 (33.3)	76 (66.7)		
Academic Level				
200 level	21 (33.3)	42 (66.7)	2.291	0.682
300 level	24 (42.1)	33 (57.9)		
400 level	33 (40.2)	49 (59.8)		
500 level	21 (41.2)	30 (58.8)		
600 level	14 (31.1)	31 (68.9)		
Marital Status				
Single	109 (37.1)	185 (62.9)	6.638**	0.020*
Married	4 (100.0)	0 (0.0)		
Religion				
Christianity	106 (36.8)	182 (63.2)	9.727**	0.005*
Islam	7 (87.5)	1 (12.5)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	33 (28.9)	81 (71.1)	15.608	0.001*
50,000 – 100,000	58 (40.6)	85 (59.4)		
101,000 – 200,000	10 (38.5)	16 (61.5)		
> 200,000	12 (80.0)	3 (20.0)		
Living Arrangement				
With parents/guardians	10 (38.5)	16 (61.5)	3.946	0.139
Hostel	81 (41.5)	114 (58.5)		
Rented accommodation	22 (28.6)	55 (71.4)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were identified for marital status, religion, and monthly allowance. Regarding marital status, all married students at 4 (100.0%) reported stimulant use compared to 109 (37.1%) of single students. This difference was statistically significant ($p = 0.020$). Religion also showed a highly significant association ($p = 0.005$). The highest prevalence was observed among students practicing Islam at 7 (87.5%) compared to those practicing Christianity at 106 (36.8%). Monthly allowance demonstrated a significant relationship ($p = 0.001$). Usage rates were highest among students receiving more than

200,000 Naira at 12 (80.0%) and lowest among those receiving less than 50,000 Naira at 33 (28.9%). No statistically significant associations were found for age ($p = 0.413$), sex ($p = 0.199$), academic level ($p = 0.682$), or living arrangement ($p = 0.139$). Although not significant, stimulant use was higher among males at 75 (40.8%) than females at 38 (33.3%). In terms of academic level, the 300 level at 24 (42.1%) and 500 level at 21(41.2%) reported the highest proportions of use. Students living in hostels at 81 (41.5%) showed a higher prevalence of stimulant use than those in rented accommodation at 22 (28.6%) or living with parents at 10 (38.5%).

Table 8: Sociodemographic characteristics and stimulant use in the last 30 days

Variables	Used stimulants in last 30 days		Chi-Square	p-value
	Yes (n=61) Freq (%)	No (n=237) Freq (%)		
Age in Years				
16 – 20	30 (23.4)	98 (76.6)	3.268	0.195
21 – 24	22 (16.1)	115 (83.9)		
≥ 25	9 (27.3)	24 (72.7)		
Sex				
Male	43 (23.4)	141 (76.6)	2.484	0.115
Female	18 (15.8)	96 (84.2)		
Academic Level				
200 level	8 (12.7)	55 (87.3)	6.734	0.151
300 level	14 (24.6)	43 (75.4)		
400 level	23 (28.0)	59 (72.0)		
500 level	8 (15.7)	43 (84.3)		
600 level	8 (17.8)	37 (82.2)		
Marital Status				
Single	57 (19.4)	237 (80.6)	15.752**	0.002*
Married	4 (100.0)	0 (0.0)		
Religion				
Christianity	55 (19.1)	233 (80.9)	15.460**	0.002*
Islam	6 (75.0)	2 (25.0)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	16 (14.0)	98 (86.0)	13.861	0.003*
50,000 – 100,000	33 (23.1)	110 (76.9)		
101,000 – 200,000	4 (15.4)	22 (84.6)		
> 200,000	8 (53.3)	7 (46.7)		
Living Arrangement				
With parents/guardians	7 (26.9)	19 (73.1)	1.311	0.519
Hostel	41 (21.0)	154 (79.0)		
Rented accommodation	13 (16.9)	64 (83.1)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were identified for marital status, religion, and monthly allowance. All married respondents at 4 (100.0%) reported current stimulant use compared to 57 (19.4%) of single respondents ($p = 0.002$). Religion also showed a highly significant association ($p = 0.002$), where 6 (75.0%) of students practicing Islam reported current stimulant use compared to 55 (19.1%) of those practicing Christianity. Furthermore, monthly allowance demonstrated a significant relationship ($p = 0.003$), with the highest prevalence at 8 (53.3%) occurring among students receiving more than 200,000 Naira, and the lowest at

16 (14.0%) among those receiving less than 50,000 Naira. No statistically significant associations were observed for age ($p = 0.195$), sex ($p = 0.115$), academic level ($p = 0.151$), or living arrangement ($p = 0.519$). Despite the lack of significance, males at 43 (23.4%) reported higher current usage than females at 18 (15.8%). In terms of academic level, 400 level students had the highest prevalence at 23 (28.0%), followed by 300 level students at 14 (24.6%), while the lowest was seen in the 200 level at 8 (12.7%). Finally, students living with parents or guardians at 7 (26.9%) showed higher current usage rates than those in hostels at 41 (21.0%) or rented accommodation at 13 (16.9%).

