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Prevalence, Use and Factors Affecting Psychoactive Substance Use Among Under-Graduate Students in A Nigerian University

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Abstract

Background:

Psychoactive drugs are substances that, when taken in or administered into one's system, 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:

The study was an observational cross-sectional study. It included students from two campuses where the undergraduate pharmacy and medicine courses are offered. 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.

Results:

Out of the total 342 participants, 324 individuals (94.7%) were exposed to information regarding substance abuse, whereas 18 participants (5.3%) were not informed on this matter. The majority, accounting for respondents 243 (71.1%), accessed their information from social media, while only a small fraction of them, 6 participants (1.8%), received information from their family members. Among students, awareness levels of addictive substances include cocaine (312 individuals, 91.2%), marijuana (309 individuals, 90.4%), tramadol (276 individuals, 80.7%), codeine (273 individuals,

79.8%), tobacco/nicotine (270 individuals, 78.9%), and others. The least recognized substance was analgesics, acknowledged by 120 participants (35.1%). A significant portion of students, 246 individuals (71.93%), expressed agreement that substance abusers are prone to addiction, while 48 participants (14.04%) indicated uncertainty on this matter. Out of the 342 students who had previously received information concerning psychoactive substance use, 312 admitted to knowing cocaine sustained ability to cause addiction, 309 admitted same for marijuana, 276 for tramadol, and 273 for codeine. The p- value for the use of codeine between the two sexes was 0.004. Bivariate correlation analysis revealed that knowledge had a significant positive correlation with us (r = 0.155**, p = 0.004).

Conclusion:

There was a persistent use of these substances amongst the students. Marijuana and Tramadol were the most 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 use of the drugs of abuse. Knowledge positively correlated with their use of psychoactive substances. Marijuana and tramadol were the most misused psychoactive substances.

Keywords: Addiction; Psychoactive drugs; students; substance abuse; Public Health; Nigeria

Introduction:

Psychoactive drugs and similar substances belong to a wider category of psychoactive substances that include also alcohol and nicotine (World Health Organization, 2023). So, what is substance use? It 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 & 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 most instances results in withdrawal symptoms when you stop using the substance (Raypole & 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, 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 excessive and persistent self-administration of a drug without acknowledgement of the medical 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, 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, 2010 and 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, 2020). Numerous theories have been propounded to deconstruct drug abuse but due to the complexity of interaction of factors, no 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 & Omeje,1996 and Lyyrapitkanen & Pulkkinen, 2005).

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 understanding them. Conducting studies to provide data to understand factors that influence psychoactive substance use is critical for effective legislation and the population (Manirambona, 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 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 & Oluwole, 2002). It has been implicated in most 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 & 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, & 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 (Enang, 2007). 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 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 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.

Methods

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.

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 in the south-eastern part of Nigeria 6˚20N 7˚00E. It covers an area of 4,844 km^2 (1870 sq m). 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 4,844km^2 and a population density of 860km^2, making it Nigeria's second most densely populated state after Lagos in the southwest. 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, thirty-five 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.

Study population:

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

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.

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.

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 undergraduate Nnamdi Azikiwe university students. The predetermined sample size was 414 and using the hybrid data collection system of both online and offline (using physical questionnaires), only 342 responses were obtained.

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 the average age is 5% × 394 = 19.70

= 394+19.70 =413.7

=414 students.

Study Period:

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

Research tool:

Questionnaire Preparation:

A questionnaire was adapted and modified; most 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.

Pre-testing of questionnaire:

The questionnaire was presented 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.

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.

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.

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.

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. Other issues pertaining to participation

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

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. 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.

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?	0	

Yes	246	71.93
No	48	14.04
I don't know	48	14.04

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 five cigarettes per day	0	0
More than five cigarettes per day	0	0
Occasionally	12	3.5
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

Table 3: The use of substances of abuse

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

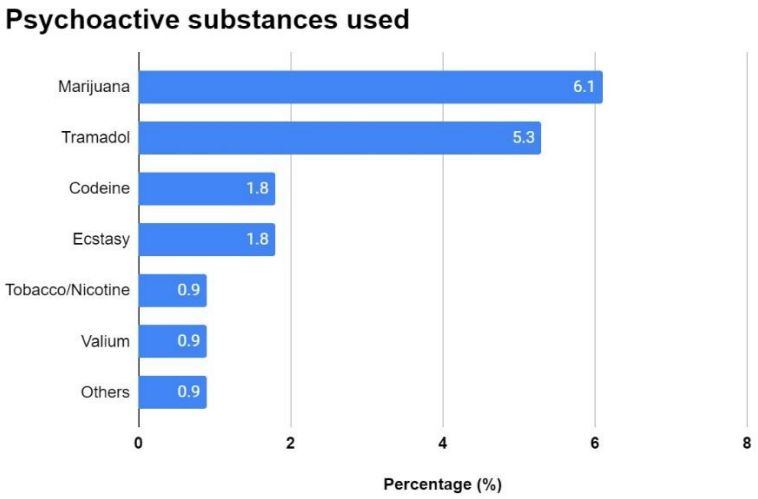

Fig 1: Common psychoactive substances used by the participants.

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 substances 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%).

