Predictors of substance use among medical students in southern Nigeria.

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Abstract

Background: Psychoactive substance use among medical students is a significant public health concern given the unique and cumulative stressors of medical education and its implications for patient safety and healthcare delivery. Nigeria bears a disproportionately high national burden of substance use, with approximately 14.3 million people estimated to have used a psychoactive substance in the past year, as of 2019. Objectives: To determine the sociodemographic predictors of tobacco, alcohol, cannabis, amphetamine, tranquilizer, sedative, and opiate use among medical students at Ambrose Alli University (AAU), Ekpoma, Edo State, Nigeria, across lifetime, past-year, and current timeframes. Methods: A cross-sectional descriptive study was conducted among 370 pre-clinical and clinical medical students of AAU and the Irrua Specialist Teaching Hospital. Data were collected using a self-administered modified WHO Student Drug Use Survey Questionnaire. Bivariate associations between substance use and sociodemographic variables including gender, age, social class, academic level, religion, religiosity, monthly allowance, parental substance use, and geopolitical zone were examined using chi-square and Fisher's exact tests ($p \leq 0.05$).Results: Significant predictors of cigarette use included male gender, advancing age, clinical-year status, and lower religiosity. Alcohol use was significantly associated with age group, social class, monthly allowance, parents' marital status, and geopolitical zone. Parental substance use exerted a strong intergenerational influence, with maternal alcohol use and paternal cigarette smoking, each significantly associated with corresponding use in students. A pronounced polydrug pattern emerged, with co-use of cigarettes, cannabis, amphetamines, and opioids occurring almost exclusively among lifetime alcohol users. Conclusion: Male gender, older age, clinical-year status, middle social class, geopolitical origin, lower religiosity, and parental substance use are key predictors of psychoactive substance use among medical students in southern Nigeria. These findings highlight the need for routine confidential screening, targeted peer-led prevention programmes, and accessible mental health services within medical training institutions.

Keywords: *Psychoactive substance use, medical students, predictors, Nigeria, alcohol*

Introduction

Psychoactive substance use among medical students is a recognized public health concern that sits at the intersection of individual vulnerability and structural risk. Nigeria bears a disproportionately high national burden, with the 2018 National Drug Use Survey estimating that 14.4% of Nigerians aged 15 to 64, approximately 14.3 million people, had used a psychoactive substance in the past year, a rate more than twice the global average, with cannabis, tramadol, and codeine-containing preparations the most commonly reported.[1] The consequences extend beyond the individual, with addiction, psychiatric morbidity, and impaired professional function directly threatening the quality of healthcare delivery.[2–4]

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Understanding who uses substances and why requires attention to the sociodemographic landscape in which use occurs. Gender is one of the most consistently reported predictors, with male medical students reporting substantially higher rates of alcohol, tobacco, and illicit drug use across settings in West Africa and beyond.[5–7] Sociocultural norms in Nigeria that stigmatize overt substance use by women help explain this disparity, though evidence increasingly suggests the gender gap may be narrowing, particularly for alcohol.[8,9]

Social class and economic resources have received less systematic attention in Nigerian medical student research, despite strong theoretical grounds for their role. Middle and upper social class confers both the financial means to access substances and the social opportunity for use in recreational settings.[10,11] Religiosity, by contrast, functions as a protective factor, with highly religious

students consistently reporting lower prevalence of tobacco and alcohol use in African university populations.[12] The geopolitical dimension of substance use in Nigeria is also important, as cultural attitudes toward alcohol vary markedly across the country's six geopolitical zones.[13,14]

The role of parental substance use in shaping the behaviour of their children through family modelling and social learning is well established in the substance use literature, yet intergenerational analyses remain rare in Nigerian medical student studies.[15,16] Families transmit not only genetic predispositions but attitudes, norms, and observed behaviours that influence whether young people perceive substance use as acceptable, normal, or risky. Multiple substance use, in which alcohol functions as a gateway to subsequent use of other substances, is a further dimension of substance use epidemiology with important implications for prevention targeting.[17]

This study was conducted to fill a gap in the literature by simultaneously examining gender, age, social class, religiosity, geopolitical origin, family structure, parental substance use, and monthly allowance as predictors of tobacco, alcohol, cannabis, amphetamine, tranquilizer, sedative, and opiate use among 370 medical students at Ambrose Alli University, Ekpoma, Edo State, Nigeria.