Table 9: Sociodemographic characteristics and opioid use in the last 12 months

Variables	Used opioids in last 12 months		Chi-Square	p-value
	Yes (n=10) Freq (%)	No (n=288) Freq (%)		
Age in Years				
16 – 20	4 (3.1)	124 (96.9)	0.846**	0.805
21 – 24	4 (2.9)	133 (97.1)		
≥ 25	2 (6.1)	31 (93.9)		
Sex				
Male	8 (4.3)	176 (95.7)	1.460**	0.327
Female	2 (1.8)	112 (98.2)		
Academic Level				
200 level	0 (0.0)	63 (100.0)	12.607**	0.011*
300 level	6 (10.5)	51 (89.5)		
400 level	1 (1.2)	81 (98.8)		
500 level	2 (3.9)	49 (96.1)		
600 level	1 (2.2)	44 (97.8)		
Marital Status				
Single	9 (3.1)	285 (96.9)	5.857**	0.128
Married	1 (25.0)	3 (75.0)		
Religion				
Christianity	8 (2.8)	280 (97.2)	11.922**	0.040*
Islam	2 (25.0)	6 (75.0)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	1 (0.9)	113 (99.1)	7.094**	0.063
50,000 – 100,000	6 (4.2)	137 (95.8)		
101,000 – 200,000	1 (3.8)	25 (96.2)		
> 200,000	2 (13.3)	13 (86.7)		
Living Arrangement				
With parents/guardians	3 (11.5)	23 (88.5)	6.460**	0.044*
Hostel	4 (2.1)	191 (97.9)		
Rented accommodation	3 (3.9)	74 (96.1)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were identified for academic level, religion, and living arrangement. Regarding academic level, a significant association was found ($p = 0.011$), with 300 level students reporting the highest prevalence of opioid use at 6 (10.5%), whereas no usage was reported among 200 level students. Religion also demonstrated a significant relationship ($p = 0.040$), where 2 (25.0%) of students practicing Islam reported using opioids compared to 8 (2.8%) of those practicing Christianity. Additionally, living arrangement was significantly associated with opioid use ($p = 0.044$), with students living

with parents or guardians showing a higher prevalence at 3 (11.5%) compared to those in hostels at 4 (2.1%) or rented accommodation at 3 (3.9%). No statistically significant associations were observed for age ($p = 0.805$), sex ($p = 0.327$), marital status ($p = 0.128$), or monthly allowance ($p = 0.063$). Despite the lack of significance, the highest proportions of use among age groups was seen in those aged 25 and above at 2 (6.1%), and males at 8 (4.3%) reported a higher prevalence than females at 2 (1.8%). Furthermore, while 1 (25.0%) of married respondents reported opioid use compared to 9 (3.1%) of single respondents, this difference did not reach statistical significance. Regarding financial status, students receiving a monthly allowance of over 200,000 Naira had the highest percentage of use at 2 (13.3%).

Table 10: Sociodemographic characteristics and opioid use in the last 30 days

Variables	Used opioids in last 30 days		Chi-Square	p-value
	Yes (n=8) Freq (%)	No (n=290) Freq (%)		
Age in Years				
16 – 20	3 (2.3)	125 (97.7)	1.625†	0.455
21 – 24	3 (2.2)	134 (97.8)		
≥ 25	2 (6.1)	31 (93.9)		
Sex				
Male	6 (3.3)	178 (96.7)	0.611†	0.495
Female	2 (1.8)	112 (98.2)		
Academic Level				
200 level	0 (0.0)	63 (100.0)	12.421**	0.012*
300 level	5 (8.8)	52 (91.2)		
400 level	0 (0.0)	82 (100.0)		
500 level	2 (3.9)	49 (96.1)		
600 level	1 (2.2)	44 (97.8)		
Marital Status				
Single	7 (2.4)	287 (97.6)	7.728**	0.104
Married	1 (25.0)	3 (75.0)		
Religion				
Christianity	7 (2.4)	281 (97.6)	3.077**	0.241
Islam	1 (12.5)	7 (87.5)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	0 (0.0)	114 (100.0)	5.440**	0.122
50,000 – 100,000	6 (4.2)	137 (95.8)		
101,000 – 200,000	1 (3.8)	25 (96.2)		
> 200,000	1 (6.7)	14 (93.3)		
Living Arrangement				
With parents/guardians	2 (7.7)	24 (92.3)	2.797**	0.331
Hostel	4 (2.1)	191 (97.9)		
Rented accommodation	2 (2.6)	75 (97.4)		

* Statistically significant ** Fisher's Exact Test

Academic level was the only variable that demonstrated a statistically significant association with current usage, yielding a p-value of 0.012. Specifically, 300-level students reported the highest prevalence of current use at 5 (8.8%), while no current usage was recorded among students in the 200-level or 400-level. The remaining sociodemographic factors did not reach statistical significance, as all had p-values exceeding 0.05. Although not statistically significant, current use was slightly higher among respondents aged 25 years and above (2, 6.1%) than among those aged 16–20 (3, 2.3%) and 21–24 (3, 2.2%), with a p-value of 0.455.

Males reported a current usage rate of 6 (3.3%), while females reported a rate of 2 (1.8%), which was not a significant difference at $p = 0.495$. While 1(25.0%) of married respondents reported current use versus 7 (2.4%) of single students, the difference was not statistically significant at $p = 0.104$. Similarly, religion showed no significant association with a p-value of 0.241, despite 1(12.5%) of students practicing Islam reporting current use compared to 7 (2.4%) of Christian students. Monthly allowance was also not significantly associated with use at $p = 0.122$, though usage was entirely absent in the lowest income bracket of less than 50,000 Naira and reached its highest point of 1 (6.7%) in the bracket of over 200,000 Naira. Regarding living arrangements, students residing with parents or guardians showed a higher prevalence of 2 (7.7%) than those in hostels at 4 (2.1%) or rented accommodation at 2 (2.6%), but this finding was not statistically significant with a p-value of 0.331.

