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Psychoactive substance use and associated expenditure among undergraduate students of two universities in south west Nigeria

Używanie substancji psychoaktywnych przez studentów dwóch uniwersytetów w południowo-zachodniej Nigerii i ponoszone przez nich koszty zakupu substancji

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Abstract

Introduction: This study determined the prevalence of psychoactive substance use, awareness of its health risks and the financial expenditure of purchasing these substances among undergraduate students.

Material and methods: A cross-sectional descriptive design involving 521 undergraduate students from second to terminal year of study from selected faculties of two universities in south west Nigeria was employed. One in every two students in the selected faculties were involved in the study. Modified WHO-validated

Streszczenie

Wprowadzenie: Analizowano rozpowszechnienie używania substancji psychoaktywnych, świadomość płynących z tego zagrożeń dla zdrowia oraz koszty zakupu tych substancji przez studentów studiów licencjackich.

Materiał i metody: Przeprowadzono przekrojowe badanie opisowe obejmujące 521 studentów od drugiego do ostatniego roku studiów. Uczestniczył w nim co drugi student z wybranych wydziałów dwóch uniwersytetów w południowo-zachodniej Nigerii. Kwestię używania substancji psychoaktywnych badano zmodyfikowaną wersją zwali-

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Alcohol Smoking and Substance Involvement Screening Test 3.0 model (ASSIST) was used to assess information on participants' use of psychoactive substances. The data were analysed using SPSS version 23.

Results: The response rate was 85.7%. Mild stimulants (23.1% and 20.0%), and alcoholic beverages (16.1% and 10.7%) were commonly used in the public and private universities respectively. Those participants that either abstained or ceased using substances indicated that awareness of health risks and/or religious beliefs were the main reasons. Among users, the most frequently reported reason for using psychoactive substances was the need to keep alert to read. Most of the current mild stimulants and cannabis users had not made much effort to reduce their consumption. Average monthly stipend of participants was $47.0 ± 65.8 and $81.5 ± 106.3 in the public and private universities respectively. There was a positive significant correlation of monthly stipend and amount spent monthly on psychoactive substances (Pearson correlation $r = 0.344$, $p = 0.02$).

Discussion: Mild stimulants were the most commonly used substances with the main reason being the need to meet study-related requirements. Moreover, higher income could be a factor in the increased use of substances. Some of the respondents had knowledge about the risks associated with psychoactive substance use though a high percentage of missing data may indicate a lack of such knowledge in some.

Conclusions: Given that awareness of health consequences motivates students to abstain, educational programmes targeted at reducing substances use among these undergraduates are required.

Keywords: Alcohol, Health promotion, Substance use, Undergraduate.

dowanego przez WHO narzędzia: *Alcohol Smoking and Substance Involvement Screening Test 3.0* (ASSIST). Otrzymane dane analizowano za pomocą programu SPSS w wersji 23.

Wyniki: Odsetek udzielonych odpowiedzi wyniósł 85,7%. Na uczelniach publicznych i prywatnych powszechnie były używane łagodne stymulanty (23,1% *vs* 20,0%) oraz napoje alkoholowe (16,1% *vs* 10,7%). Uczestnicy, którzy powstrzymywali się lub zaprzestali używania substancji psychoaktywnych, jako główny powód podawali świadomość zagrożeń dla zdrowia i/lub przekonania religijne. Natomiast wśród użytkowników najczęściej potwierdzanym powodem używania tych substancji była potrzeba zachowania stałej gotowości do nauki. Większość użytkowników łagodnych stymulantów oraz konopi nie starała się ograniczyć ich spożycia. Średnie miesięczne stypendium uczestników badania wynosiło 47,0 ± 65,8 USD na uczelniach publicznych i 81,5 ± 106,3 USD na prywatnych. Stwierdzono istotną pozytywną korelację między wysokością stypendium a kwotą wydawaną miesięcznie na substancje psychoaktywne (korelacja Pearsona $r = 0{,}344$, $p = 0{,}02$).

