

# Factors Associated with Psychoactive Substance Use among In-School Adolescents in Zaria Local Government Area, Kaduna State, Nigeria: A Cross-Sectional Study

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## Abstract

**Background:** The use and abuse of psychoactive substances among adolescents pose serious health problems in society. It is crucial to ascertain the factors predisposing adolescents to this in order to enable action by stakeholders. This study was conducted to determine the prevalence and factors associated with psychoactive substance use among in-school adolescents in Zaria Local Government Area (LGA) of Kaduna State, Nigeria.

**Methods:** A descriptive cross-sectional study was conducted in nine secondary schools selected by balloting with a sample size of 639 students. A semi-structured, self-administered questionnaire was used to obtain information on socio-demographics and lifetime/current use of psychoactive substances. Data were analyzed by descriptive statistics, chi-square test, and logistic regression at  $P=0.05$ .

**Results:** The mean age of respondents was  $15.98 \pm 1.52$  years, 51% were male, and 54.6% were aged 14-16 years. The lifetime and current prevalence of psychoactive substances were 69.3% and 46%, respectively. Kolanut was the most widely used substance with a lifetime and current use prevalence rates of 56% and 37.6%, followed by 14.4%, 12.8%, and 11% of respondents with lifetime use of sedatives, alcohol, and tobacco, respectively. Respondents' age (OR 2.493 95% CI=1.670-5.185;  $P=0.001$ ), mothers' educational level (OR 1.703 95% CI=4.201-5.057;  $P=0.001$ ), family (OR 3.428 95% CI=9.778-8.856;  $P=0.023$ ) and friends' (OR 2.252 95% CI=1.315-3.856;  $P=0.003$ ) use of psychoactive substances were predictors of substance use.

**Conclusions:** The study revealed that both lifetime and current use of psychoactive substances among the adolescents were high, especially among the males. Kolanut was the most used psychoactive substance among in-school adolescents, followed by sedatives and alcohol. Age, mothers' educational level, and parents' occupation were predisposing factors to psychoactive substance use.

**Keywords:** In-school adolescents, Psychoactive substances, Lifetime prevalence, Public-private schools, Drug abuse

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## 1. Introduction

Psychoactive substance use among adolescents remains a major global and national health issue. Psychoactive substances refer to substances that, when taken in or administered into one's system, affect mental processes such as cognition. Alcohol, cannabis, heroin, cocaine, codeine, caffeine, tobacco, and kolanut are but examples of such substances (1, 2). Furthermore, psychoactive substance abuse refers to the continued use of the above stated substances despite the knowledge of the persistent or recurrent social, psychological or physical problem caused or exacerbated by the foregoing substances (3).

The use of most psychoactive substances begins during the adolescent years, particularly during the middle and late adolescent years. Adolescence is the

period after childhood and before adulthood, occurring between 10-19 years of age. It is a period of immense growth and development (3). It is also a period of increased independence from the parents or guardians as well as increased decision making as the adolescent struggles to make the right choices from the plethora of decisions they are faced with (4). The use and abuse of psychoactive substances among adolescents continue to pose significant health and social problems such as cultism, increase in unwanted pregnancies, school dropouts, violence and crime, Hepatitis B and C virus, and HIV/AIDS diseases (1, 2).

According to the 2013 national survey on drug and health in the U.S., 8.8% of adolescents aged 12-17 years were illicit drug users with 7.1% being current users of marijuana, 2.2% current non-medical users of psychotherapeutic drugs, and 0.3% current users of

cocaine and heroin. In Africa, Zambia is a country with the highest lifetime prevalence of drug use with a rate of 36% among students aged 13-15 years (5). According to the WHO report on the global tobacco epidemic in 2014, 15.4% of adolescents aged 13-15 years in Nigeria used tobacco (5). In a study carried out among secondary school students in Lagos, Southwest Nigeria, it was discovered that 19.5% had smoked cigarettes once or more in their lifetime (6), 77.2% had used alcohol once or more in their lifetime, and 7.7% had used marijuana, 8.4% tranquilizers, and 1.9% cocaine (6). Moreover, in a study carried out in Delta State, Nigeria it was shown that the initiation age for smoking was 12-15 years with a smoking prevalence of 7% (7). Furthermore, the prevalence of psychoactive substance use among in-school adolescents in Zaria Local Government Area (LGA) was reported as 56% (8).

