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Prevalence, uses and factors affecting Psychoactive Substance Use among undergraduates in a Nigerian University

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Abstract

Background: Psychoactive drugs are substances that affect mental processes, perception, consciousness, cognition or mood and emotions. Objective: We evaluated the prevalence, use, and factors affecting psychoactive substance use among pharmacy and medical students in a Nigerian university. **Methods:** We carried out an observational cross-sectional study among students from two campuses. Chi-square was used to explore the relationship between the two categorical variables. A *p*-value of > 0.05 was considered significant. **Results:** Out of the total 342 participants, 324 individuals (94.7%) have been exposed to information regarding substance abuse. Majority of the respondents 243 (71.1%), accessed their information from social media. The awareness levels of addictive substances are: cocaine (312, 91.2%), marijuana (309, 90.4%), tramadol (276, 80.7%), codeine (273, 79.8%), and tobacco/nicotine (270, 78.9%). The p-value for the use of codeine between the two sexes was 0.004. **Conclusion:** There was high use of psychoactive substances among the students. Marijuana and Tramadol were the most commonly misused substances. Majority of the respondents got their information from social media. Teenage curiosity, peer influence, and access to drugs were the leading factors that contributed to the substance. Knowledge positively correlated with the substance use.

Keywords: *Addiction, Psychoactive drugs, Students, Substance abuse, Public health, Nigeria*

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1. Introduction

Psychoactive drugs and similar substances belong to a wider category of psychoactive substances that include also alcohol and nicotine (World Health Organization, 2023). Substance use is the non-medical self-administration of a substance to produce effects such as mood changes, intoxication (being "drunk" or "high"), or an altered self-image or perception, despite the knowledge of its potential side effects. It can also be described as the use of any substance to the point where it negatively affects an individual's health, social or economic adjustment (UNICEF and WHO, 2006).

One major outcome of psychoactive substance use is dependence and addiction (American Psychiatric Association, 2006) and most of those substances sustain the ability to create dependence. This, in the vast majority of instances results in withdrawal symptoms when you stop using the substance (Raypole and Crystal, 2020) and ultimately addiction (addiction is a brain disease involving compulsive substance use despite unfavorable consequences. It's a sophisticated condition with both psychological and physical elements that are hard (if not impossible) to separate (Raypole and Crystal, 2020) especially after prolonged/sustained abuse, the consequences of these usually spanning both psychological, behavioral mostly, motor and social on the longer run. Drug abuse is defined as an excessive and persistent self-administration of a drug without acknowledgement of the medically or culturally accepted patterns of administration (Haladu, 2003). Drug abuse has a strong inter-relationship with substance use.

The prevalence, use, and dependence on these psychoactive substances requires external agents (the drugs), and this depends on their availability, potency and the specific legislations of the political and healthcare environments involved (Onaolapo *et al.*, 2022). Generally, some of these abused drugs have medical uses and are used in varieties of important medical procedures, for example tramadol, morphine, codeine, and other opioid drugs of alike chemistry and biological activity are used as they do have moderate to strong pain-relieving activity, this makes them extremely useful in surgical procedures, accidents and severe injuries (Lippe *et al.*, 2010; Leung, 2012). However, in most countries, these drugs are mostly beyond the reach of ordinary citizens, as they are only available on a prescription-only use. Ideally, they should remain so, but various factors exist which flaw these processes, especially in a country like Nigeria, with numerous maneuvers to instituted processes. The result of this is the recent proliferation in the use of these substances amongst the younger population in Nigerian schools (Obadeji *et al.*, 2020). Numerous theories have been propounded to deconstruct drug abuse but due to the complexity of interaction of factors, no one particular theory fully explains the etiology of drug abuse (Gould, 2010). Especially with youths and teenagers in tertiary institutions, identified common factors motivating students to start drug use include: experimental curiosity, peer pressure, lack of parental supervision and guidance, personality disorders, the need for energy to work for lengthy hours, availability of drugs of abuse, purchasing power and cultism, amongst others ((Eze and Omeje, 1996).