Table 11: Sociodemographic characteristics and sedative use in the last 12 months

Variables	Used sedatives in last 12 months		Chi-Square	p-value
	Yes (n=12) Freq (%)	No (n=286) Freq (%)		
Age in Years				
16 – 20	3 (2.3)	125 (97.7)	1.707	0.426
21 – 24	7 (5.1)	130 (94.9)		
≥ 25	2 (6.1)	31 (93.9)		
Sex				
Male	8 (4.3)	176 (95.7)	0.128**	0.774
Female	4 (3.5)	110 (96.5)		
Academic Level				
200 level	0 (0.0)	63 (100.0)	18.433**	<0.001*
300 level	7 (12.3)	50 (87.7)		
400 level	0 (0.0)	82 (100.0)		
500 level	4 (7.8)	47 (92.2)		
600 level	1 (2.2)	44 (97.8)		
Marital Status				
Single	11 (3.7)	283 (96.3)	4.615**	0.152
Married	1 (25.0)	3 (75.0)		
Religion				
Christianity	11 (3.8)	277 (96.2)	1.602**	0.341
Islam	1 (12.5)	7 (87.5)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	2 (1.8)	112 (98.2)	12.796**	0.009*
50,000 – 100,000	7 (4.9)	136 (95.1)		
101,000 – 200,000	0 (0.0)	26 (100.0)		
> 200,000	3 (20.0)	12 (80.0)		
Living Arrangement				
With parents/guardians	2 (7.7)	24 (92.3)	1.004**	0.727
Hostel	7 (3.6)	188 (96.4)		
Rented accommodation	3 (3.9)	74 (96.1)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were identified for academic level and monthly allowance. Regarding academic level, the association was highly significant with a p-value of less than 0.001, where 300-level students reported the highest prevalence of sedative use at 7 (12.3%), followed by 500-level students at 4 (7.8%). Notably, no usage was recorded among students in the 200-level or 400-level. Monthly allowance also showed a significant relationship ($p = .009$), with the highest prevalence of use at 3 (20.0%) among students receiving more than 200,000 Naira, while usage was absent in the 101,000 – 200,000 Naira bracket. No statistically significant associations were observed for the remaining

sociodemographic factors. Age did not show a significant association at $p = 0.426$, although the prevalence of use slightly increased from 3 (2.3%) in the 16 – 20 group to 2 (6.1%) in those aged 25 years and above. Sex was not significantly associated with sedative use ($p = 0.774$), with males reporting a rate of 8 (4.3%) compared to 4 (3.5%) among females. While 1 (25.0%) of married respondents reported use, compared with 11 (3.7%) of single students, this difference was not statistically significant ($p = 0.152$). Similarly, religion showed no significant association ($p = 0.341$), despite 1 (12.5%) of students practicing Islam reporting use, compared with 11 (3.8%) of Christian students. Regarding living arrangements, there was no significant relationship ($p = 0.727$), with students living with parents or guardians at 2 (7.7%), followed by those in rented accommodation at 3 (3.9%) and hostels at 7 (3.6%).

Table 12: Sociodemographic characteristics and sedative use in the last 30 days

Variables	Used sedatives in last 30 days		Chi-Square	p-value
	Yes (n=7) Freq (%)	No (n=291) Freq (%)		
Age in Years				
16 – 20	2 (1.6)	126 (98.4)	2.342**	0.376
21 – 24	3 (2.2)	134 (97.8)		
≥ 25	2 (6.1)	31 (93.9)		
Sex				
Male	5 (2.7)	179 (97.3)	0.285**	0.712
Female	2 (1.8)	112 (98.2)		
Academic Level				
200 level	0 (0.0)	63 (100.0)	12.762**	0.004*
300 level	4 (7.0)	53 (93.0)		
400 level	0 (0.0)	82 (100.0)		
500 level	3 (5.9)	48 (94.1)		
600 level	0 (0.0)	45 (100.0)		
Marital Status				
Single	6 (2.0)	288 (98.0)	9.069**	0.091
Married	1 (25.0)	3 (75.0)		
Religion				
Christianity	6 (2.1)	282 (97.9)	3.730**	0.214
Islam	1 (12.5)	7 (87.5)		
Traditional	0 (0.0)	1 (100.0)		
Others	0 (0.0)	1 (100.0)		
Monthly Allowance (Naira)				
< 50,000	1 (0.9)	113 (99.1)	9.717**	0.037*
50,000 – 100,000	4 (2.8)	139 (97.2)		
101,000 – 200,000	0 (0.0)	26 (100.0)		
> 200,000	2 (13.3)	13 (86.7)		
Living Arrangement				
With parents/guardians	2 (7.7)	24 (92.3)	3.815**	0.153
Hostel	3 (1.5)	192 (98.5)		
Rented accommodation	2 (2.6)	75 (97.4)		

* Statistically significant ** Fisher's Exact Test

Statistically significant associations were identified for academic level and monthly allowance. Regarding academic level, a significant relationship was observed ($p = 0.004$), with 300-level students reporting the highest prevalence of current sedative use at 4 (7.0%), followed by 500-level students at 3 (5.9%). Notably, no usage was recorded among students in the 200, 400, or 600 levels. Monthly allowance also showed a significant association ($p = 0.037$), with the highest prevalence of use at 2 (13.3%) among students receiving more than 200,000 Naira, while usage was absent in the 101,000–200,000 Naira bracket. The remaining sociodemographic factors did not show statistically significant associations with current sedative use. Age did not reach statistical significance ($p = 0.376$), although usage rates were

highest among those aged 25 and above at 2 (6.1%) and lowest in the 16–20 age group at 2 (1.6%). Sex was not significantly associated with use ($p = 0.712$), with males reporting a current usage rate of 5 (2.7%) compared to 2 (1.8%) among females. While 1 (25.0%) of married respondents reported current use, compared with 6 (2.0%) of single students, this difference was not statistically significant ($p = 0.091$). Similarly, no significant association was found for religion ($p = 0.214$), despite 1 (12.5%) of students practicing Islam reporting current use, compared with 6 (2.1%) of those practicing Christianity. Regarding living arrangements, there was no significant relationship ($p = 0.153$), though students living with parents or guardians at 2 (7.7%) showed higher usage rates than those in rented accommodation at 2 (2.6%) or in hostels at 3 (1.5%).