Materials and Method

Study Design and Setting

This was a cross-sectional descriptive study examining the prevalence, patterns, and sociodemographic predictors of psychoactive substance use among medical students of Ambrose Alli University, Ekpoma, Edo State, Nigeria.

Study Area

The study was conducted at the College of Medicine, Ambrose Alli University (AAU), Ekpoma, and the Irrua Specialist Teaching Hospital (ISTH), Irrua, both in Edo State, Nigeria. Ekpoma is situated in the South-South geopolitical zone, approximately 100 kilometres from Benin City. Pre-clinical medical training (years 1 to 3) is carried out on the main university campus in Ekpoma, while clinical training (years 4 to 6) takes place at ISTH, Irrua.

Study Population and Sampling

All consenting medical students enrolled in the pre-clinical and clinical programmes (200 to 600 level) were eligible to participate. Although a minimum sample size of 196 was calculated using the formula $n = Z^2pq/d^2$, based on a previously reported lifetime substance use prevalence of 85% among Nigerian medical students, a 95% confidence interval, and a precision level of 0.05, the decision was taken to include all available students to minimize sampling error and maximize representativeness. Following exclusion of students who declined consent or were unable to participate due to illness, 370 students completed usable questionnaires and were included in the analysis.

Instrument

Data were collected using a modified version of the World Health Organization (WHO) Student Drug Use Survey Questionnaire, originally developed by the WHO in collaboration with the United Nations Fund for Drug Abuse Control.[18] The instrument is a self-administered questionnaire validated for use across diverse sociocultural settings, with pilot studies in Nigeria demonstrating high reliability and validity.[19]

Data Collection

A pilot study was first conducted with 38 students drawn from the target population. Questionnaires were administered to students in each class during free periods. Students were requested to complete the questionnaires independently, without discussing their responses with peers. All questionnaires were collected immediately upon completion. To preserve confidentiality, no names or matriculation numbers were recorded.

Data Analysis

Data were entered and analyzed using SPSS version 25.0. Descriptive statistics were used to summarize prevalence rates and sociodemographic characteristics. Bivariate associations between substance use and categorical variables were examined using the chi-square test; Fisher's exact test was applied where expected cell frequencies were less than 5. A p-value of ≤ 0.05 was considered statistically significant.

Ethical Considerations

Written ethical approval was obtained from the Health Research and Ethics Committee before commencement of the study. Written informed consent was obtained from each participant. Participation was entirely voluntary, and all data were handled in strict confidence.

Results

Predictors of Cigarette Use (Table 1, Figure 1)

Lifetime cigarette use was reported by 49 (13.2%) males compared to 10 (2.7%) females, a statistically significant difference ($\chi^2 = 10.186$, $p = 0.02$). Past year use was also significantly higher in males, 17 (4.6%) versus 3 (0.8%)

(χ^2 = 3.761, p = 0.038). Prevalence increased progressively with age, from 8 (9.0%) among those aged 16 to 20 years to 21 (23.6%) among those older than 25 years. Religiosity showed a significant association (χ^2 = 6.65, p = 0.036), with 17 (26.6%) of students who were just religious reporting lifetime use compared to 42 (13.8%) who were very religious. Clinical students reported significantly higher past-year use than preclinical students, 15 (8.6%) versus 5 (2.6%) (χ^2 = 6.641, p = 0.019).