Also, substance use has been seen to be of significantly higher proportion amongst poverty endemic regions in comparison to demographics occupied by the bourgeoisie and the elite. With the acknowledgement of the many variables which are significant factors responsible for the different variations and intensities of substance use in different demographics, a study is pertinent to understand them. Conducting studies to provide data to understand factors that influence psychoactive substance use is critical for effective legislation and the population (Ogunwale, 2022).

The consequences of substance use are far-reaching and span across many spheres of society. It is a major public health issue that has resonating consequences in education, psychology, and career, ultimately society suffers the long-term damages. Health wise, psychoactive substance use has been strongly associated with dire health conditions such as lung cancers, liver cirrhosis, dementia, and sometimes extensive organ damage. But even more significant are the psychosocial consequences, frequently involving the destruction of important interpersonal relationships, self-isolation and stigma, resultant anti-social behavior, academic failure and retardation, vocational failure and lack of occupational progress. Psychoactive substance use is a major cause of violence among individuals and a predominant cause of avoidable mortality and morbidity (Falaye

and Oluwole, 2002). It has been implicated in the vast majority of cases of vehicle fatalities around the world, with resultant effects on physical deformity, health, social functions, loss of property, loss of jobs, loss of self-esteem and loss of lives (Ekpenyong and Aakpege, 2014; Abdulahi, 2009). There are also severe educational consequences. Students who engaged in substance abuse were more likely to exhibit lower commitment to education and educational activities, have poorer grades and increased propensity of dropping out. They were also more likely to cheat in exams and violate school authorities and codes of conduct. Suicides, homicides, and accidental injuries have all been connected to drug use among students (Ekpenyong and Aakpege, 2014).

Also, high prevalence of depression, development lapses, apathy, withdrawal, drainage and waste of family financial and emotional resources have all been reported among substance using students (Oshodi, 2010). The frequent use of substances has resulted in an increase in the number of degenerate acts such as rape, armed robbery, cultism, violent disorders and vandalism among Nigerian youths (Fareo, 2012). University undergraduates attempt to abuse drugs for a myriad of reasons including: combating real or imagined failure, boosting their self-confidence, or an escape route from bad unexpected circumstances and experiences. They are particularly at risk because they have unsupervised freedom; some possess too much money, poor choice of role models, peer influence, and irrational ambitions (Oshikoya and Alli, 2006). As seen, the harmful effects of substance use span across many social strata, because of this, there is an attendant overall increase in moral decadence in the society and a corresponding decrease in moral standards and what is considered objectively moral. These substance abuse trends are increasingly becoming trivialized; thereby, being normalized.

Providing the public with insight into the degree of menace that substance use poses to the society. Existing literature has shown to a certain degree the level of ignorance that exists on substance abuse and related issues, including possible harmful effects, ripple effects, etc. Literature also provides useful data concerning prevalence, negative effects, and reasons for consumption, commonly abused substances, and possible ways to tackle this menace. All useful data for legislative bodies, to take commensurate measures; intervening organizations, to provide adequate interventions; law enforcement agencies, to adequately enforce laws concerning substance use; educating bodies, to provide much needed enlightenment on matters of substance use. We evaluated the prevalence, use, and factors affecting psychoactive substance use among pharmacy and medical students in a Nigerian University.

2. Methods

2.1. Study design

The study was an observational cross-sectional study. It included students from all Nnamdi Azikiwe University campuses in Awka, Agulu, and Nnewi, Anambra State, where undergraduate pharmacy and medicine are offered. For data collection, a semi-structured questionnaire adapted from previous studies and modified to meet the study's objectives was used.

2.2. Study setting

The study was conducted in all campuses of Nnamdi Azikiwe University located in Awka, Agulu and Nnewi, all in Anambra state, Nigeria. Anambra state is located in the south-eastern part of Nigeria 6°20N 7°00E. It covers an area of 4,844 km^2 (1870 sq mi). The Igbos are the indigenous ethnic group comprising 98% of the population. According to the 2006 census, Anambra state has a population of 5.8 million people. It has a total land area of 4,844 km^2 and a population density of 860 km^2, making it Nigeria's second most densely populated state after Lagos in the south west. Awka is the state capital of Anambra, while Onitsha and Nnewi are the largest commercial and industrial cities, respectively. Because Nnamdi Azikiwe University Awka (NAU) is the most significant Federal University in Anambra state, this study was conducted among its students. The University's main campus is in Awka, 35 kilometers to the south-west of Awka; the second campus is in Nnewi Nnamdi Azikiwe University Teaching Hospital (NAUTH) and Okofia, where the college of health and basic medical sciences is located; and the third campus is in Agulu, that is, the Faculty of Pharmaceutical Sciences.