Table 13: Factors contributing to substance use among respondents

Variables	Frequency (n=298)	Percent
Close friends who use psychoactive substances		
Yes	87	29.2
No	211	70.8
Substances easily accessible		
Yes	91	30.5
No	207	69.5
Medical school workload is an overwhelming stressor		
Yes	231	77.5
No	67	22.5
Family history of substance use		
Yes	50	16.8
No	248	83.2
Pressured by peers to use a substance		
Yes	57	19.1
No	241	80.9
Believe the university environment encourages substance use		
Yes	107	35.9
No	191	64.1

Regarding the factors contributing to substance use, a majority of respondents at 231 (77.5%) identified the medical school workload as an overwhelming stressor. This was followed by the belief that the university environment encourages substance use at 107 (35.9%) and the perception that substances are easily accessible at 91 (30.5%). Also, 87 (29.2%) of students reported having close friends who use psychoactive substances, while 57 (19.1%) admitted to having felt pressured by peers to use a substance. The least frequently reported factor was a family history of substance use, which was noted by 50 (16.8%) of the participants.

Table 14: Psychological Health Assessment (GHQ-12) among respondents

Variables	Not at all	No more than usual	Rather more than usual	Much more than usual
	Freq (%)	Freq (%)	Freq (%)	Freq (%)
Able to concentrate on tasks currently doing	16 (5.4)	142 (47.7)	89 (29.9)	51 (17.1)
Lost much sleep over worry	102 (34.2)	114 (38.3)	58 (19.5)	24 (8.1)
Felt playing a useful part in things	32 (10.7)	122 (40.9)	82 (27.5)	62 (20.8)
Felt capable of making decisions about things	20 (6.7)	111 (37.2)	97 (32.6)	70 (23.5)
Felt constantly under strain	40 (13.4)	122 (40.9)	76 (25.5)	60 (20.1)
Could not overcome difficulties	104 (34.9)	115 (38.6)	52 (17.4)	27 (9.1)
Enjoyed normal day-to-day activities	20 (6.7)	153 (51.3)	79 (26.5)	46 (15.4)
Felt unhappy or depressed	76 (25.5)	115 (38.6)	74 (24.8)	33 (11.1)
Lost confidence in self	99 (33.2)	118 (39.6)	61 (20.5)	20 (6.7)
Thought of self as worthless	155 (52.0)	78 (26.2)	51 (17.1)	14 (4.7)
Felt reasonably happy	16 (5.4)	135 (45.3)	102 (34.2)	45 (15.1)
Felt could not face problems	96 (32.2)	103 (34.6)	70 (23.5)	29 (9.7)

Regarding positive daily functioning, the highest proportion of students reported experiencing these states "no more than usual," including being able to concentrate at 142 (47.7%), enjoying normal day-to-day activities at 115 (51.3%), and feeling reasonably happy at 135 (45.3%). Similarly, 122 (40.9%) felt they were playing a useful part in things at their usual capacity. However, the data reveals notable levels of psychological distress among the medical students. A substantial 136 (45.6%) of respondents felt constantly under strain "rather more" or "much more" than usual combined, and 107 (35.9%) reported feeling unhappy or depressed at these elevated levels. Furthermore, 82 (27.6%) of the students lost much sleep over worry "rather more" or "much more" than usual, while 99 (33.2%) felt they could not face their problems more frequently than normal. Conversely, extreme negative

self-perceptions were less prevalent. More than half of the students at 155 (52.0%) stated they "not at all" thought of themselves as worthless, 104 (34.9%) felt "not at all" unable to overcome their difficulties, and 99 (33.2%) had "not at all" lost confidence in themselves.