Omówienie: Najczęściej używanymi substancjami były łagodne stymulanty, a jako główny powód ich używania podawano konieczność spełnienia wymagań związanych z nauką. Czynnikiem zwiększającym konsumpcję substancji mogły być też wyższe dochody. Część respondentów znała zagrożenia związane z używaniem substancji psychoaktywnych, wysoki odsetek braku odpowiedzi na to pytanie może jednak świadczyć o niedostatku wiedzy u sporej grupy respondentów.

Wnioski: Świadomość skutków zdrowotnych motywuje studentów do powstrzymania się od używania substancji, potrzebne są zatem programy edukacyjne dla studentów ukierunkowane na ograniczenie używania substancji psychoaktywnych.

Słowa kluczowe: alkohol, promocja zdrowia, używanie substancji, studenci.

■ Introduction

Many countries are facing the challenge of use of substances such as alcohol and tobacco mostly among youth [1-3]. In Nigeria, a good number have been reported to be users of one form of drug or the other, including caffeine, alcohol, tobacco, cannabis, cocaine, amphetamine, morphine, heroin, ephedrine, inhalants and unprescribed barbiturates [4, 5]. This behaviour among university students is becoming a rapidly-developing public health issue in Nigeria [6]. A study carried out

among medical students in a public university (University of Ilorin, Nigeria) on the use of psychoactive substances showed that the most commonly used substances were mild stimulants (coffee and kola nut, which contains caffeine), alcohol, tobacco, tranquillisers and sleeping pills [6]. However, the prevalence varies in different region of the country and universities. A study in Madonna University Elele in Rivers State in south Nigeria reported prevalence of current users of substances such as alcohol (60.8%), caffeine (57.3%), codeine (48.1%), sleeping pills (44.0%), tobacco (43.7%) and inhalants (25.6%). The general prevalence of use of psychoactive substances in this study was 65.5% [7]. A report from a study among public tertiary institutions in south west Nigeria reported varying prevalence of current users as alcohol (62.0%), locally brewed alcohol (28.9%), caffeine (51.5%), cigarette/tobacco smoking (26.9%), inhalants (18.9%), morphine (16.0%) and marijuana (14.8%) [8].

This increase in use of psychoactive substances in Nigeria could be a result of urbanisation and exposure to a Western life-style, with tobacco and alcohol acting as "gateway drugs" to the use of other substances like heroin, cocaine, amphetamine, inhalants and others [9]. Factors that have been reported to contribute to the high prevalence of psychoactive substance use in Nigeria included social factors like peer group influence, unhealthy family background such as illegitimate relationships, broken homes, alcoholic parents or involvement of parent in antisocial and illegal activities and individual factors like desire to stay awake at night, academic pressure to succeed, curiosity and coping with shyness as well as macro-level influences like easy accessibility of the substances [9-11].

The physical, psychological, social and economic consequences of the drug problems among youth in Nigeria are becoming more obvious and disturbing [2]. Moreover, drug use has been shown to be associated with secret cult activities in secondary schools and in most universities in Nigeria with an ultimate increase in crime rate [12]. Secret cults are "groups or organizations characterized by the use of secret initiations or other rituals, oaths, grips (or hand-claps) or signs of recognition between members, stating that the existence, motives, membership, activities, plans and rituals of such societies are usually kept secret and not revealed to non-members" [13]. With the report of increase in crime rate in Nigeria [2] and in Africa, rated as second highest in the world [14], research on psychoactive substance use among youth is essential. In addition, substance use has negative effect on societal values and ideals [12] as well as deleterious effects on academic performance and behaviour [11].

Although previous studies have been conducted on the prevalence and health effects of psychoactive substances among university students, research on users' associated financial expenditure as well as comparison of substance use between public and private universities is rare. Therefore this study assessed the prevalence of current psychoactive substance use, reason(s) for use, expenditure on the purchase of drugs, awareness of health risks associated with drug use and efforts made towards reducing substance use/quitting among undergraduate students of a public and a private university in south west Nigeria.

