Title: Substance use among Secondary School Adolescents in Gwagwalada Area Council, Abuja, Nigeria.

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Abstract

Background: Adolescent substance use is a growing epidemic that is placing heavy burdens on individuals, families and communities hence the stimulus for this study.

Aim/Objectives: To determine the prevalence and pattern of substance use among secondary school adolescents in Gwagwalada Area Council, Abuja, Nigeria.

Methods: A questionnaire-based, cross-sectional, descriptive study done over a three-month period among secondary school adolescents aged 10 to 18 years old after obtaining appropriate ethical approvals, consent and assent.

Results: A total of 1,196 questionnaires were analysed, of which 641 (53.6%) were females and 1,052 (87.96%) from public schools. The overall prevalence rate for lifetime use was 72.7%. The substance with the highest prevalence rates for lifetime, annual and current use was kola nut (44.3%, 24.4 and 11.0%, respectively) and lowest for heroin (0.7%, 0.6% and 0.5%, respectively). There was a statistically significant male preponderance for licit substance use and a non-statistically significant female preponderance for illicit substance use. 507(42.4%) students were single substance users while 363 (30.35%) students were multiple substance users. Age at first use was at ten years of age or less.

Conclusion and recommendations: There is need for strengthening substance use prevention programmes and implementing regulatory laws on sale and use of substances. Stiffer penalties for offenders are recommended.

SUBSTANCE USE AMONG SECONDARY SCHOOL ADOLESCENTS IN GWAGWALADA AREA COUNCIL, ABUJA, NIGERIA.

INTRODUCTION/BACKGROUND

Substance use among adolescents is a growing global epidemic with dire consequences on the user and society. It usually starts with the "gateway drugs", alcohol and tobacco before progressing to the illicit substances[1] and occurs for various reasons. The prevalence rates for various substances vary across countries and within parts of a country. This study will determine the prevalence, pattern and reason(s) for substance use, and also test the null hypothesis that there is no significant difference between the proportion of adolescent students who indulge in substance use in public and private schools in Gwagwalada Area Council using an

Table I: Age and sex distribution of the students

Age (years)	Males (%)	Females (%)	Total (%)
10 -13	173 (14.5)	234 (19.5)	407 (34.0)
14 – 16	240 (20.0)	308 (25.8)	548 (45.8)
17 - 18	142 (11.9)	99 (8.3)	241 (20.2)
Total	**555 (46.4)**	**641 (53.6)**	**1196 (100%)**

DISTRIBUTION OF SELECTED SUBJECTS AND THEIR CLASSES

There were 1052 (88%) students from public schools and 144 (12%) from private schools. This disparity in the number of students from public and private schools was due to the proportionate sampling method applied. Six hundred and ten (610; 5%) students were from the senior secondary schools (SSS) while 586 (49%) were from the junior secondary schools (JSS). The SSS class 2 contributed the largest proportion (352; 29.4%) while SSS class 3, the smallest proportion of students (26; 2.2%). This is shown in Table II.

Table II: Distribution of selected subjects and their classes

Class	Females	Males	Number of students	Percentage
JSS 1	112	76	188	15.7%
JSS 2	129	93	222	18.6%
JSS 3	104	72	176	14.7%
SSS 1	135	97	232	19.4%
SSS 2	145	207	352	29.4%
SSS 3	16	10	26	2.2%
Total	**641**	**555**	**1,196**	**100%**

PREVALENCE OF SUBSTANCE USE

Eight hundred and seventy (72.7%) students have used at least one substance in their lifetime. Therefore, the overall lifetime prevalence rate of substance use was 72.7%.

The use of kola nut had the highest prevalence for lifetime use, 44.3% (n =530), annual use, 24.2% (n=292) and current use, 11.0% (n= 131). Alcohol and sniffed and inhaled substance use had the second and third highest prevalent rates respectively for lifetime, annual and current use. The prevalence for lifetime, annual and current use for alcohol was 15.6%, 7.2% and 2.2%, respectively while for tobacco use (the fourth highest),the prevalence rates for life time, annual and current use for tobacco were 2.2%, 1% and 0.5% respectively. Heroin had the lowest prevalence rates of 0.7%, 0.6% and 0.5% for lifetime, annual and current use. The prevalence rates for substance use are shown in Table III.

Table III. Prevalence of substance use among secondary school students in Gwagwalada

SUBSTANCE	LIFE TIME USE		ANNUAL USE (Use in the past 12 months)		CURRENT USE (Use in the past 30 days)	
	n	(%)	n	(%)	n	(%)
Kola nut	530	(44.3)	292	(24.4)	131	(11.0)
Alcohol	186	(15.6)	86	(7.2)	26	(2.2)
Sniffed or inhaled substances	78	(6.5)	54	(4.5)	24	(2.0)
Tobacco	26	(2.2)	12	(1)	6	(0.5)
Cannabis	17	(1.4)	14	(1.2)	9	(0.8)
Cocaine	14	(1.2)	10	(0.8)	7	(0.6)
Hallucinogen	11	(0.9)	8	(0.7)	8	(0.7)
Heroin	8	(0.7)	7	(0.6)	6	(0.5)