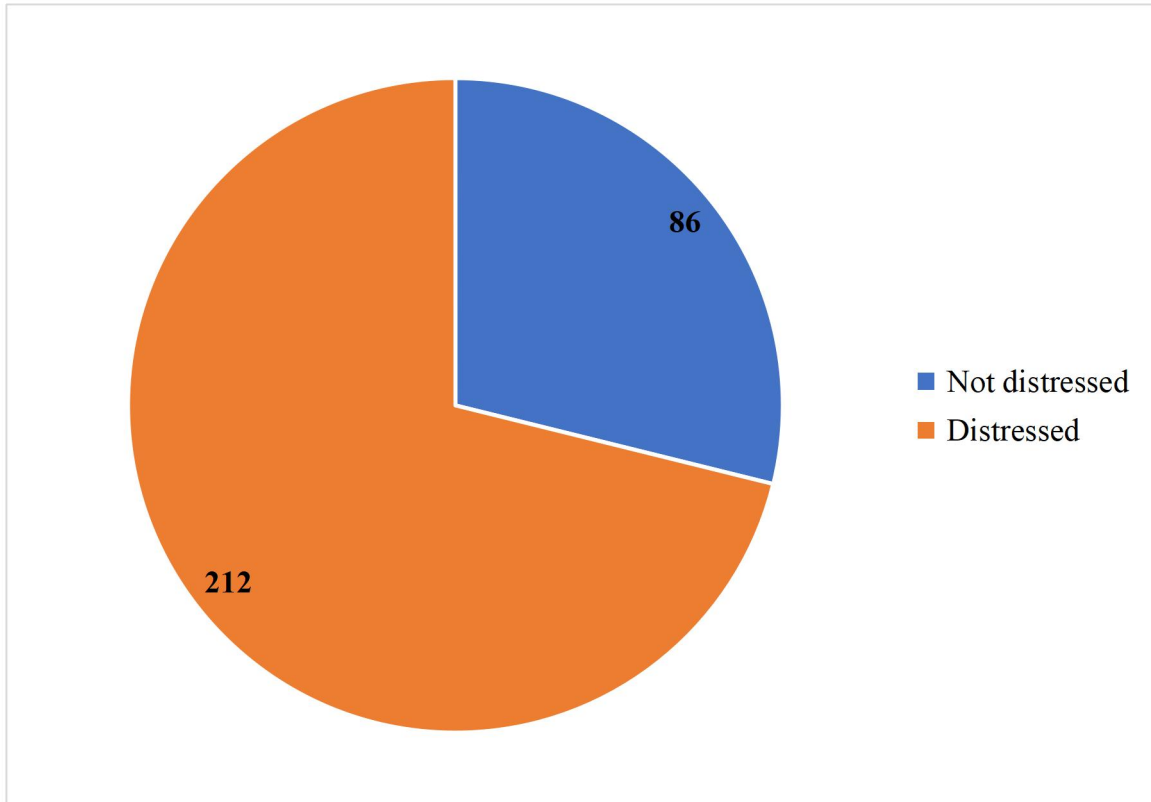


Figure 3: Prevalence of Psychological Distress Among Respondents using Psychological Health Assessment (GHQ-12)

Out of the 298 respondents, a significant majority of 71.1% (n=212) were found to have psychological distress. In contrast, 28.9% (n=86) of the respondents did not meet the criteria for distress based on Psychological Health Assessment (GHQ-12).

Table 15: Psychoactive substance use and psychological distress among respondents

Substance Use Variable	Psychological Distress		Chi-Square	p-value
	Yes (n=212) Freq (%)	No (n=86) Freq (%)		
Alcohol use in the last 12 months				
Yes	94 (78.3)	26 (21.7)	5.062	0.024*
No	118 (66.3)	60 (33.7)		
Alcohol use in the last 30 days				
Yes	38 (80.9)	9 (19.1)	2.563	0.109
No	174 (69.3)	77 (30.7)		
Tobacco/Nicotine use in the last 12 months				
Yes	29 (85.3)	5 (14.7)	3.745	0.053
No	183 (69.3)	81 (30.7)		
Tobacco/Nicotine use in the last 30 days				
Yes	22 (88.0)	3 (12.0)	3.778	0.052
No	190 (69.6)	83 (30.4)		
Stimulant use in the last 12 months				
Yes	88 (77.9)	25 (22.1)	4.022	0.045*
No	124 (67.0)	61 (33.0)		
Stimulant use in the last 30 days				
Yes	50 (82.0)	11 (18.0)	4.379	0.036*
No	162 (68.4)	75 (31.6)		
Opioid use in the last 12 months				
Yes	9 (90.0)	1 (10.0)	1.793**	0.291
No	203 (70.5)	85 (29.5)		
Opioid use in the last 30 days				
Yes	7 (87.5)	1 (12.5)	1.072**	0.446
No	205 (70.7)	85 (29.3)		
Sedative use in the last 12 months				
Yes	9 (75.0)	3 (25.0)	0.091**	1.000
No	203 (71.0)	83 (29.0)		
Sedative use in the last 30 days				
Yes	6 (85.7)	1 (14.3)	0.742**	0.678
No	206 (70.8)	85 (29.2)		

* Statistically significant ** Fisher's Exact Test

Alcohol usage within the past 12 months showed a statistically significant association with psychological distress ($p = 0.024$), where 94 (78.3%) of those who used alcohol were distressed compared to 118 (66.3%) of those who did not use alcohol. While current alcohol usage within the last 30 days did not reach statistical significance, a high proportion of current users at 38 (80.9%) still reported distress ($p = 0.109$). Stimulant use showed significant associations with both use in the last 12 months ($p = 0.045$) and current use in the last 30 days ($p = 0.036$). Specifically, 50 (82.0%) of current stimulant users were found to have psychological distress. Regarding tobacco or nicotine, associations approached

significance for both the last 12 months ($p = 0.053$) and the last 30 days ($p = 0.052$), with usage being notably higher among those categorized as having psychological distress. No statistically significant associations were observed for opioids or sedatives across either timeframe.

CHAPTER FIVE

5.1 DISCUSSION

The findings from the study revealed that among medical students, substance use was common. The probable reason for its high prevalence is the social acceptability and availability of substances such as alcohol, where it is readily available in parties, celebrations, and peer group gatherings, and the newfound independence that most of these students experience, where they are no longer under the direct supervision of their parents, which might lead to their experimentation with these drugs.

The public health implications of these findings include absenteeism, poor academic performance, depression, anxiety, and increased risk-taking activities that can lead to premature death. Beyond the medical school, the normalization of substance use will lead to impaired medical judgment and reduced cognitive performance. Eventually, this leads to overall poor patient care.

To mitigate these findings, the University of Benin would have to move beyond seminars on the dangers of substance use to social and recreational activities by developing on-campus programs that promote healthy alternatives for stress relief. Through these programs, students have an outlet to develop skills, stay fit, and engage with peers in substance-free zones. Also, the University of Benin should develop peer counselling initiatives that enable students to connect and support each other, which would reduce isolation that can lead to engagement in substance use.

The findings of this study are in tandem with a study carried out among students of tertiary institutions in Imo state, Nigeria, which revealed a high prevalence of substance use among the respondents,³⁴ reflecting possible similarities in cultural and social behaviour, such as the exposure of children to family members who use these same substances at an early age, and also, the widely acceptability of substance like alcohol drinking among the male respondent

in both studies. Another study carried out in Gandaki Medical College Teaching Hospital, Nepal, revealed similar findings of high prevalence of substance use among medical students.³⁵

The pattern of substance use from the study revealed characteristics of the type, frequency, and behaviour of the students regarding substance use, with the most commonly used substance being alcohol, particularly among the 300 level students and those with a higher monthly allowance. In terms of frequency, most reported occasional use, although a large proportion of opioid and tobacco users reported daily usage.