2.3. Study population

This study was conducted among undergraduate students of the university who were willing to participate. According to data from the university's official website, the number of undergraduate students in the university in March 1st, 2023 was 25,000.

2.4. Inclusion criteria

All undergraduate students enrolled in regular classes at Nnamdi Azikiwe University Awka's three campuses who were willing to give their informed consent to participate in the study.

2.5. Exclusion criteria

All undergraduate students who were not enrolled into the regular programs, and all eligible students who were absent at the time of data collection were excluded from the study. We also excluded all students who did not give their informed consent to participate in the study.

2.6. Sampling technique

The simple random sampling method was used because it ensured that each undergraduate student had an equal chance of being chosen. The study aimed to objectively evaluate the prevalence, use and factors which affect the use of psychoactive substances amongst the undergraduate students of Nnamdi Azikiwe University. The predetermined sample size was 414, and using the hybrid data collection system of both online and off-line (using physical questionnaires), only 342 responses were obtained.

2.7. Sample size determination

The sample size for the study was calculated from the study population using the Yamane sample size formula.

The sample size was determined using Yamane's formula $n = N/1 + N(e)^2$

Where n = unknown

N = population size

e = margin of error

From our data,

N = 25,000

e = 0.05

n = 25000/1 + 25,000(0.05)^2

= 25000/1 + 62.5

= 25000/63.5

= 393.7, i.e., 394 students sample size

But overage is 5% × 394 = 19.70

= 394+19.70 = 413.7

= 414 students

2.8. Study period

The study spanned a period of 3 months, starting from March 2023 to June 2023.

2.9. Research tool

2.9.1. Questionnaire preparation

A questionnaire was adapted and modified; the majority of the items were close-ended with a few open-ended, this was designed to assist participants in providing information about their knowledge on psychoactive substance use and factors affecting it; and confidentiality would be maintained. Section 1 contained the demographic data of the respondents; and because it is anonymous, it was effective in gathering data on the sensitive issues and ultimately resulted in less biased responses to the questions. It was also cost effective. Participants were not required to provide any identification, such as their name, address, or phone number. Sections 2 covered questions which assessed students' knowledge, and perception of psychoactive substance use, investigate its prevalence and the factors affecting its general use, and finally what substances were being abused by undergraduate students.

2.9.2. Pre-testing of questionnaire

The questionnaire was pretested with 15 people, and all necessary changes were made. The ease in understanding it as well as the time required to complete it were noted. Those who participated in the questionnaire pre-testing were not allowed to participate in the main study.

2.9.3. Administration and collection of questionnaires

Online (using Google Forms) as well as physical administration and collection of questionnaires were done. This was done to increase reach/audience.

2.10. Statistical analysis

Microsoft excel 2019 computer software was used to analyze the obtained data. Descriptive statistics was used to explain categorical data, frequency tables and percentages were created. Chi-square was used to explore the relationship between the two categorical variables while correlation was used to assess the degree of association between the two quantitative variables. A p-value of > 0.05 was considered significant.

2.11. Ethical considerations

Ethical approval was obtained from the Nnamdi Azikiwe University Teaching Hospital Informed consent was obtained from the students involved. Participants were not asked any form of identification such as name, address, and phone numbers.

2.12. Limitations encountered

Participants' reluctance to participate and possible dishonesty with select questions: Assured participants' anonymity if they do not feel comfortable sharing personal activity/experiences.

2.13. Other issues pertaining to the participation

Because the study was not funded, the participants were not paid.

3. Results

A total of 342 questionnaires were collected and considered valid for this study. Within this survey, 144 respondents (43%) identified as male, while 195 respondents (57%) identified as female (Table 1). The largest portion, accounting for 150 individuals (43.9%), fell within the age bracket of 21 to 25 years, with no participants exceeding 30 years of age. Among the 342 participants, the majority—330 individuals (96.5%)—reported being single, while a smaller portion—12 individuals (3.5%)—mentioned being married, as presented in Table 1. The distribution of participants' academic levels showed that 141 individuals participated in the study from 100-200 levels.