Adolescents from low-socio-economic conditions, lacking parental supervision or having unstable family lives were reported to be at risk for psychoactive substance use (4, 9). Other studies have proffered additional risk factors such as peer influence, availability of drugs, adolescent curiosity, relief from stress, self-medication for primary psychological disorders such as depression, and ignorance of the dangers related to substance use among others (7, 10).

Substance abuse begins mostly during the adolescent years, which is the most optimal time to plan interventions for reducing the burden and preventing the adverse effects. According to the National Drug Law Enforcement Agency and Mamman and colleagues in 2015, the highest rates of psychoactive substance abuse were found in the North West region of Nigeria (10). The highest rates of smokers among adolescents aged 13-15 years were also reported in the North West region (3).

Northern Nigeria has the highest rates of psychoactive substance abuse and addicts; however, the majority of the studies on psychoactive substance use and abuse seem to be concentrated on the southern parts of the country. Furthermore, most of the studies done in the north have focused on either the general population or students in tertiary institutions, forgetting that most drug users or addicts begin drug use during their adolescence. According to a study carried out among in-school adolescents in Zaria Local Government Area (LGA), the prevalence of psychoactive substance use was 56% (8). However, this study did not effectively highlight the factors associated with psychoactive substance use and the authors recommended more research in this area. Therefore, the present study was

conducted to determine the prevalence, pattern, and the factors associated with psychoactive substance use among in-school adolescents in Zaria LGA, which is a major educational center in the north-western region of the country owing to the high number of tertiary institutions and its large number of secondary and primary schools.

## 2. Methods

### *Study Area*

Zaria is a major city and a LGA in Kaduna State, North-western Nigeria. It is located at 11°04'N 7°42'E with an estimated population of 695,089 (11). Zaria is home to Ahmadu Bello University (the largest university in north-western Nigeria), the Nigerian College of Aviation Technology, National Research Institute for Chemical Technology, National Animal Production Research Institute, a Federal College of Education and a host of other federal and state-run tertiary and secondary institutions of education; therefore, it is a major academic center and as such, an ideal location for this study. At the time of the research, there were 30 secondary schools in Zaria LGA, 12 public and 18 private schools.

### *Study Design*

A school-based cross-sectional analytical study design was employed.

### *Study Population*

The study population included adolescents in public and private secondary schools located in Zaria Local Government Area of Kaduna State, Nigeria.

### *Study Sampling Technique*

The Leslie Kish formula for descriptive study design was used to estimate the minimum required sample size (8). A two-stage cluster sampling technique was employed to select the respondents for this study.

**Stage 1:** A list of all the public and private secondary schools was obtained from the Zonal Office, Ministry of Education, Science and Technology, in Zaria LGA, Kaduna State. There are a total of 30 public and private senior secondary schools in Zaria LGA.

Using balloting, nine schools were randomly selected from 12 public (3) and 18 private (6) senior

secondary schools in Zaria LGA.

**Stage 2:** One arm of each of senior secondary classes 1 and 2 was randomly selected from the schools by balloting. All the students in the selected arm were recruited provided they met the inclusion criteria.

#### *Data Collection Tool*

The study was carried out using a semi-structured self-administered questionnaire based on the objectives of this study and the review of relevant literature and the UNODC Global Assessment Programme (GAP) school survey questionnaire comprising the following sections:

**Section A–Socio-demographic characteristics:** this section comprised questions on the respondents' sex, age, religion, and ethnicity.

**Section B–Socio-economic status:** this section consisted of questions on academic sponsor, parents' educational level and employment type, and the wealth index. The socio-economic level was measured using Principal Components Analysis (PCA). The input to the PCA is the information on the presence and functioning of key assets such as electricity, mobile telephones, electric fan, refrigerator, air conditioner, radio, television, cable TV, computer, electric iron and generator, and piped water in the household. Each participant was assigned the wealth index score of his or her household. The quintiles are Q1=Lowest, Q2=Second, Q3=Middle, Q4=Fourth, Q5=Highest, modified into poor, middle class, and rich.