A likely probable reason for this pattern and characteristic behaviour of substance use is the widespread availability and acceptability of alcohol within the social environment, with many students having heard or known someone who personally takes this substance. Another reason is that, second to carbonated drinks, alcohol is the most common drink served at weddings, graduations, and burials, increasing these students' chances of exposure to it. Within the context of academic level, the 300 level is a unique one, because it is at the level that students are first introduced to clinical courses, postings in the form of ward rounds, night calls, and a broader academic curriculum after the basic sciences. All these, including their attempt to comprehend their new environment and reality, increase their susceptibility to exposure to these substances. The findings that students with higher monthly allowance have a higher prevalence of substance use are not surprising, as these students have the purchasing power to get the products. Also, a higher income means a higher probability of being exposed to parties and peer-group gatherings where these substances are used. The occasional use of alcohol is encouraging as alcohol seems to be a way for the students to unwind after a long week of posting, whereas the daily use of opioids and tobacco indicates dependence on these substances to cope with the physical and mental demands of the medical curriculum, deal with chronic discomfort from long medical school hours, stay awake to read longer hours,

and relieve anxiety. The daily use of opioids and tobacco marks a change from where substance use becomes recreational to mandatory for survival within the medical school.

The public health significance of these patterns among medical students poses critical risks, notably academic impairment, elevated rates of psychological distress, and severe long-term health consequences. Beyond the medical school, the use of substances leads to dependency, which may affect the social and psychological health of these students, making it difficult to keep long term relationship or maintain jobs.

To address these findings, the university of Benin would have to move beyond seminars that aim to instill fear on the dangers of substance use like as been done in the past as it has little or no effect in the trajectory of substance use within the campus and develop social clubs that helps students engage in well meaningful activities, find mentors and develop discipline through committed participation that can translate to the discipline to resist drug use. Overall, there should be restructuring of the school curriculum with programs, especially within the 300 level, that aim to help students prepare for and also give them confidence for the new phase of life they are about to enter. Students should be taught financial literacy and given opportunities within the campus where their disposable income can be put to work, as the saying goes, an idle man is the devil's workshop, but, in this case, an idle money becomes a catalyst in developing harmful substance use

The finding of a pattern of substance use is in tandem with a study carried out among medical students in India, which also revealed alcohol as the most commonly used substance, with the third level being the class with the highest users.³⁶ Although the frequency was in contrast, as most of the respondents in the study reported a weekly usage of the substance.³⁶ Another study carried out in Nepal among medical students revealed that the 300 level class had the fewest respondents with substance use, which was in contrast with this study.³⁷

With respect to the factors that contribute to substance use among medical students at the University of Benin, it becomes clear that this is not simply a matter of personal choice or weakness. Instead, substance use appears to be the outcome of an intensely demanding environment. One might expect peer pressure to be the main driver, but the findings suggest something quite different: the academic system itself quietly shapes students into adopting substance use as a normal response to stress. The combination of an overwhelming curriculum and the easy availability of drugs on and around campus creates a setting where unhealthy coping becomes almost routine. This means the university plays an unwitting role. When studies become overwhelming rather than stimulating, students may fall into a state where substances are used as an escape rather than for leisure.

The shift toward using substances as a coping strategy rest on the discovery that a large majority of these students experience high levels of psychological distress. What makes this striking is that these medical students are generally responsible people who can make good decisions. Yet the weight of academic demands on their mental state and on their sleep seems to overpower their better judgment. This points to a unique kind of stress in medical education. Students do not necessarily need direct pressure from friends to try drugs. Instead, they watch their peers using substances to get through long study sessions and high-pressure exams, and over time, the act loses its stigma. The clear rise in substance use among those moving into clinical training confirms this pattern, because clinical work brings high stakes like patient safety and fear of failure. A student may quietly reason that it is safer to sacrifice a part of themselves to an external aid, such as a stimulant or alcohol, than to fail. So, the student's dependence on an outside substance is perhaps not their fault, but a direct result of the academic structure they live in.

This situation raises serious worries for the future of medical training and healthcare. Most of tomorrow's doctors are experiencing burnout while still in medical school, not after they start

working. A major public health consequence could be a generation of physicians who are prone to dependence and impaired practice. Also, substance use is linked to poor academic performance and long-term mental health disorders thereby affecting both individual wellbeing and healthcare system productivity.

Addressing this issue needs a well-coordinated effort from medical schools and institutions. A good starting point is to ease the heavy academic pressure by reviewing the curriculum, improving how schedules are organized, and using fair, skill-based assessments that reduce constant stress on students. Schools also need to prioritize mental health by making counseling services easy to access, encouraging peer support systems, and identifying students who are struggling early enough to offer help. At the same time, access to substances within and around the school environment should be better controlled to reduce temptation and casual use. Regular health education is also important, so students fully understand the risks of substance use and learn healthier ways to cope with stress.

The strong role of academic workload in driving substance use at the University of Benin is similar to findings elsewhere. A study from Germany found that Medical students experienced considerable stress due to academic demands, emotional exhaustion, and limited recovery time, highlighting how the structure of medical training itself can negatively affect well-being.³⁶ This is similar to our findings, where the sheer weight of medical school workload pushes medical students to use substances to cope with the demands of medical school, which in turn negatively affects their well-being. An African study from Cameroon reported that curiosity and peer pressure were the main reasons for substance use among tertiary students, with academic stress coming second.³⁹ That study included students from many disciplines, not only medical students, so that the academic demands may have been less intense. By contrast, our medical student population showed a clear surge in substance

use during the transition into clinical training, something the Cameroonian study did not capture.

5.2 CONCLUSION

The study revealed that there was a high prevalence of substance use among medical students at the University of Benin.

Among these, alcohol was the most commonly used substance, especially among 300 level students, and their monthly allowance had a strong influence on the usage patterns.