Major factors that enhance the use of these substances by addicts include; teenage curiosity (264, 81.5%), friends offer (237, 73.1%), joy seeking (216, 66.7%), access to drugs (201, 62%) among others (Table 4). The participants gave their various reasons for the continuous use of these substance and majority submitted that; feeling high (246, 75.9%), depression (228, 70.4%), better acceptability by friends (192,

59.3%), improvement in some somatic diseases (87, 26.9%), and improved memory and learning ability (69, 21.3%).

Table 5 reveals that there was a significant association between gender of the students and the use of some of the psychoactive substances. It was noted that respondents in the 21-25 age group displayed a higher percentage of involvement with psychoactive substances, followed by those in the 26-30 age range. Among

Table 1: Socio-demographic characteristics of the participants (n = 342)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	144	43
Female	195	57
Age group (years)		
≤20	150	43.9
21-25	147	43
25-30	45	13.2
>30	0	0
Marital status		
Single	330	96.5
Married	12	3.5
Divorced	0	0
Level of education		
100-200	141	41.2
300-400	93	27.2
500-600	102	29.8
Faculty		
Art	0	0
Basic medical sciences	9	2.6
Biological sciences	6	1.8
Computer sciences	3	0.9
Education	6	1.8
Engineering	3	0.9
Environmental sciences	0	0
Health sciences and tech	33	9.6
Law	3	0.9
Management sciences	0	0
Mass communication	3	0.9
Medicine	75	21.9
Nursing	3	0.9
Pharmaceutical sciences	162	47.4
Physical sciences	0	0
Social sciences	33	9.6

Table 2: Knowledge of substance abuse		
Variable	**Frequency (n)**	**Percentage (%)**
Have you ever received information about substance abuse?		
Yes	324	94.7
No	18	5.3
If yes, what was your source of information??		
Mass media	231	67.5
Social media	243	71.1
Seminars	162	47.4
Lectures	240	70.2
Religious programs	150	43.9
Family	6	1.8
Which of the following causes drug addiction?		
Marijuana	309	90.4
Analgesics	120	35.1
Cocaine	312	91.2
Rohypnol	147	43
Ecstasy	162	47.4
Heroin	249	72.8
Tobacco/Nicotine	270	78.9
Codeine	273	79.8
Valium	144	42.1
Tramadol	276	80.7
Do you think everyone who abuses these substances can be addicted?		
Yes	246	71.93
No	48	14.04
I don't know	48	14.04

Table 3: The use of substances of abuse		
Variable	**Frequency (n)**	**Percentage (%)**
Do you smoke cigarettes?		
Yes	15	4.4
No	327	95.6
If yes, how often do you smoke it?		
Less than five cigarettes per week	3	0.9
More than five cigarettes per week	0	0
Less than cigarettes five per day	0	0
More than cigarettes five per day	0	0
Once in a while	12	3.5

Table 3 (Cont.)		
Which of the above psychoactive substance(s) have you used?		
Marijuana	21	6.1
Analgesics	72	21.1
Cocaine	0	0
Rohypnol	0	0
Ecstasy	6	1.8
Heroin	0	0
Tobacco/Nicotine	3	0.9
Codeine	6	1.8
Valium	3	0.9
Tramadol	18	5.3
None	195	57
Others	3	0.9
On what occasions do you use the substances?		
Before exams	0	0
Before doing sports	3	0.9
With friends	0	0
At parties	18	5.3
Alone	24	7.02
When in pain or sick	45	13.2
Others	6	1.8
How do you use these substances (drugs)?		
Sniff	0	0
Smoke	18	5.3
Oral	87	25.4
Injections	6	1.8
Others	6	1.8