**Section C–Use of psychoactive substances:** this section was comprised of questions on the respondents' use of psychoactive substances in their lifetime and in the preceding 30 days (current use). It also contained questions on the age of initiating psychoactive substance use, most preferred drug, and frequency of psychoactive substance use.

**Section D–Factors associated with psychoactive substance use:** this section revolves around the reported reasons behind the initiation and continued use of psychoactive substances.

**Section E–Availability of psychoactive substances:** this section comprised questions on the respondents' access to psychoactive substances.

To assess the feasibility, clarity, and time management

during data collection, a pre-test was conducted using 10% of the minimum estimated sample (63) in a secondary school in Sabon-Gari LGA of Kaduna State. Based on the findings from the pre-test, necessary adjustments were made on the instrument prior to the final data collection. All information during the pre-test was discarded following the initial analysis and not included in the final study

#### *Data Analysis*

Data obtained from questionnaires were checked for errors, cleaned, coded, and analyzed using the Statistical Package for Social Sciences (SPSS) software version 23. Data checking and cleaning were performed daily to ensure that missing items were accounted for and variables not properly entered were corrected. Numbers were used to code each response category and open-ended questions were grouped and coded as appropriate. Frequencies, percentages, and means of variables were generated. Data were analyzed using descriptive statistics (frequencies and percentages). Chi-square was used to compute the association between various categorical variables (independent and dependent variables such as socio-demographic characteristics and drug use, respectively) at 5% level of significance. Binary logistic regression was utilized to determine the predictors of psychoactive substance use.

### **3. Results**

A total of 660 questionnaires were distributed and 639 were used because 21 respondents did not properly fill out the questionnaire resulting in a response rate of 96.8%. About 55% of the respondents were from private schools and male adolescents accounted for 50.5%. The highest proportion (54.6%) were aged 14-16 years and 55.6% were Muslims as shown in Table 1. More than a quarter reported that at least one of their parents had only obtained the secondary level of education–28.8% and 34.4% for fathers and mothers, respectively. The majority (69.3%) of respondents had used one or more psychoactive substances in their lifetime. The most widely used psychoactive substance was kolanut (56%), followed by sedatives (14.4%), alcohol (12.8%), and tobacco (11%). Nearly half (46%) of the respondents had used at least one psychoactive substance over the last 30 days. The substance with the highest current use prevalence rate was kolanut (37.6%), followed by sedatives (9.9%), alcohol (5.9%), and inhalants (4.9%). Out of the 443 respondents who reported to have used psychoactive substances in their lifetime, 68.2% mentioned kolanut as their first psychoactive

**Table 1:** Distribution of socio-demographic characteristics of respondents

Variables (N=639)	n	%
Type of school		
Public	287	44.9
Private	352	55.1
Sex		
Male	323	50.5
Female	316	49.5
Age group (years)		
11-13	32	5.0
14-16	349	54.6
17-19	255	40.4
Religion		
Christianity	284	44.4
Islam	355	55.6
Ethnicity		
Hausa	369	57.7
Yoruba	54	8.5
Igbo	50	7.8
Others	166	26.0
Fathers' highest level of education		
At most primary	49	7.7
Secondary	184	28.8
Tertiary	406	63.5
Mothers' highest level of education		
At most primary	78	12.2
Secondary	220	34.4
Tertiary	341	53.4

substance, followed by sedatives (12.2%), and alcohol (10.4%). The preponderance (57.6%) reported that they tried their first psychoactive substance by the ages of 9-12 years, followed by 13-16 years (30.7%), and 5-8 years (11%). Out of the 443 respondents reporting to have used psychoactive substances, 47.6% mentioned kolanut as their most preferred substance, followed by sedatives (12.2%) and alcohol (10%). Nearly half (41.3%) obtained their substances from petty traders. Approximately, 60% of the respondents initiated psychoactive substance use due to curiosity, followed by peer pressure (20.5%), depression (8.6%), and academic problems (3.4%). Nearly two-thirds (62.9%) of the respondents reported enjoying the feeling derived from the substance as the main reason for the continued use of psychoactive substance, followed by peer pressure (13.6%), depression (10.2%), and academic problems (3.1%). A significantly higher proportion (69.7%) of older adolescents (15-19 years) compared with those aged 10-14 years (43.9%) were engaged in psychoactive substance use ( $P < 0.001$ ). Furthermore, a higher proportion (73.3%) of respondents whose mothers had only a secondary level of education were current users of psychoactive substances compared to those whose mothers had a higher level of education ( $P = 0.008$ ).