The study clearly revealed that substance use among medical students in the University of Benin is mostly caused by extreme pressures of medical school. The heavy workload, constant academic stress, easy access to drugs, and the university environment itself were the biggest reasons. In the study, association with friends who use these substances, peer influence and family background were also contributing factors. Overall, most of the students turn to substances as a way to cope with the intense demands of their training and not just for fun or social reasons.

5.3 RECOMMENDATION

The university and medicine department should create a proper wellness support system that includes setting up private, confidential counselling services designed specifically for medical students.

The University of Benin should support and fund more alcohol-free social events and fun extracurricular activities. Similarly, they should also create more opportunities for students to connect through fun events that do not revolve around alcohol or other substances.

The University of Benin should include mandatory mental health breaks into the academic calendar and reduce the number and frequency of high-stakes assessments to ease student workload.

The University of Benin should collaborate with relevant authorities, such as the National Drug Law Enforcement Agency and regulatory bodies, to ensure better control of the availability of these substances within the campus and its surrounding environment.

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APPENDIX I

CONSENT FORM

TITLE OF STUDY: PREVALENCE, PATTERN, AND FACTORS OF SUBSTANCE ABUSE AMONG MEDICAL STUDENTS IN UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA

INSTITUTION: Department of Public Health and Community Medicine, College of Medicine, University of Benin, Benin City, Edo State, Nigeria.

PRINCIPAL INVESTIGATORS: IJEOMA CATHERINE NWAODUA, JEFFERY OBANOR, OHONBAMU PHILLIPA ODUWARE, AND EMMAUEL OHUE

SUPERVISOR: PROFESSOR A. R. ISARA

PARTICIPATION: Participation in this study is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue your participation at any time without penalty or loss of benefits. The principal investigators may decide to withdraw from the study if we are unable to obtain the necessary information.

INTRODUCTION: We are interested in assessment of prevalence, pattern, factors influencing substance abuse among medical students in University of Benin, Benin City, Edo State, Nigeria.

PROCEDURES TO BE FOLLOWED

If respondents agree to participate, a self-administered questionnaire will be used to obtain information from such respondents, and this questionnaire will identify the prevalence, patterns, and factors influencing the use of substances among medical students at the University of Benin.

BENEFITS: Participants would contribute to important research that may help improve public health promotion strategies. The results obtained from this research work would help

us determine the prevalence and patterns associated with substance use, factors influencing substance abuse, to provide targeted health education campaigns, and identify high risk periods, enhancing support services.

COMPENSATION: Participants will not receive any compensation for their participation.

DURATION OF PARTICIPATION: This study only requires the questionnaire. There is no follow-up or further information needed.

WHO CAN PARTICIPATE IN THIS STUDY: Medical students in the University of Benin who have completed at least one full session.

ASSURANCE OF CONFIDENTIALITY OF VOLUNTEER'S IDENTITY: Records relating to your participation in the study will remain confidential. Your name will not be used in any report resulting in this study. All questionnaires, computerized records, and analysis of data will contain only a unique study number, not your name.

PERSONS AND PLACES FOR ANSWERS REGARDING YOUR RIGHTS AS A RESEARCH SUBJECT:

If during the course of this study you have questions concerning the nature of the research or you believe you have sustained a research-related injury or assault, you should contact;

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APPENDIX 2

QUESTIONNAIRE

DEPARTMENT OF PUBLIC HEALTH AND COMMUNITY MEDICINE

UNIVERSITY OF BENIN, BENIN CITY

PREVALENCE, PATTERN, AND FACTORS OF SUBSTANCE ABUSE AMONG

MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN, BENIN CITY.

Dear respondents, we are 600 Level medical student of the University of Benin interested in studying the “**Prevalence, Pattern and Factors of Substance Use Among Medical Students in University of Benin**”. This questionnaire will aid as a tool of data collection in this research. Your sincere response will be helpful and the information given here will be appreciated and treated with utmost confidentiality.

SECTION A: SOCIO-DEMOGRAPHIC AND ECONOMIC DATA

Please tick [] the most appropriate option.

1. **Age:** _____ (In years as at last birthday)
2. **Sex:**
 - Male
 - Female
3. **Academic Level:**
 - 200L
 - 300L
 - 400L
 - 500L
 - 600L
4. **Marital Status:**
 - Single
 - Married
 - Other (specify) _____
5. **Religion:**
 - Christianity
 - Islam

- Traditional
- Other (specify) _____

6. Ethnicity:

- Bini
- Esan
- Etsako
- Igbo
- Yoruba
- Hausa
- Other (specify) _____

7. Monthly Allowance (Naira):

- < 50,000
- 50,000 – 100,000
- 101,000 – 200,000
- > 200,000

8. Living Arrangement:

- With parents/guardians
- Hostel
- Rented accommodation
- Other (specify) _____

SECTION 2: ENVIRONMENTAL AND SOCIAL FACTORS

Instruction: Please answer Yes or No to the following statement based on your personal experience or perception.

S/N	Statement	YES	NO
9	Do you have close friends who use psychoactive substances?		
10	Are substances easily accessible to you within or around UNIBEN		
11	Do you feel the medical school workload is an overwhelming stressor?		
12	Is the history of substance use in your immediate family?		
13	Have you ever felt pressured by peers to use a substance?		
14	Do you believe the university environment encourages substance use?		