Material and methods

Participants

The study was carried out in two universities in south west Nigeria, namely University of Ibadan, Ibadan and Bowen University, Iwo. University of Ibadan (UI) is a public university which admits students from all parts of the country. It is located in Oyo State, south west Nigeria and was established in 1948. Bowen University Iwo is a privately-owned institution. It is located in Osun State, south west Nigeria and was established in 2002.

The total population of undergraduates was 40,000 in University of Ibadan and 5600 in Bowen University. The undergraduate students from five faculties (Arts, Agriculture, Social Sciences, Science, and Law) from second to terminal years were involved in the study. Only undergraduate students in the selected faculties and years of study who consented to participating in the study were sampled. First-year and postgraduate students were excluded from the study. The study was carried out between October 2017 and January 2018.

Sample size

The sample size was calculated for both institutions using total population of students in the selected faculties in second to terminal years of study. The 2200 of the 40,000 and 672 of 5600

undergraduate students in University of Ibadan and Bowen University respectively were selected according to the institutions' records. Using 2200 and 672 as population size of study, a sample size of 328 was calculated for University of Ibadan and 245 for Bowen University with the Raosoft calculator [15].

Sampling technique

The purposive sampling technique was used in order to conduct this study among students of the same faculties. Hence, the selected faculties were those available in the two institutions. The selected faculties represented each of the strata. Stratum 1 – Faculty of Arts, Stratum 2 – Faculty of Law, Stratum 3 – Faculty of the Social Sciences, Stratum 4 – Faculty of Agriculture and Stratum, 5 – Faculty of Science.

Two departments with the largest student population were selected in each faculty except from the Faculty of Law, which had just one department. Selection was based on the presence of the departments in both institutions. Selection of participants was systematic as every second student enrolled in class was approached for the study until the number assigned for each department was achieved.

Material/measures

The questionnaire was a modified WHO-validated self-administered Alcohol Smoking and Substance Involvement Screening Test (ASSIST) v 3.0 model [16]. ASSIST is a screening tool for clients about their lifetime use of psychoactive substance(s) and associated problems over the past 3 months [17]. It allows detection of a multiple substance user and it has provision of appropriate intervention [16], though in this study the risk scoring of ASSIST was not included. The other sections of the questionnaire which included sociodemographic, amount of money spent on substances and knowledge on health risk associated with substance use data were prepared by the authors. Questions on knowledge of health risk were prepared based on previous information on associated health risks of use of substances [18, 19].

The instrument, which comprised modified ASSIST and other questions, was assessed to ensure face validity by academic staff who specialised in pharmacy practice. It was then pre-tested among 30 participants (5% of total sample size) outside the sample pool. The pre-test questionnaire was piloted among 15 students from the Department of Sociology and 15 from the Department of Chemistry exempt from the study. After collection of the pilot data, certain modifications were made; the questions on involvement of parents or relative use of substances in the instrument were removed because many participants had left them unanswered.

Procedure

The students were approached in their lecture halls prior to the start of lecture and each participant's consent was sought before participating in the study. The administered questionnaire copies, filled within 15 to 20 minutes, were collected back immediately. The data were collected between October 2017 and January 2018.

Data analysis

The data were analysed with the SPSS version 23. Descriptive statistics were applied to assess prevalence of psychoactive substance use, reason(s) for use, awareness of health risks associated with substance use and efforts made towards reducing or quitting among the studied population. Chi square was applied to test for the association between gender and prevalence of substance use. Pearson correlation was employed to determine the relationship between monthly stipend and amount spent per month on substances among the participants and $p < 0.05$ was considered statistically significant.

Ethical approval was obtained from the UI/University College Hospital Ethics Committee. The approval number was UI/EC/17/0279.

Results

Participants demographic data in both institutions

The questionnaire was administered to 608 students and a total of 521 completed questionnaires were returned, giving a response rate of 85.7% (Table I). There were more females in the private university and most were in the range of 16-20 years of age. The average monthly stipends among the participants in the private university was $81.5 ± 106.3 while that of the public university was $47.0 ± 65.8. The monthly stipend

varied among the participants and was as low as $3.2 while some participants received $93.8 and more. Private university students were more likely to report receiving high stipends while the public university students were more likely to report a low stipend.