A higher proportion of respondents whose fathers were artisans and businessmen were found to engage in psychoactive substance use in comparison with those whose fathers were civil servants and professionals ( $P < 0.001$ ). Similarly, a higher proportion of respondents whose mothers were artisans and businesswomen were involved in psychoactive substance use compared to respondents whose mothers were civil servants and professionals. As shown in tables 2 and 3, adolescents aged 10-14 years were three times more likely to be engaged in substance use compared to those aged 15-19 years (95% CI=1.670-5.185;  $P = 0.001$ ); adolescents whose mothers had only a primary or secondary level of education were, respectively, three times and about two times more likely to be engaged in psychoactive substance use in comparison to those whose mothers had a tertiary level of education. Respondents whose fathers were businessmen were 3.7 times more likely to engage in psychoactive substance use compared with those whose fathers were professionals; moreover, respondents whose mothers were artisans and businesswomen were about two times more likely to use psychoactive substances compared with those whose mothers were professionals.

**Table 2:** Predictors of psychoactive substance use among respondents

Variables	Odds Ratio	95% CI	P value
Age group (years)			
10–14	2.943	1.670–5.185	0.001*
15–19 (ref)	1.000		
Religion			
Christianity	1.367	0.812–2.304	0.240
Islam (ref)	1.000		
Ethnicity			
Hausa	0.529	0.303–0.926	0.026*
Yoruba	0.665	0.304–1.458	0.309
Igbo	0.470	0.198–1.119	0.088
Others (ref)	1.000		
Parents' living status			
Together	0.413	0.183–0.930	0.033*
Separate (ref)	1.000		
Parents' type of marriage			
Monogamy			
Polygamy (ref)	1.242	0.733–2.103	0.420
Respondents' living status			
Both parents			
Father only	0.953	0.412–2.203	0.911
Mother only	0.089	0.018–0.452	0.004*
Guardian (ref)	0.410	0.145–1.162	0.093
	1.000		
Frequency of witnessing arguments			
Rarely	0.318	0.407–1.321	0.652
Often (ref)	1.000		
Frequency of witnessing fights			
Rarely	0.514	0.923–1.871	0.416
Often (ref)	1.000		
Most significant person in upbringing			
Grandparents	0.113	0.012–1.038	0.054
Both parents	0.147	0.019–1.132	0.066
Father only	0.344	0.038–3.108	0.342
Mother only	0.142	0.018–1.146	0.067
Friends (ref)	1.000		

\*Significant at P=0.05

#### 4. Discussion

This cross-sectional study was conducted to determine the prevalence, pattern, and factors associated with psychoactive substance use among in-school adolescents in Zaria local government area of Kaduna State.

##### *Prevalence of Lifetime and Current use of Psychoactive Substances*

More than two-thirds (69.3%) of the respondents in this study reported lifetime use of psychoactive substances. This prevalence is similar to that reported in a study conducted by Manyike and colleagues among in-school adolescents in Enugu, Nigeria (12). However, it is higher than the prevalence reported by a similar study conducted in Zaria (8). The fact that both studies

were conducted among participants with similar characteristics could mean that the use of psychoactive substances among in-school adolescents in Zaria has increased over time. If this observed trend is sustained, the use of psychoactive substances may reach drastically high levels in the coming years. This highlights the urgent need for effective strategies targeting adolescents in order to thwart the uptake of these substances. Furthermore, about half of the respondents (46%) reported a current use of psychoactive substances, which is similar to the study done by Lawoyin and colleagues among senior secondary school students in Igboora, Nigeria (13). Despite the reduction in the lifetime prevalence of these substances compared to their current use in the present study, the prevalence is still alarmingly high. This underscores the need to develop strategies specifically targeting current users who may encounter difficulties stopping psychoactive substance use.