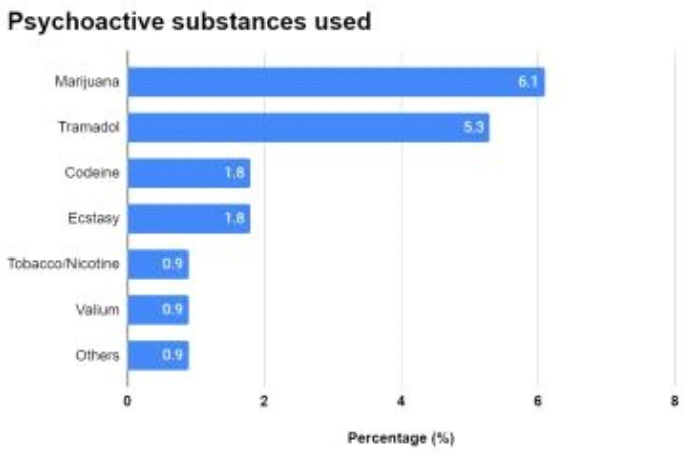

Figure 1: Flowchart of literature search

Table 4: Factors affecting the utilization of substances of abuse

Variable	Frequency (n)	Percentage (%)
Influence in enhancing substance abuse		
Teenage curiosity	264	81.5
Lack of knowledge about complications of drugs	150	46.3
Joy seeking	216	66.7
Positive attitude toward drug abuse	72	22.2
Friends offer	237	73.1
Presence of an addicted person in the family	129	39.8
Family dispute	123	38.0
Access to drugs	201	62.0
Low costs of drugs	108	33.3
Having free time	69	21.3
Motivation for substance(s) abuse		
Feeling high	246	75.9
Improved memory and learning ability	69	21.3
Depression	228	70.4
Improvement in some somatic diseases	87	26.9
Better acceptability by friends	192	59.3