Table 1: Factors Associated with Cigarette Use (N = 370)

Factors	Lifetime (%)	Past Year (%)	Current (%)
Gender			
Male	49 (13.2)*	17 (4.6)*	8 (2.2)
Female	10 (2.7)	3 (0.8)	3 (0.8)
Age Group (years)			
16–20	8 (2.2)	3 (0.8)	2 (0.5)
21–25	30 (8.0)	11 (3.0)	5 (1.4)
>25	21 (5.7)	6 (1.6)	4 (1.1)
Social Class			
Upper	25 (6.8)	6 (1.6)	3 (0.9)
Middle	25 (6.8)	10 (2.7)	7 (1.9)
Low	6 (1.6)	3 (0.8)	1 (0.3)
Academic Level			
Pre-Clinical	27 (7.3)	5 (1.4)	4 (1.1)
Clinical	32 (8.6)	15 (4.1)*	7 (1.9)
Religiosity			
Very Religious	42 (11.4)	12 (3.2)	8 (2.2)
Just Religious	17 (4.6)*	8 (2.2)	3 (0.8)
Not Religious	0 (0.0)	0 (0.0)	0 (0.0)
Parents' Marital Status			
Married	46 (12.4)	12 (3.2)	7 (1.9)
Separated/ Divorced	2 (0.5)	1 (0.3)	0 (0.0)
One or Both Dead	11 (2.9)	7 (1.9)	4 (1.1)
Geopolitical Zone			
South-South	48 (13.0)*	15 (4.1)	8 (2.2)
South-West	2 (0.5)	0 (0.0)	0 (0.0)
South-East	9 (2.4)	5 (1.4)	3 (0.8)
North-Central	0 (0.0)	0 (0.0)	0 (0.0)

**** Statistically significant (p < 0.05). Cells show n (%).***

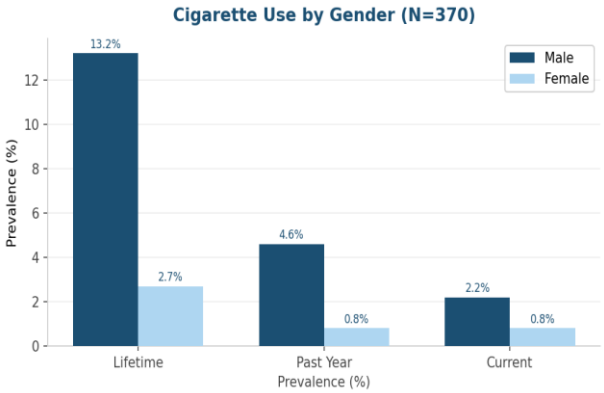

Figure 1: Cigarette use prevalence by gender across lifetime, past-year, and current time frames (N = 370).

Table 2: Factors Associated with Alcohol Use (N = 370)

Factors	Lifetime (%)	Past Year (%)	Current (%)
Gender			
Male	150 (40.5)	106 (28.6)	63 (17.0)*
Female	80 (21.6)	61 (16.5)	15 (4.1)
Age Group (years)			
16–20	31 (8.4)	27 (7.3)	14 (3.8)
21–25	132 (35.6)*	94 (25.4)*	39 (10.5)*
>25	67 (18.1)	46 (12.4)	25 (6.8)
Social Class			
Upper	92 (24.9)	62 (16.7)	36 (9.7)
Middle	104 (28.1)*	79 (21.3)*	32 (8.7)*
Low	22 (5.9)	18 (4.9)	9 (2.4)
Academic Level			
Pre-Clinical	123 (33.2)	91 (24.6)	42 (11.4)
Clinical	107 (28.9)	76 (20.5)	36 (9.7)
Monthly Allowance (₦)			
<₦50,000	125 (33.7)*	92 (24.9)	43 (11.6)*
₦50,000–75,000	50 (13.5)	34 (9.2)	21 (5.7)
₦80,000–100,000	22 (6.0)	19 (5.1)	1 (0.3)
>₦100,000	33 (8.9)	22 (5.9)	13 (3.5)
Parents' Marital Status			
Married	188 (50.8)	142 (38.4)	70 (18.9)*
Separated/ Divorced	11 (3.0)	5 (1.3)	3 (0.8)
One or Both Dead	31 (8.4)	20 (5.4)	5 (1.4)
Geopolitical Zone			
South-South	171 (46.1)*	124 (33.5)*	56 (13.4)
South-West	35 (9.5)	26 (7.0)	13 (3.5)
South-East	19 (5.1)	13 (3.5)	7 (1.9)
North-Central	7 (1.9)	4 (1.1)	2 (0.5)

** Statistically significant (p < 0.05). Cells show n (%).*

Predictors of Alcohol Use (Table 2, Figure 2)