Prevalence of psychoactive substance use among participants

The total number of individuals who were current users of one or more psychoactive substances (i.e. used them within the last 30 days) was 157 (out of 316) in the public university and 73 (out of 205) in the private university with a prevalence rate of 49.7% and 35.6% in the public and private universities respectively. Most prevalent among study participants were mild stimulants (coffee, caffeine-containing substances) and alcoholic beverages. The use of remaining substances was confirmed by no more than 4% of the study participants. Details are shown in Table II. There were some significant differences between men and women in the prevalence of the studied psychoactive substances. Current users of mild stimulants among the students in the public university were 24.6% of males and 28.8% of females (p = 0.444), while those in the private university were 17.4% of males and 21.3% of females (p = 0.012). So female students from private university confirmed using mild stimulants significantly more often than male students. Alcoholic beverages were currently being used by 18.0% of males and 13.6% of females in the public and 14.5% of males and 8.8% of females in the private university. Use of tobacco was more common among the male participants in both institutions. None of the females at the public or private university confirmed the use of inhalants. Details in Table III.

Table I. Demographics of study participants

Variables	University	
	Public (n = 316)	Private (n = 205)
Sex* (N = 521)		
Male	183 (57.9%)	69 (33.7%)
Female	132 (41.8%)	136 (66.3%)
Age (years) (N = 521)		
16-20	158 (50%)	149 (72.7%)
21-25	142 (44.9%)	55 (26.8%)
> 26	16 (5.4%)	1 (0.5%)
Mean age (years)	20.5 (SD = ±2.4)	
Monthly stipend ($) ($n$ = 414)		
3.2-32	47 (19.8%)	20 (11.3%)
32.1-62.49	83 (35.0%)	52 (29.4%)
62.5-93.7	68 (28.7%)	46 (26.0%)
93.8 and above	39 (16.5%)	59 (33.3%)
Average monthly stipend	$47.0 ± 65.8	$81.5 ± 106.3

**One person – lack of data on sex.*

Table II. Prevalence of psychoactive substance use among participants from public (n = 316) and private (n = 205) universities

Substance	Current use (within the last 30 days)		Lifetime use (but stopped at least 30 days ago)		Never use	
	Public	Private	Public	Private	Public	Private
Tobacco products	11 (3.5%)	7 (3.4%)	13 (4.1%)	3 (1.5%)	283 (89.6%)	192 (96.1%)
Alcoholic beverages	51 (16.1%)	22 (10.7%)	21 (6.6%)	17 (8.3%)	244 (77.2%)	157 (76.6%)
Cannabis	8 (2.5%)	5 (2.4%)	7 (2.2%)	4 (2.0%)	291 (92.1%)	198 (96.6%)
Cocaine	5 (1.6%)	4 (2.0%)	1 (0.3%)	0 (0.0%)	302 (95.6%)	197 (96.1%)
Amphetamine type stimulants	4 (1.4%)	4 (2.0%)	3 (0.9%)	2 (1.0%)	297 (94.0%)	190 (92.7%)
Inhalants (nitrous, glue, petrol, paint thinner)	4 (1.3%)	3 (1.5%)	7 (2.2%)	2 (1.0%)	295 (93.4%)	194 (94.6%)
Tranquillisers or sleeping pills	9 (2.8%)	8 (3.9%)	13 (4.1%)	11 (5.4%)	282 (89.2%)	180 (87.8%)
Opioids	8 (2.5%)	4 (2.0%)	9 (2.8%)	5 (2.4%)	286 (90.5%)	187 (91.2%)
Mild stimulants (coffee, caffeine, kola nut)	73 (23.1%)	41 (20.0%)	34 (10.8%)	24 (11.7%)	181 (57.3%)	128 (62.4%)

Missing values ranged from 1.5% to 8.7%.