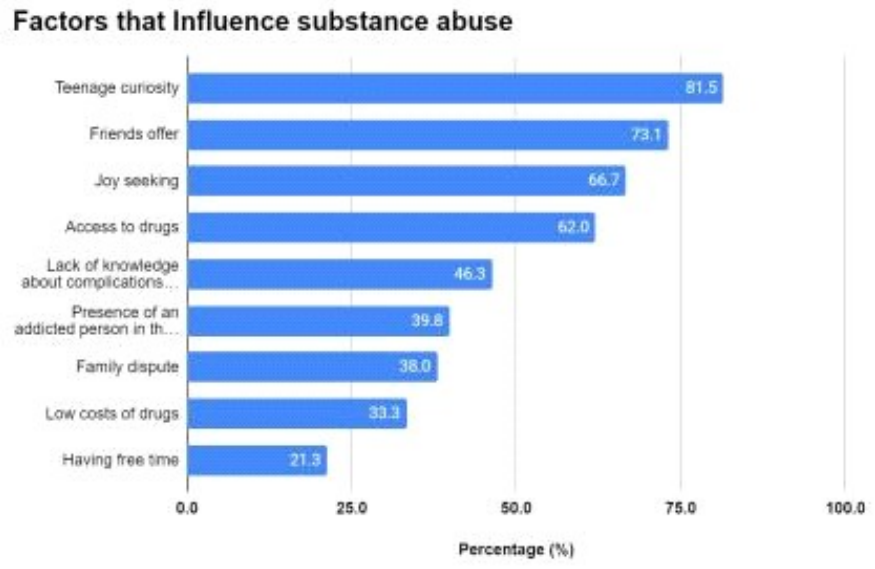

Figure 2: Factors influencing the utilization of substances of abuse

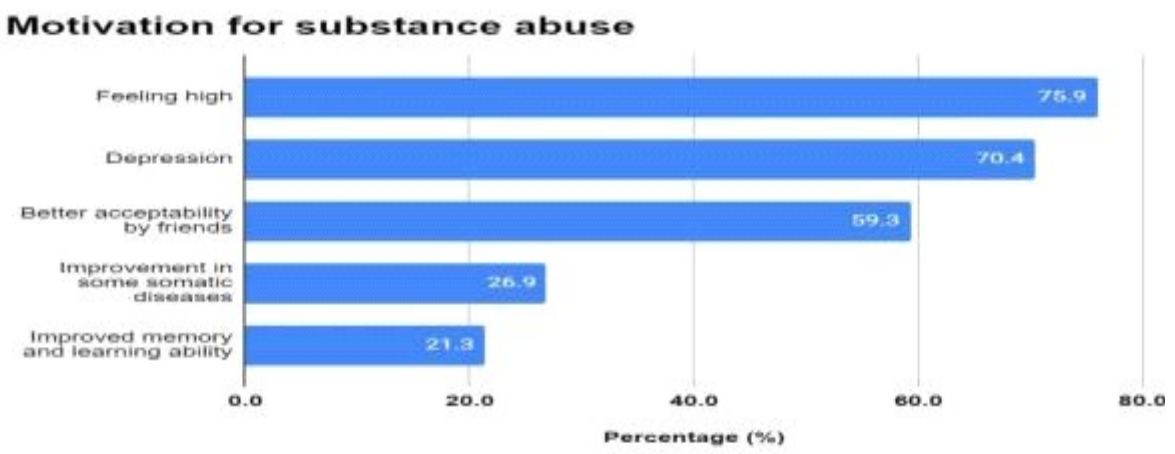

Figure 3: Motivating factors on the utilization of substances of abuse

Table 5: Statistical analysis on the age and use of psychoactive substances

Substances	< 20 yrs (%)	21-25 yrs (%)	26-30 yrs (%)	>30 yrs (%)	p-value
Marijuana	14.3	71.4	14.3	-	0.013
Tramadol	-	16.7	83.3	-	<0.001
Codeine	50	-	50	-	0.011
Valium	-	100	-	-	0.134
Ecstasy	50	50	-	-	0.629
Tobacco	-	-	100	-	<0.001

these substances, Marijuana was the most commonly misused. However, the *p*-value > 0.05, indicated that there was no statistically significant difference in the use of psychoactive substances across different age groups.

According to Table 6, there is notable association between the students' gender and their engagement with specific psychoactive substances. The percentages indicate that a larger proportion of male respondents misuse drugs compared to their female counterparts.

Table 6: Statistical analysis on the gender and use of psychoactive substances

Substances	Male	Female	P-value	χ^2
Marijuana	8.16	4.62	0.176	1.831
Tramadol	8.16	3.08	0.037	4.349
Codeine	4.08	0.00	0.004	8.101
Ecstasy	2.04	1.54	0.726	0.123
Valium	2.04	0.00	0.045	4.015
Tobacco	2.04	0.00	0.045	4.015

Note: χ^2 is the chi-square value.

The questionnaire provided knowledge and use scores of psychoactive substances, calculated by adding up the scores for knowledge and use of psychoactive substances in each section. The total score for knowledge was 11, and for use, it was 9 (Table 6). The mean scores (± SD) for knowledge of psychoactive substances were 7.9 (±2.54), and for use, it was 0.2 (±0.48). Bivariate correlation analysis revealed that knowledge had a significant positive correlation with use ($r = 0.155^{**}$, $p = 0.004$).

Table 7: Descriptive statistics for knowledge and use of psychoactive substances

Variable	Total	Minimum	Maximum	Mean	Standard deviation	Pearson Correlation	
						Knowledge	Use
Knowledge score	11	0	11	7.9	2.54	r = 1.00	r = 0.155**
Use Score	9	0	3	0.2	0.48	r = 0.155** p-value = 0.004	r = 1.000

Note: ** Correlation is significant at the 0.01 level (two-tailed).