**Table 3:** Predictors of psychoactive substance use among respondents (cont'd)

Variables	Odds Ratio	95% CI	P value
<b>Mother's education</b>			
None	0.300	0.089–1.720	0.829
Primary	3.009	7.094–9.263	0.038*
Secondary	1.703	4.201–5.057	0.001*
Tertiary (ref)	1.000		
<b>Father's occupation</b>			
Artisan	0.925	1.902–3.126	0.002*
Business	3.721	9.456–10.756	0.045*
Civil servant	0.722	1.552–2.372	0.013*
Professional (ref)	1.000		
<b>Mother's occupation</b>			
Artisan	1.858	4.523–5.577	0.021*
Business	2.340	5.875–6.845	0.036*
Civil servant	0.469	0.853–1.697	0.095
Professional (ref)	1.000		
<b>Family use of psychoactive substances</b>			
Yes	3.428		
No (ref)	1.000	9.778–8.856	0.023*
<b>Reasons for initiating substance use</b>			
Friends	2.252		
School problems	0.452	1.315–3.856	0.003*
Depression	0.513	0.109–1.866	0.272
Curiosity (ref)	1.000	0.191–1.373	0.184

\*Significant at P=0.05

In this study, there was no significant difference between the public and private schools regarding both the lifetime and current use of any of the psychoactive substances. The study conducted by Akanni and Adayonfo in 2015 also reported similar findings (14). This finding suggests that the type of school may not necessarily be an important predictive factor with regards to the use of psychoactive substances compared to other factors such as gender.

The findings of the present research showed that males were more likely to use many of the psychoactive substances at least once in their lifetime and be current users of alcohol, marijuana, hallucinogens, and inhalants when compared to female adolescents. These findings are similar to those reported by several other studies (12, 15). Being risk-takers, male adolescents are more likely to experiment with drugs compared to females. Furthermore, society is generally more disapproving of substance use among female adolescents compared to males.

#### *Pattern of Lifetime and Current Use of Psychoactive Substances*

Kolanut was reported as the most prevalent psychoactive substance used by respondents both

currently and in their lifetime. This finding is in line with several other studies (12, 15). It was also reported to be the most preferred and first used psychoactive substance among the respondents. Kolanut is an affordable and readily available substance. Furthermore, it is the most acceptable form of psychoactive substance compared to other forms such as sedatives and alcohol, with its use uncontrolled by the government. Also, students are more likely to use kolanut to induce wakefulness due to its high concentration of caffeine (16). Therefore, with the consumption of kolanuts, students can stay awake for hours without any form of rest. This leads to the poor quality and quantity of rest, further affecting their academic performance (17). Students must be educated on healthier forms of staying awake in order to minimize their use.

In this study, 14.4% of respondents reported the use of sedatives in their lifetime. This is similar to the prevalence reported by Yisa and colleagues, where 17.3% of respondents had used sedatives in their lifetime (18). Also, 13% and 6% of the respondents reported a lifetime use and current use of alcohol, respectively. These percentages are lower than those reported in the studies carried out among adolescents in the United State (8% respectively) and Argentina (50%) (5, 9). They are also much lower than studies conducted in other

African countries such as Zambia (52%), Namibia (43%), and Ghana (28%) (19). Such difference is likely due to the prohibition of alcohol consumption by the Muslim faith, which is the dominant religion in the study area. These religious values could have also led to under reporting of their use in the study.

About one-tenth of the respondents in this study were reported to have used tobacco in their lifetime. This is similar to 10.6% of tobacco use found in a study among adolescents in Ibadan (18), and 15.4% of adolescents reported to use of tobacco products in a nationwide survey (20). The prevalence of tobacco use is; however, lower than the 19.5% of respondents recorded to have used tobacco products in Lagos State (6). The difference observed in the prevalence of both studies may be attributed to the more conducive social atmosphere in Lagos State.

The most widely used illicit substance ever was marijuana with 6.4% of the respondents reporting to have consumed it at least once in their lifetime. This is in accordance with other studies reporting lifetime prevalence rates of 4.4% and 6.5%, respectively (6, 7). This is also in line with the global trend reported by the United Nations Office on Drugs and Crime (UNODC) in the World Drug Report of 2017. However, the prevalence rate of marijuana use was lower than that recorded in the United Kingdom and in Argentina, where 15% and 8.4% of adolescents had used marijuana in their lifetime (19). The use of marijuana in these countries is becoming normalized among youths, unlike in Nigeria where its use is still heavily frowned upon.