Variable	Frequency (n	Percentage (%)
Influence in enhancing substance abuse		
Teenage curiosity	264	81.5
Lack of knowledge about complications of drugs	150	46.3

Table 4: Factors affecting the utilization of substances of abuse

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

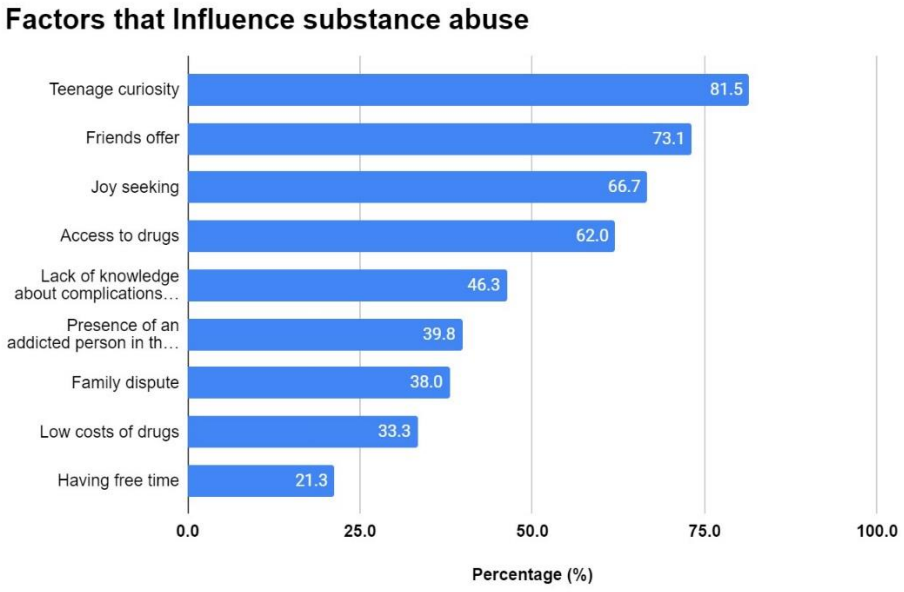

Fig 1: Factors influencing the utilization of substances of abuse.

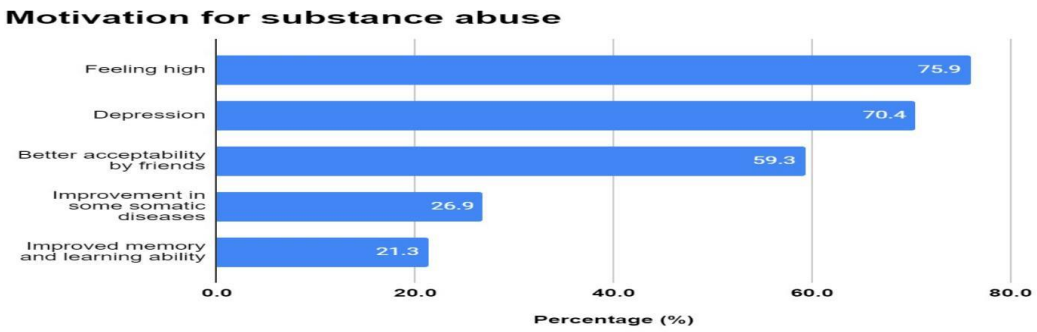

Fig 2: Motivating factors on the utilization of substances of abuse.

Table 5 reveals that there was a significant association between the 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 these substances, Marijuana was the most 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.

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

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

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

Substances	Male	Female	P-value	x2
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

— X2 is the chi-square value.

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

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).

Variable	Total	Minimum	Maximum	Mean	ndard deviati	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

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

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

Discussion:

Participant awareness of psychoactive substance use:

Following retrieval of results, it was observed that the majority, accounting of the respondents agreed to having acquired information in the past towards psychoactive substance use. It is like a study in Edo State Nigeria where most of the medical students who participated in the study agreed to have 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) This shows that in today's modern society, sufficient awareness

concerning substance use has been adequately disseminated. 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, et cetera). This is similar to the outcomes obtained in studies in other parts of Nigeria (Adelekan et al., 1993; Manyike et al., 2016; Gudaji and Habib, 2016). Additionally, 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 knowing cocaine sustained ability to cause addiction, 309 admitted same for marijuana, 276 for tramadol, 273 for codeine. This is like the findings obtained by Jatau et al., 2021 and Bramer et al., 2017.

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 4.3 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 (of which from Table 3 was seen to be 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 like 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, and others.

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 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 like studies by Admas et al., 2023, Kalichman, 2006, Gebresilassie, 2020; Bojanic, 2021 and Saban, 2014.

Conclusions:

Despite sufficient dissemination and reception of information regarding psychoactive substance use, there was a persistent use of these substances amongst the students of Nnamdi Azikiwe university; hence the significant use and prevalence of these substances amongst the university students. Teenage curiosity, peer influence, and access to drugs were the leading factors that contributed to the use of the drugs of abuse. Efforts need to be invested into interventions targeted at eliminating factors which enhance psychoactive substance use such as addiction for which rehabilitation centers can be provided, depression which can be ameliorated by adequate psychological therapy, ease of access for which more stringent measures can be implemented to curb access to these substances, ignorance about complications for which better education on the negative effects of these substances can be provided.

Conflict Of Interest: The authors have none to declare

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