Lifetime alcohol use was strongly associated with age group (χ^2 = 15.358, p = 0.002), rising from 31 (34.8%) among those aged 16 to 20 years to 67 (75.3%) among those older than 25 years. Social class demonstrated a highly significant association (χ^2 = 28.05, p < 0.001), with upper- and middle-socioeconomic class students reporting markedly higher lifetime use than lower socioeconomic class students. Monthly allowance and geopolitical zone were also significantly associated with alcohol use across selected timeframes. Current use was significantly higher among males, 63 (17.0%) versus 15 (4.1%) (χ^2 = 11.665, p = 0.005). Parents' marital status was significant for current alcohol use (χ^2 = 18.311, p = 0.001).

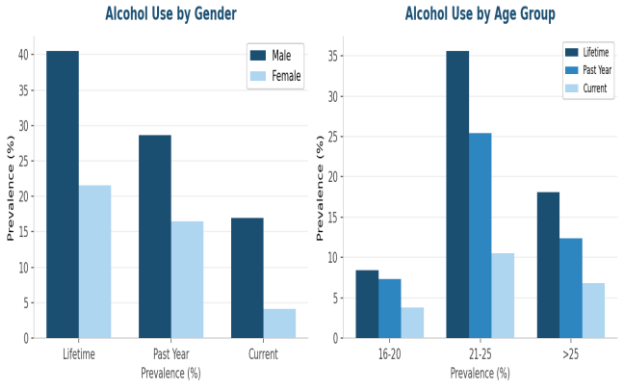

Figure 2: Alcohol use by gender (left) and by age group (right) across all time frames (N = 370).

Predictors of Cannabis, Amphetamine, and Tranquilizer Use (Tables 3–5, Figure 3)

Males reported higher lifetime cannabis use, 17 (4.7%) versus 4 (1.1%) in females, though gender differences were not statistically significant. Lifetime use was highest among students aged 21 to 25 years at 15 (7.8%). Social class, academic level, religion, monthly allowance, parents' marital status, hostel residence, religiosity, and geopolitical zone were not significantly associated with cannabis use.

Males and older students reported higher lifetime amphetamine use, though most differences were not statistically significant. Parents' marital status was the only significant correlate (χ^2 = 9.59, p = 0.008), with the highest prevalence among students from separated or divorced families.

No current tranquilizer use was recorded. Lifetime use was significantly higher among clinical students, 19 (10.9%) versus 6 (3.1%) (χ^2 = 9.035, p = 0.005). Religiosity was also significant (χ^2 = 18.26, p < 0.001), with a higher prevalence among students who were just religious. Parents' marital status was significantly associated (χ^2 = 6.53, p = 0.038).

Factors	Lifetime (%)	Past Year (%)	Current (%)
Gender			
Male	17 (4.7)	7 (1.9)	4 (1.1)
Female	4 (1.1)	1 (0.3)	1 (0.3)
Age Group (years)			
16–20	2 (0.5)	0 (0.0)	0 (0.0)
21–25	15 (4.1)	5 (1.4)	3 (0.8)
>25	4 (1.1)	3 (0.8)	2 (0.5)
Social Class			
Upper	7 (1.9)	2 (0.5)	0 (0.0)
Middle	10 (2.9)	5 (1.4)	4 (1.1)
Low	4 (1.1)	1 (0.3)	1 (0.3)
Academic Level			
Pre-Clinical	10 (2.7)	3 (0.8)	2 (0.5)
Clinical	11 (3.0)	5 (1.4)	3 (0.8)
Geopolitical Zone			
South-South	15 (4.1)	6 (1.6)	3 (0.8)
South-West	2 (0.5)	0 (0.0)	0 (0.0)
South-East	4 (1.1)	2 (0.5)	2 (0.5)

No statistically significant associations observed. Cells show n (%).