Table III. Prevalence of current psychoactive substance use by gender

Substance	Gender					
	Public University			Private University		
	Male (*n* = 183)	Female (*n* = 132)	*p*-value	Male (*n* = 69)	Female (*n* = 136)	*p*-value
Tobacco products	10 (5.4%)	1(0.8%)	0.028*	5 (7.2%)	2 (1.5%)	0.018*
Alcoholic beverages	33 (18.0%)	18 (13.6%)	0.218	10 (14.5%)	12 (8.8%)	0.245
Cannabis	5 (2.7%)	3 (2.3%)	1.000*	3 (4.3%)	2 (1.5%)	1.000*
Cocaine	4 (2.2%)	1(0.8%)	0.398*	4 (5.8%)	0 (0.0%)	0.012*
Amphetamine type stimulant	2 (1.1%)	2 (1.5%)	1.000*	2 (2.9%)	2 (1.5%)	1.000*
Inhalants (nitrous, glue, petrol, paint thinner)	4 (2.2%)	0 (0.0%)		3 (4.3%)	0 (0.0%)	
Sedatives or sleeping pills	5 (2.7%)	4 (3.0%)	1.000*	4 (5.8%)	4 (2.9%)	1.000*
Opioids	4 (2.2%)	4 (3.0%)	0.467*	2 (2.8%)	2 (1.5%)	1.000*
Mild stimulants (coffee, caffeine, kola nut)	45 (24.6%)	38 (28.8%)	0.444	12 (17.4%)	29 (21.3%)	0.012

*p-value – Pearson χ^2 and *Fisher's Exact test (with cells less than 5).*

Table IV. Reasons for consumption of psychoactive substances among users

Reasons for consumption	University		*p*-value
	Public (*n* = 157)	Private (*n* = 73)	
My friends and peer-groups do so	50 (31.8%)	11 (15.1%)	0.232
My parents take them	16 (10.2%)	9 (12.3%)	0.497
Family problems (e.g. family breakups, conflict with parents)	15 (9.6%)	5 (6.8%)	0.737
To stay awake (so as to read more)	75 (47.8%)	33 (45.2%)	0.805
Academic pressure	16 (10.2%)	22 (30.1%)	0.06
Curiosity about the substance	38 (24.2%)	15 (20.5%)	0.016
To feel high and get excited	11 (7.0%)	16 (21.9%)	0.850
Domestic matters (e.g. lack of school fees)	34 (21.7%)	22 (30.1%)	0.047

p-value – Pearson χ^2.

Reasons for consumption or abstinence from psychoactive substances

The study participants who use psychoactive substance most often answered they use them to stay awake to read more (Table IV). The importance of this reason is also indicated by the result showing that approximately half of them from both universities consumed mild stimulants mostly at night (the public university 48.2%, private 51.2%). Nicotine stimulant tobacco products were also mostly consumed at night by students in both institutions (the public university 54.5%, private 57.1%).

The influence of friends on substance use was also a factor common among the two universities. Moreover, approximately a quarter of students from the public university and 20.5% from a private university answered that they were curious about the substance. A significant reason, particularly for students from a private university (30.1%), was also the academic pressure (Table IV).

The main reason for abstinence from and/or quitting the use was awareness of health risks. This motive was reported by 96.8% of students in the public and 98.3% in the private university. Religious belief was also an important reason, with this answer chosen by 76.0% study participants in the public and 81.8% in the private university. The next important reason was that parents forbid the use of the substances (the public university – 60.4%, private university – 56.8% respondents). In comparison to reasons above, the cost of purchasing psychoactive substances was the least important, with this answer indicat-

Table V. Health effects of psychoactive substance experience by participants in the past three months