SECTION C: PREVALENCE AND PATTERNS OF SUBSTANCE USE

Instruction: This section refers to the use of substances. Please complete the table by ticking "Yes" or "No" and specifying the frequency of use where applicable

S/N	Substance	Have you Ever used?	Used in the last 12 months?	Used in the last 30 days?	Frequency of use (if Yes)

		(Lifetime)			
15	Alcohol (Beer, spirits, palm wine)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Daily <input type="checkbox"/> weekly <input type="checkbox"/> occasional
16	Tobacco/Nicotine (cigarettes, shisha, vapes)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Occasional
17	Stimulants (Caffeine, pills, coffee, reflux)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> occasional
18	Opioids (codeine, tramadol)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Occasional
19	Sedatives (Diazepam, Lexion, Rohypnol)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Occasional

SECTION D: PSYCHOLOGICAL HEALTH ASSESSMENT (GHQ-12)

Instructions: Indicate how you have recently felt using the following scale: 0 = Not at all, 1 = No more than usual, 2 = Rather more than usual, 3 = Much more than usual

Item	0	1	2	3
20. Able to concentrate on whatever you're doing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Lost much sleep over worry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Felt that you are playing a useful part in things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Felt capable of making decisions about things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Felt constantly under strain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Could not overcome difficulties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Enjoyed normal day-to-day activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	0	1	2	3
27. Felt unhappy or depressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Lost confidence in yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Thought of yourself as worthless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Felt reasonably happy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Felt you could not face your problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX 3

**ETHICAL APPROVAL FROM HEALTH ETHICS COMMITTEE (HREC),
UNIVERSITY OF BENIN TEACHING HOSPITAL, BENIN CITY, EDO STATE.**



HEALTH RESEARCH ETHICS COMMITTEE (HREC)

UNIVERSITY OF BENIN TEACHING HOSPITAL

P.M.B. 1111 BENIN CITY, NIGERIA Telephone: 052 608745 Website: ubth.org

CHIEF MEDICAL DIRECTOR
Prof. (Mrs) I.N Ize-Iyamu

DIRECTOR OF ADMINISTRATION
Jim Uwardio, Esq.

CHAIRMAN
Prof. (Mrs) Antoinette N. Ofili



HREC OFFICE:

Committee email: ubthresearchethics@gmail.com
Registration Number:
NHREC/24/01/2020

PROTOCOL NUMBER: ADM/E 22/A/VOL. VII/14865491272122

PROPOSAL TITLE: "PREVALENCE, PATTERN, FACTORS OF SUBSTANCE ABUSE AMONG MEDICAL STUDENTS IN UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA"

PRINCIPAL INVESTIGATOR(S): IJEOMA CATHERINE NWAODUA, JEFFERY AGBONOSA OBANCR, OBCNBAMU PHILLIPA ODUWARE, EMMANUEL OHUE

DEPARTMENT/INSTITUTION: DEPARTMENT OF PUBLIC HEALTH AND COMMUNITY MEDICINE, SCHOOL OF MEDICINE, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA

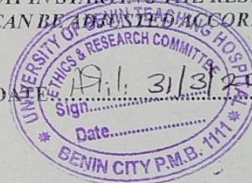
DATE CONSIDERED: MARCH 31ST, 2026

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 31/03/2026 TO 19/03/2027. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY
REMARK:

CHAIRMAN: PROF. (MRS) A.N. OFILI

SIGNATURE & DATE



SUPERVISOR (S): PROF. A. R ISARA

DECLARATION BY INVESTIGATOR(S): PROTOCOL NUMBER (please quote in all enquiries)

Note that no participant accrual or activity related to this research may be conducted outside of these dates and you are to furnish the committee with the research activities at the completion of the study. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual report to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification.

Signature & Date.....



ubthresearchethics@gmail.com

Registration Number: NHREC/24/01/2020

APPENDIX 4

RECEIPTS FOR PLAGIARISM TEST



INTELLECTUAL PROPERTY & TECHNOLOGY TRANSFER OFFICE (IPTTO)

Vice Chancellor's Office
University of Benin
PMB1154, Benin City, Nigeria

CLEARANCE FORM

DATE: 20th May 2026

NAME: NWAODUA IJEDMA

MATRIC NO: MED1807438

DEPARTMENT: MEDICINE

FACULTY: MEDICINE

SESSION OF GRADUATION: 2026

DIRECTOR
DATE _____
IPTTO (VCO)
UNIBEN BENIN CITY
Head Of Unit (IPTTO)



INTELLECTUAL PROPERTY & TECHNOLOGY TRANSFER OFFICE (IPTTO)

Vice Chancellor's Office
University of Benin
PMB1154, Benin City, Nigeria

CLEARANCE FORM

DATE: 20 / MAY / 2026

NAME: OHUE EMMANUEL

MATRIC NO: MED1807452

DEPARTMENT: MEDICINE

FACULTY: MEDICINE

SESSION OF GRADUATION: 2026

DIRECTOR
DATE _____
IPTTO (VCO)
UNIBEN BENIN CITY
Head Of Unit (IPTTO)



INTELLECTUAL PROPERTY & TECHNOLOGY TRANSFER OFFICE (IPTTO)
 Vice Chancellor's Office
 University of Benin
 PMB1154, Benin City, Nigeria

CLEARANCE FORM

DATE: 20/MAY/2026
 NAME: OHONBAMU PHILLIPA
 MATRIC NO: MED1807451
 DEPARTMENT: MEDICINE
 FACULTY: MEDICINE
 SESSION OF GRADUATION: 2026

DIRECTOR
 DATE _____
IPTTO
 UNIVERSITY OF BENIN
 Head Of Unit (IPTTO)



INTELLECTUAL PROPERTY & TECHNOLOGY TRANSFER OFFICE (IPTTO)
 Vice Chancellor's Office
 University of Benin
 PMB1154, Benin City, Nigeria

CLEARANCE FORM

DATE: 20/MAY/2026
 NAME: OBANOR JEFFERY
 MATRIC NO: MED1807439
 DEPARTMENT: MEDICINE
 FACULTY: MEDICINE
 SESSION OF GRADUATION: 2026

DIRECTOR
 DATE _____
IPTTO
 UNIVERSITY OF BENIN
 Head Of Unit (IPTTO)