Table 4: Factors Associated with Amphetamine Use (N = 370)

Factors	Lifetime (%)	Past Year (%)	Current (%)
Gender			
Male	15 (4.1)	3 (0.8)	2 (0.5)
Female	6 (1.6)	1 (0.3)	0 (0.0)
Age Group (years)			
16–20	2 (0.5)	0 (0.0)	0 (0.0)
21–25	11 (3.0)	2 (0.5)	1 (0.3)
>25	8 (2.2)	2 (0.5)	1 (0.3)
Parents' Marital Status			
Married	14 (3.8)	3 (0.8)	2 (0.5)
Separated/ Divorced	4 (2.2)*	1 (0.3)	0 (0.0)
One or Both Dead	3 (0.8)	0 (0.0)	0 (0.0)

**** Statistically significant (p < 0.05). Cells show n (%).***

Table 5: Factors Associated with Tranquilizer Use (N = 370)

Factors	Lifetime (%)	Past Year (%)	Current (%)
Gender			
Male	20 (5.4)	8 (2.2)	0 (0.0)
Female	5 (1.4)	4 (1.1)	0 (0.0)
Academic Level			
Pre-Clinical	6 (1.6)	4 (1.1)	0 (0.0)
Clinical	19 (5.1)*	8 (2.2)	0 (0.0)
Religiosity			
Very Religious	14 (3.8)	7 (1.9)	0 (0.0)
Just Religious	11 (3.0)*	5 (1.4)	0 (0.0)
Parents' Marital Status			
Married	19 (5.1)	9 (2.4)	0 (0.0)
Separated/Divorced	4 (1.1)*	2 (0.5)	0 (0.0)
One or Both Dead	2 (0.5)	1 (0.3)	0 (0.0)

**** Statistically significant (p < 0.05). No current use recorded. Cells show n (%).***

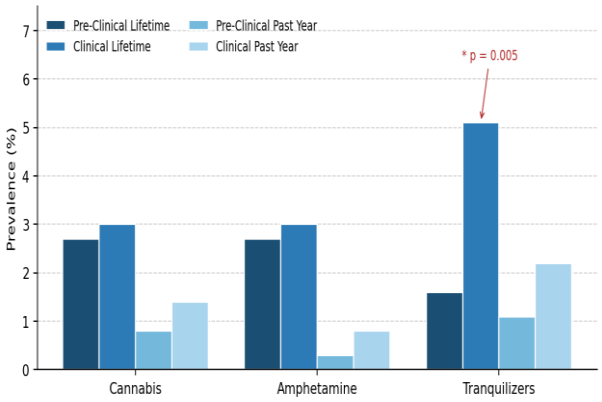

Figure 3: Cannabis, amphetamine, and tranquilizer use by academic level (pre-clinical vs clinical) across lifetime and past-year timeframes. Asterisk (*) denotes significant difference for tranquilizer lifetime use (p = 0.005).

Multiple substance Use: Association Between Lifetime Alcohol Use and Other Substances (Table 6, Figure 4)

There was a significant association between lifetime alcohol use and lifetime cigarette ($\chi^2 = 41.311$, $p < 0.001$), cannabis ($\chi^2 = 13.734$, $p < 0.001$), amphetamine ($\chi^2 = 13.484$, $p < 0.001$), and opioid use ($\chi^2 = 6.168$, $p = 0.008$). Co-use occurred almost exclusively among alcohol users. Associations with tranquilizers and sedatives were not statistically significant.

Table 6: Association Between Lifetime Alcohol Use and Other Substances (N = 370)

Substance Pair	Alcohol Users Co-using (%)	Non-Users Co-using (%)	p-value
Alcohol × Cigarette	59 (15.9)	0 (0.0)	<0.001*
Alcohol × Cannabis	21 (5.7)	0 (0.0)	<0.001*
Alcohol × Amphetamine	21 (5.7)	0 (0.0)	<0.001*
Alcohol × Tranquilizer	17 (4.6)	8 (2.2)	0.360
Alcohol × Sedatives	2 (0.5)	4 (1.1)	0.390
Alcohol × Opioids	10 (2.7)	0 (0.0)	0.008*