Effect of substances on health	University	
	Public (*n* = 157)	Private (*n* = 73)
Memory loss and reduced problem-solving ability, reduced cognitive function (e.g. difficulty in driving)	28 (11.5%)	6 (8.2%)
Anxiety, panic, depression and mood-swings	22 (14.0%)	19 (26.0%)
Elevated blood pressure, increased heart rate and breathing rate	14 (8.9%)	8 (10.5%)
Indigestion and stomach ulcers	12 (7.6%)	11 (15.0%)
Difficulty in sleeping (insomnia), disrupted sleep cycles	35 (22.2%)	21 (28.8%)
Increased aggressiveness and violent behaviour	18 (11.4%)	3 (4.1%)
Migraines or headaches	11 (7.0%)	6 (8.2%)
Psychosis from high doses	3 (1.9%)	0 (0.0%)
Numbness, tingling sensations and itchy skin	10 (6.3%)	7 (9.6%)
Abnormal increase in body temperature, shivering etc.	17 (10.8%)	7 (9.6%)

ed by 40% from the public and 31% from private university.

Health effects experienced by the users and the effort made to control or cut down their use

The responses from those who had experienced the health effects in the last three months or earlier are shown in Table V. Difficulty in sleeping (insomnia) and disrupted sleep cycles were found to be experienced by 22.2% of students from the public and 28.8% from private university. Moreover, 11.5% participants from public and 8.2% from private university experienced difficulties in cognitive functioning. Emotional problems like anxiety, panic, depression and mood swings were confirmed by 14% of the public university students and 26% of the private one, while fewer students reported aggression and violent behaviour (11.4% in the public and 4.1% in the private university). Somatic health problems indicated included elevated blood pressure, indigestion and stomach ulcers, migraines or headaches, numbness, tingling sensations, itchy skin and abnormal increases in the body temperature.

Efforts to control or cut down substance use were undertaken by most with exception of cannabis and mild stimulant users. Approximately 62% of students from the public and 58.5% from private university had never made an effort to cut down of mild stimulant use and 62.5% of students from the public and 60% from private university had never made an effort to cut down cannabis use. Details in Table VI.

Table VI. Efforts made by users to control or cut down the use of psychoactive substances

Substance	University	
	Public (*n* = 157)	Private (*n* = 73)
Tobacco products	7 (63.6%)	7 (100.0%)
Alcoholic beverages	26 (49.1%)	13 (59.1%)
Cannabis	3 (37.5%)	2 (40.0%)
Cocaine	3 (60.0%)	3 (75.0%)
Amphetamine type stimulant	4 (100.0%)	3 (75.0%)
Inhalants	3 (75.0%)	1 (33.3%)
Sedatives or sleeping pills	6 (66.7%)	6 (75.0%)
Opioids	6 (75.0%)	3 (75.0%)
Mild stimulants	28 (38.4%)	17 (41.5%)

Percentages (%) calculated based on numbers of users.

Respondents' knowledge of health risk of psychoactive substance use and sources of information

The results of respondents' reported knowledge on the health effects of substance use are shown in Table VII. Some of the participants showed good knowledge across the two institutions. At least half of the participants confirmed that the use of psychoactive substances may cause the problems mentioned in the survey. The lowest number of respondents was of the opinion that the use of psychoactive substances can reduce sexual performance and sexual desire. Interestingly, the existence of risk associated with the use of psychoactive substances was more often confirmed by

Table VII. Respondents' knowledge of health risks of psychoactive substance use

Health risk of substance use	Public university (*n* = 316)	Private university (*n* = 205)
It can reduce sexual performance and sexual desires	123 (39.0%)	77 (37.6%)
It can lead to memory loss and reduced problem-solving ability	197 (62.3%)	154 (75.1%)
It can lead to anxiety, panic, depression and mood-swings	214 (67.7%)	168 (82.0%)
It can lead to high blood pressure and increased heart rate	197 (62.3%)	144 (70.2%)
It can cause indigestion and stomach ulcer	165 (52.2%)	114 (70.2%)
It can lead to difficulty in sleeping	201 (63.6%)	157 (76.6%)
It can increase aggressiveness and violent behaviour	210 (66.4%)	161 (78.5%)
It can lead to psychosis from high doses	191 (60.4%)	149 (72.7%)
It can cause numbness, tingling sensations and itchy skin	172 (54.4%)	127 (62.0%)
It can lead to sudden death from heart problems	195 (61.7%)	149 (72.6%)
It can cause abnormal increase in body temperature, shivering etc.	187 (59.2%)	127 (62.0%)

The percentage of missing data was high and amounted to approximately 25%.