Curiosity was cited by more than half of the respondents as their reason for initiating psychoactive substances, with 62% continuing the use of these substances because they enjoyed the feeling. These findings may be explained by the fact that adolescence is a period of risk taking and experimentation. Accordingly, it is important that health education programmes target both non-users and users through highlighting the effect of these drugs to thwart curiosity among teenagers and the dangerous effects of these substances despite the perceived feelings of enjoyment obtained from their use.

#### *Predictors of Current Use of Psychoactive Substances*

The socio-demographic characteristics found to be independently associated with current use of psychoactive substances were age and mothers' level of

education. Age was a factor significantly associated with current use of psychoactive substances. Adolescents aged 10-14 years (early adolescents) were about three times more likely to engage in psychoactive substances. This might be attributed to the increased curiosity commonly experienced during early adolescence. This is similar to other studies, which also reported adolescent curiosity as a risk factor of psychoactive substance use (7, 10).

In this study, the adolescents who had mothers with primary and secondary education were, respectively, three times and about two times more likely to use psychoactive substances compared to mothers who attained tertiary education. Mothers' and fathers' occupations were the socioeconomic characteristics independently associated with the use of psychoactive substances among the adolescents in this study. The adolescents whose fathers were artisans and civil servants were less likely to use psychoactive substances compared to those whose fathers had professional occupations. Furthermore, adolescents whose fathers were businessmen were three times more likely to use psychoactive substances compared to those whose fathers had professional education. Studies (21, 22) have shown that adolescents from the upper social class are more likely to use psychoactive substances such as alcohol and marijuana compared to those from other socioeconomic classes because access to these substances is usually determined by cost. On the contrary, in the present study, the adolescents whose mothers were artisans or traders were about two times more likely to use psychoactive drugs compared to those whose mothers had professional jobs.

#### *Limitations of the Study*

This was a cross-sectional study, hence the fact that a cause-effect relationship could not be established between independent and outcome variables. Furthermore, this research did not consider the effects of psychoactive substances on the respondents.

#### **5. Conclusion**

This study revealed that both the lifetime and current use of psychoactive substances were high among the adolescents and higher among the male gender. Kolanut was the most used psychoactive substance among in-school adolescents, followed by sedatives and alcohol. Curiosity was reported by the preponderance of the respondents as the reason for initiating psychoactive substance use. Furthermore, age and socio-economic

characteristics such as mothers' educational level and parents' occupation were the factors predisposing to psychoactive substance use.

#### *Recommendations*

The following recommendations are made based on the findings of this study:

#### *Government (Policy Makers)*

- State and local governments should initiate comprehensive and regular public enlightenment programs aimed at educating the public in general and adolescents in particular on the hazards of psychoactive substance use.

- The federal government should enforce laws that increase taxes on alcohol and tobacco products.

- All tiers of government should enforce a ban on the sale of alcohol, tobacco products, and over the counter medications with psychoactive properties to any individual below 18 years of age.

#### *Spiritual Organizations*

- These organizations should be involved in youth education against the use of psychoactive substances and the attendant health and social problems.

#### *Education Authorities*

- School authorities should prioritize the counselling of students from broken homes.

- School authorities should closely monitor adolescents to promptly inform parents/guardians if a behavioral change or academic decline occurs.

- Regular seminars or talks should be organized by school authorities on the dangers of psychoactive substance use.

#### *Researchers*

- Further studies should be carried out to determine the effects experienced by in-school adolescents using psychoactive substances.

#### *Parents/Guardians*

- Parents should educate their children on the

dangers of psychoactive substance use.

- Parents should try to create time to bond with their children, especially at the beginning of adolescence.

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#### **Ethical considerations**

Approval was sought from the Kaduna State Ministry of Education, Science and Technology. Consent was further obtained from the appropriate school authorities of the selected secondary schools. Anonymity and confidentiality were maintained with all identifiers removed from the questionnaires.

#### **Conflict of Interest**

The authors declared no conflict of interest.

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