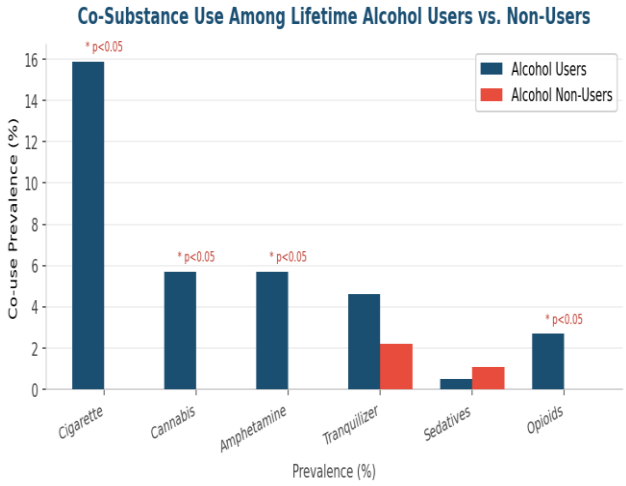

Figure 4: Co-substance use among lifetime alcohol users vs. non-users. Asterisks (*) denote significant associations (p < 0.05).

Drug Use Comparison: Pre-Clinical versus Clinical Students (Table 7, Figure 5)

Prevalence was broadly similar between groups, with two significant differences. Past year cigarette use was higher among clinical students, 15 (8.6%) versus 5 (2.6%) ($\chi^2 = 6.641$, $p = 0.019$). Lifetime tranquilizer use was also significantly higher among clinical students, 19 (10.9%) versus 6 (3.1%) ($\chi^2 = 9.035$, $p = 0.005$). Alcohol, cannabis, amphetamine, sedative, and other opiate use did not differ significantly between groups.

Table 7: Drug Use Comparison: Pre-Clinical vs. Clinical Medical Students (N = 370)

Drug	Lifetime Pre-Clin (%)	Lifetime Clinical (%).	Past Year Pre-Clin (%)	Past Year Clinical (%)	Past Month Pre-Clin (%)	Past Month Clinical (%)
Cigarette	27 (7.3)	32 (8.6)	5 (1.4)	15 (4.1)*	4 (1.1)	7 (1.9)
Alcohol	123 (33.4)	107 (29.1)	91 (24.6)	76 (20.5)	42 (11.4)	36 (9.7)
Cannabis	10 (2.7)	11 (3.0)	3 (0.8)	5 (1.4)	2 (0.5)	3 (0.8)
Amphetamine	10 (2.7)	11 (3.0)	1 (0.3)	3 (0.8)	0 (0.0)	2 (0.6)
Tranquilizers	6 (1.6)	19 (5.1)*	4 (1.1)	8 (2.2)	0 (0.0)	0 (0.0)
Sedatives	3 (0.8)	3 (0.8)	3 (0.8)	3 (0.8)	2 (0.5)	2 (0.5)
Other Opiates	4 (1.1)	6 (1.6)	2 (0.5)	4 (1.1)	2 (0.5)	2 (0.5)

**** Statistically significant (p < 0.05). Other Opiates include pethidine, codeine, morphine, and methadone. Cells shown (%).***

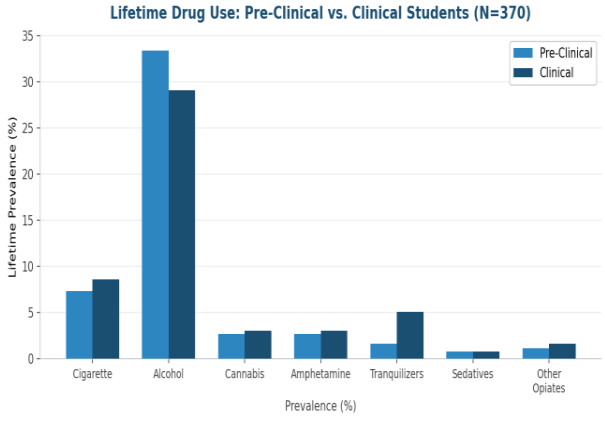

Figure 5: Lifetime drug use prevalence comparing pre-clinical and clinical medical students (N = 370).

Parental Drug Use and Respondents' Drug Use (Table 8, Figure 6)

Father's alcohol use was strongly associated with lifetime cigarette use in respondents ($\chi^2 = 41.063$, $p < 0.001$), though not significantly associated with respondents' alcohol use at any timeframe. Mother's alcohol use showed significant associations with respondents' lifetime, past year, and current alcohol use, as well as lifetime cigarette and lifetime cannabis use. Father's cigarette smoking was significantly associated with respondents' alcohol use across all timeframes and with lifetime cigarette and cannabis use.