Table VIII. Monthly average amount spent on psychoactive substances among users

Substance	Public university (*n* = 157)	Private university (*n* = 73)
Tobacco products	8.1 ± 7.8	11.0 ± 14.5
Alcoholic beverages	9.1 ± 12.2	18.6 ± 22.3
Cannabis	10.3 ± 11.6	10.4 ± 4.3
Cocaine	6.2 ± 8.6	5.3 ± 4.3
Amphetamine type stimulants	11.3 ± 10.2	12.0 ± 12.1
Inhalants (nitrous, glue, petrol, paint thinner)	13.4 ± 5.2	12.4 ± 6.3
Sedatives or sleeping pills	7.2 ± 4.6	13.9 ± 14.5
Opioids	18.1 ± 24.6	16.3 ± 25.2
Mild stimulants (coffee, caffeine, kola nut)	3.1 ± 5.6	1.9 ± 3.2
Grand total spent monthly by users	7.7 ± 11.5	12.4 ± 15.3

Total expenditure on substances monthly significantly correlate with the participants' monthly stipend (Pearson product correlation: r = 0.344, p = 0.02).

respondents from the private university. For example, the risk of anxiety, panic attacks, depression and mood swings was indicated by 67.7% of students from the public and 82% from the private university. It is worth mentioning that the percentage of missing data for this question was around 25%, which suggests poor access to health information among a large proportion of students.

Information on the health effects of substance use and treatment of drug use problems was received by the participants from different sources. The major ones were social media/internet (indicated by approximately 40% of students of both the public and private university); television or radio or newspaper (approximately 33% of students) and a drug information centre (approximately 9% of students). Some differences were also detected as respondents from the public university more often indicated the university health clinic as a source of information (23.7% *vs.* 17.6%).

Expenditure on psychoactive substances among the users

The monthly average amount spent on each substance was calculated across the number of users of each substance and for both universities (Table VIII). Total monthly expenditure on substances significantly correlate with the participants' per month stipend. In the private university, the average amount spent on substance use ranged from $3.1 to $18.1 with an average total of 12.4 ± 15.3 per month, which is similar to that of their

counterparts in the public university ($1.9 to $18.6 with an average total of 7.7 ± 11.5). Participants spent more on alcohol than any other substance but opioids are the most expensive substances used by study participants.

Total monthly amounts spent on substances significantly correlate with the participants' monthly stipend (Pearson product correlation: $r = 0.344$, $p = 0.02$).

■ Discussion

The consumption of mild stimulants and alcoholic beverages among undergraduates obtained in this study has been reported by previous studies in Nigeria and other countries [4, 12, 20, 21]. However, the prevalence of current users of these two substances in this study is much lower compared to 72% alcohol and 69% stimulants prevalence reported among undergraduates in private universities by Adekeye *et al.* [4], and 34.3% alcohol and 29.8% mild stimulants use reported by Uchendu and Ukonu [22] among students of a public university in north central Nigeria. A study in Nigeria among students of a public university also reported high prevalence of current users of alcohol (25.9%) and stimulants (43.2%) [20]. In this study, use of most psychoactive substances was more common among the male participants as also reported in previous studies among undergraduates in Nigeria [4, 9] and other parts of Africa [23, 24]. Two-thirds of the participants in the private university were females, which could account for a lower prevalence of substance use in the private university. The use of cocaine and tobacco was relatively common among the male participants of the two institutions in this study. In this part of Nigeria, the use of cigarettes and alcohol by women is still not culturally accepted by society and this could probably explain the difference in the prevalence observed among the gender. Nevertheless, a significant number of females in the private university in this study consumed mild stimulants, and the number was greater than for their male counterparts.