4. Discussion

4.1. Participant awareness of psychoactive substance use

Following retrieval of results, we observed that the majority, accounting of the respondents agreed to having acquired information in the past on psychoactive substance use. It is similar to a study in Edo State Nigeria where most of the medical students who participated in the study agreed to having knowledge and good attitude towards those who misuse of psychoactive substances, but preferred that such substances and treatment should be handled by specialists (James and Omoaregba, 2013). Teenage curiosity affected the use of psychoactive substances most, followed by friends, and joy seeking attitude as depicted in Figure 2. Majority of individuals, accounting for 71.1% had received their information from social media, this is all thanks to the extremely digital age that came with the advancement of technology and abundance of social media networks (for example: Face book, Twitter, YouTube, etc.) as shown in Table 2. This is similar to the outcomes obtained some studies in other parts of Nigeria (Adelekan *et al.*, 1993; Manyike *et al.*, 2016; Gudaji and Habib, 2016). The participants expressed awareness concerning the addictive properties of certain substances. Out of the 342 students who had previously received information concerning psychoactive substance use, 312 admitted to being aware of the fact that cocaine sustained ability to cause addiction, 309 admitted same for marijuana, 276 for tramadol, 273 for codeine. This is similar to the findings obtained by Jatau *et al.* (2021) and Bramer *et al.* (2017) where the burden of substance use remains high despite the preventive measures and government policies in place. Feeling high, tackling depression, and the quest for better acceptability by friends were the major motivators for indulgence in the use of psychoactive substances as shown in Figure 3. this is similar to a study in Mekelle University in northern Ethiopia where the quest for socialization, physical environment, academic pressure, and poor organizational influence and support were the key drivers of psychoactive substance use among the students (Kahsay *et al.*, 2019).

4.2. Prevalence and use of psychoactive substances

Individuals who admitted to having ever smoked were supposedly 15 in number out of the total 342 participants but this number is likely higher than that since according to Table 4 cumulatively much higher of respondents agreed to have used drugs on occasions such as at parties, alone, before doing sports, etc., and equally admitting to have used such substances as marijuana (as shown in Table 3 where the majorly consumed psychoactive substance). In the same way, numbers higher than 15 admitted to having smoked, injected, or orally taken psychoactive substances. This inconsistency in results is likely due to the social stigma attached to smoking, such that individuals find it difficult to admit to a direct question on substance use such as "do you smoke?" but affirm its use when asked the same questions in subtle ways such as "which of these psychoactive substances do you use?" or "on what occasions do you use psychoactive substances?". It is likely due to the unavailability of the ethical approval at the time of the questionnaire distribution and likely hesitation arising from questions concerning the anonymity, much more individuals may have held back on complete honesty about their usage status. This is similar to studies in Northern and western Nigeria by Idowu *et al.* (2018), and Gudaji and Habib (2016) among commercial motorcycle operator and secondary school students.

According to Table 5, young people between the ages of 21-25 showed more involvement with psychoactive substances. This is mostly because this is the age group most found in the undergraduate institution. Also males were found to have misused drugs more than their female counterparts. As previously stated, marijuana

recorded the highest use amongst participants who used psychoactive substances, deductively; it is the most popular among students, commonly referred to as "weed" in some demographics. Following marijuana closely in substance use score was tramadol which is supposedly a prescription-only medication but is relatively available to most Nigerian students. Other substances abused on a much smaller scale were ecstasy, valium, tobacco, codeine, others.

4.3. Factors affecting psychoactive substance use

According to Table 4, it was observed that the following factors motivated individuals into psychoactive substance use: teenage curiosity, accounting for the greatest factor, amongst other factors such as being offered the substances by friends, joy seeking, ease of access to drugs, According to respondent provided data, feeling high (which many have been described as a feeling of freedom and happiness), ability of the substances to ease depression, and desire to blend with one's peers, amongst others, have served as reasons for which individuals continued consuming and abusing these substances. It is similar to studies by Admasu *et al.* (2023), Kalichman *et al.* (2006), Gebresilassie *et al.* (2020), Bojanic *et al.* (2021) and Saban *et al.* (2014).

5. Conclusion

Despite repeated dissemination of information about psychoactive substance use, there was a persistent use of these substances high and prevalence of these substances among the university students. Majority of the respondents got their information from social media. Knowledge positively correlated with their use of the psychoactive substances. Teenage curiosity, friends offer, peer influence, and access to drugs were the leading factors that contributed to their use. The quest to feel high and depression were key motivators to substance use. Marijuana, Tramadol and Codeine were the most utilized psychoactive substances among the students. Efforts need to be invested into interventions targeted at eliminating factors which enhance psychoactive substance use such as addiction for which rehabilitation centers could be provided. Depression can be ameliorated by adequate psychological therapy, and ease of access. Prohibition of use with stringent measures can be implemented to curb access to these substances. Youth education and regular enlightenment campaigns on the negative effects of these substances should be enhanced.

Conflicts of interest

The authors have none to declare

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