Table 8: Parents' Drug Use and Selected Respondent Drug Use (N = 370)

Respondent Drug Use	Parent Yes n(%)	Parent No n(%)	chi-sq	p-value
(A) Father's Alcohol Use				
Lifetime cigarette use	29 (7.8)	19 (5.1)	41.063	<0.001*
Lifetime alcohol use	106 (28.6)	105 (28.4)	4.816	0.077
(B) Mother's Alcohol Use				
Lifetime alcohol use	38 (10.3)	182 (49.2)	10.970	0.001*
Past year alcohol use	30 (8.1)	133 (35.9)	6.566	0.003*
Current alcohol use	14 (3.8)	64 (17.3)	6.996	0.030*
Lifetime cigarette use	19 (5.1)	38 (10.3)	26.260	0.001*
Lifetime cannabis use	7 (1.9)	12 (3.3)	9.561	0.016*
(C) Father's Cigarette Use				
Lifetime alcohol use	48 (13.0)	175 (47.3)	12.567	0.005*
Past year alcohol use	32 (8.7)	131 (35.4)	10.958	0.003*
Current alcohol use	14 (3.8)	64 (17.3)	5.878	0.018*
Lifetime cigarette use	22 (6.0)	34 (9.2)	18.567	0.001*
Lifetime cannabis use	9 (2.4)	12 (3.3)	9.558	0.033*

**** Statistically significant (p < 0.05). Cells show n (%).***

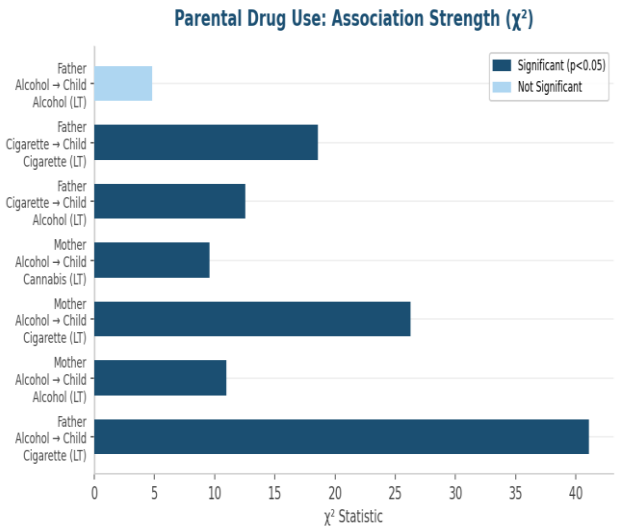

Figure 6: Strength of association (chi-square) between parental drug use and respondent drug use. Dark bars = significant ($p < 0.05$).

Discussion

This study identified a consistent set of sociodemographic predictors of psychoactive substance use among 370 medical students at Ambrose Alli University, Ekpoma. Among the most robust findings was the gender differential: males reported significantly higher lifetime and past-year cigarette use and significantly higher current alcohol use than females. This pattern has been documented in comparable Nigerian university populations, with Agbo et al.[20] in Anambra State and Igirigi[21] in Bayelsa both reporting a consistent male predominance across drug categories. The social disapproval of visible substance use among women in Nigerian culture contributes to this disparity both through genuine behavioural differences and through differential underreporting among female respondents. The public health concern, however, is not simply the current gap but its trajectory: as female medical students increasingly enter clinical environments with comparable occupational stressors to their male peers, convergence in alcohol and tobacco use patterns can be anticipated.

Age emerged as a strong and monotonic predictor. Students older than 25 years reported cigarette use nearly three times higher than the youngest age group and alcohol use more than double the rate of those aged 16 to 20 years. Idoko et al.[5] in a study of University of Nigeria medical students similarly found that advancing age was a significant correlate of current substance use, noting that the cumulative exposure to academic and financial stressors over successive years of training likely underpins this dose-response pattern. Academic level reinforced the age finding: clinical students reported significantly higher past-year cigarette use and lifetime tranquilizer use than preclinical peers. The clinical environment itself may introduce specific risk factors including proximity to prescription medications, exposure to occupational trauma, and the erosion of help-seeking due to professional identity pressures.