The reasons for use of psychoactive substances by the respondents varied. Most of those using stimulants did so to stay alert to read and because of academic pressure as reported in particular by students from the private university. This also corresponded to the mostly nocturnal consumption pattern. Other reasons for substance use common to both institutions included peer group influence, curiosity and reduction of stress related to family problems. These factors are primarily the problems of adolescents. These have been shown by past studies among undergraduates in Nigeria to be common reasons for substances use [11, 20]. The concern on use of psychoactive substances among the students is due to future risk of using more dangerous hard drugs and/or associated crimes [2, 25, 26].

The monthly stipend mostly reported by the respondents from the public institution was lower than that of the private institution because private university students are mostly children of middle or upper-class earners. This disparity possibly influenced the total monthly average expenditure on these substances as the average recorded for the public was lower than that of the private institution. In both institutions, the monthly stipend correlated with the expenditure on substances consumed by participants – the higher their monthly stipend, the greater the expenditure on substances. Higher income is, therefore, a factor that increases psychoactive substance use, as reported among some undergraduates of universities in Africa [26, 27] and among adolescents in other parts of the world [23]. Base on this finding, it is therefore suggested that parents should reduce or regulate the amount of stipend sent to their children/wards who do not live with them.

Most of the participants abstained from psychoactive substances at the time of the study due to their awareness of associated health risks, which is reflected in their knowledge of the health effects of substances. Moreover, religious beliefs and knowledge of health risk of substances play a major role in abstinence. Results related to students' knowledge on substance use consequences agreed with Awosusi and Adegboyega's [8] study, which reported good knowledge of health risk of substances among students of tertiary institutions in south west Nigeria [8]. Most of the respondents showed awareness that substance use can lead to an increase in aggressiveness and violent behaviour but the respondents were mostly unaware of reduction in sexual performance and sexual libido. However, despite having knowledge of the health effects of substance use, there was little effort to cut down or control use of, especially, mild stimulants, alcohol and cannabis;

more than half of users had never made an effort to cut down or quit. These results are, however, not surprising as knowledge about the harmfulness of substances has little effect on user's behaviour in terms of quitting [28, 29]. In addition, similar behaviour was reported by Awosusi and Adegboyega among the students of tertiary institutions in south west Nigeria [8]. This result reflects the poor attention to health effect, which should have been prioritised rather than reasons given by most participants for continuing consumption, such as, to stay awake in order to read, academic pressures, stress at home, inability to pay fees and curiosity about the drug.

Many reports have shown an increase in access and use of social media among youth worldwide [30, 31]. This could account for why the majority of the participants reported social media as the source of information on the health risks of substance use. In addition, efforts should be made to increase the campaign against substance use via their campus radio stations.

The most common substances used by the participants were mild stimulants. Some of the respondents reported knowledge about the risks associated with psychoactive substance use but a high percentage of missing data may indicate a lack of such knowledge in some respondents.

Limitations to the study. The results of the study cannot be generalised for the country because the study was only carried out in two universities in the south west region of Nigeria. Purposive sampling was used, which limited the respondent sample size. Therefore, the number of participants might not have fully represented the entire population of undergraduates in Nigerian universities.

■ Conclusions

Considering that awareness of health effects motivates students to abstain, educational programmes that are targeted at reducing psychoactive substance use among these undergraduate students are required. These should be planned, developed and implemented by all university community stakeholders.

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Conflict of interest/Konflikt interesów

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Not declare./Nie zadeklarowano.

Ethics/Etyka

The work described in this article has been carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki) on medical research involving human subjects, Uniform Requirements for manuscripts submitted to biomedical journals and the ethical principles defined in the Farmington Consensus of 1997.

Treści przedstawione w pracy są zgodne z zasadami Deklaracji Helsińskiej odnoszącymi się do badań z udziałem ludzi, ujednoliconymi wymaganiami dla czasopism biomedycznych oraz z zasadami etycznymi określonymi w Porozumieniu z Farmington w 1997 roku.

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