Social class showed an unexpected and important non-linear relationship with alcohol use. Middle-class students recorded the highest lifetime alcohol prevalence, surpassing even their upper-class counterparts. This finding challenges the commonly held assumption that substance use risk increases linearly with economic disadvantage. Moderate financial capacity appears to represent an optimal risk profile for alcohol use, conferring sufficient disposable income for recreational drinking while lacking the social distancing from peer-group drinking norms that may characterize the wealthiest students. Gajda et al.[22] in a Polish medical student cohort similarly found socioeconomic variables to be among the most significant structural predictors of alcohol consumption, with middle-income students reporting the most hazardous patterns. Monthly allowance showed parallel associations with alcohol use in the present study, with the highest prevalence among students reporting the lowest allowance band, possibly reflecting home-brewed or inexpensive alcohol consumption in that group.

Geopolitical zone was a statistically significant predictor of alcohol use, with South-South students reporting the highest rates. Cultural permissiveness toward alcohol consumption differs substantially across Nigeria's geopolitical zones, with traditional fermented beverages deeply integrated into social and ceremonial life in many South-South communities. Metuge et al.[23] in Cameroon similarly found regional and ethnic cultural factors to be significant determinants of alcohol use in tertiary institution students, independent of socioeconomic status. Religiosity functioned as a protective factor for both cigarette and tranquilizer use: students who identified as just religious reported significantly higher prevalence than those who were very religious, suggesting that the intensity of religious engagement, rather than mere affiliation, is the operative variable. This is consistent with the broader African and global literature on religiosity as a buffer against substance use.[24–26]

The parental substance use findings constitute one of the most analytically distinct contributions of this study. Maternal alcohol use was the single strongest predictor of respondents' own alcohol use across all three timeframes, with children of mothers who drink alcohol

reporting more than four times the lifetime alcohol prevalence of those whose mothers do not. Paternal cigarette smoking was independently associated with respondents' alcohol use, cigarette use, and cannabis use, suggesting cross-substance intergenerational pathways beyond simple substance-specific modelling. These findings align with social learning theory, in which parental behaviour shapes children's normative expectations about substance use as early as childhood and adolescence, well before medical school entry.[27,28] They also raise implications for screening: family history of substance use should be incorporated into student wellness assessments, and medical school mental health services should be equipped to address students from high-risk family backgrounds.

The gateway pattern between alcohol and other substances adds a further layer of predictive logic. Co-use of cigarettes, cannabis, amphetamines, and opioids occurred almost exclusively among lifetime alcohol users, while non-drinkers reported virtually none of these substances. This mirrors findings from Gajda et al.[22] and Metuge et al.[23], who both reported that alcohol use was the dominant predictor of polydrug involvement in medical and tertiary institution student populations. The implication is that alcohol prevention is not an isolated intervention: reducing alcohol uptake among medical students would be expected to prevent or delay initiation of a broader spectrum of substances

Limitations

Data were obtained through self-report using the WHO Student Drug Use Survey questionnaire, which despite demonstrated reliability and validity in Nigerian settings may still be subject to underreporting, particularly among female and highly religious respondents for whom social desirability pressures are greatest. A fictitious drug item was included to detect over-reporting, but the possibility of residual bias cannot be fully excluded. The cross-sectional design establishes association but not causation, and reverse causality cannot be excluded for several of the predictor relationships. The study was conducted at a single institution in Edo State and may not be fully representative of medical student populations at larger federal universities or those in Northern Nigeria.

Conclusion

Male gender, older age, clinical-level training, middle social class, South-South geopolitical origin, lower religiosity, parental substance use, and intergenerational family modelling are key predictors of psychoactive substance use among medical students in southern Nigeria. The concentration of multiple substance use among lifetime alcohol users identifies alcohol as the central leverage point for prevention. Medical schools should incorporate confidential substance use screening into student health services, embed high-risk sociodemographic profiles into triage criteria for mental health support, and establish structured peer-led prevention programmes that directly address the occupational and familial risk factors identified in this study.

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