Prevalence of Substance Use According to Sex

The difference in sex was statistically significant for lifetime use (X^2 = 7.481, p= 0.006), annual use (X^2 =16.332, p = <0.001) and current use (X^2= 17.657, p = <0.001) for kola nut, for lifetime use and annual use for alcohol, X^2 = 9.8849, p = 0.002 and X^2 =16.649, p = <0.001 respectively and for lifetime and annual use for sniffed or inhaled substances at X^2 =9.687, p = 0.002 and X^2 = 5.732, p = 0.017 respectively but was not significant for lifetime, current or annual use for tobacco at X^2 = 1.352, p = 0.244, X^2 = 0.837, p = 0.360 and X^2 = 0.973, p = 0.324 respectively.

More females had used cannabis, cocaine and heroin in their lifetime compared to the males. However, this difference was not statistically significant. This is depicted in Table IV.

Table IV: Prevalence of substance use according to sex

Substance	Lifetime use				Annual use				Current use			
	F	M	X^2	p value	F	M	X^2	p value	F	M	X^2	p value
Kola nut	258	272	7.481	0.006*	125	167	16.332	0.000*	47	84	17.657	0.000*
Alcohol	80	106	9.849	0.002*	28	58	16.649	0.000*	9	17	3.796	0.051
Sniffed or inhaled	28	50	9.687	0.002*	20	34	5.732	0.017*	10	14	1.252	0.263
Tobacco	11	15	1.352	0.244	8	4	0.837	0.360	2	4	0.973	0.324
Cannabis	11	6	0.856	0.355	9	5	0.651	0.420	6	3	0.633	0.426
Cocaine	8	6	0.069	0.792	7	3	1.090	0.297	5	2	0.906	0.34
Hallucinogen	5	6	0.293	0.538	5	3	0.256	0.613	5	3	0.263	0.608
Heroin	6	2	1.652	0.199	5	2	0.982	0.322	5	1	2.244	0.13

df =1   *= p value < 0.05   F= Females   M= Males

PATTERN OF SUBSTANCE USE

Five hundred and seven (507; 42.4%) students had used only one substance in their lifetime while 363 (30.4%) students had used a combination of 2 or more substances in their lifetime. There were various combinations used however, no student had used seven or the eight substances. The most commonly combined substances used were kola nut and alcohol (n= 122, 10.2%), and kola nut and sniffed and inhaled substances (n= 55; 4.6%). Sixteen (16; 1.3%) students had used a combination of the gateway substances, alcohol and tobacco. Only 1 (0.1%) student had ever used both heroin and tobacco. The pie chart shown in Figure 1 depicts the number of substances that have been used by the students.
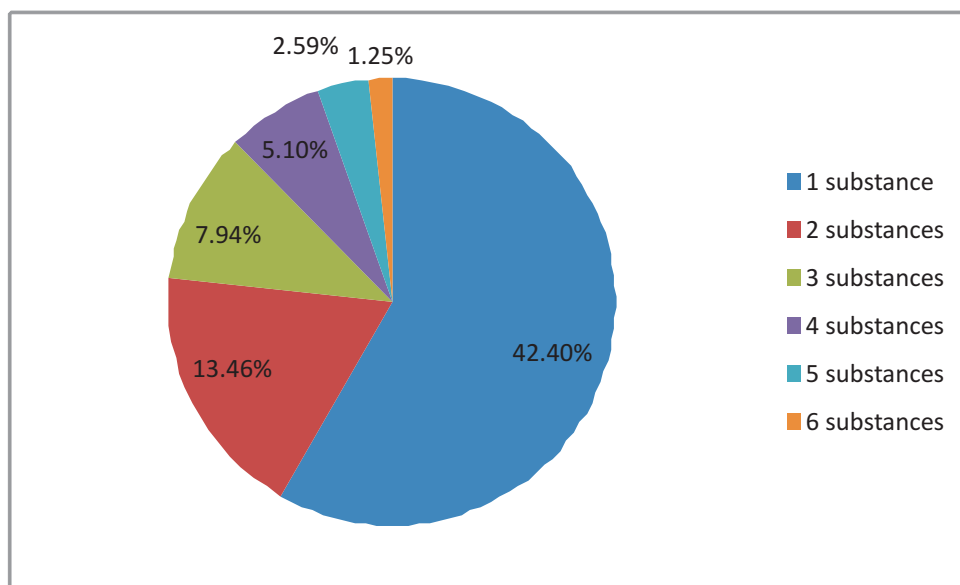

Figure 1: Number of substances used by secondary school students in Gwagwalada Area Council.

Age pattern at first use for licit substances

Most licit substances were used on or before 10 years of age except alcohol. First use for alcohol was highest in the age group 11– 12 years (n= 55; 4.6%). The age at first use was lowest for all licit substances at 17 to 18 years. The age distribution at first use for licit substances is shown in Table V.

Table V: Age at first use for licit substances

Age (years)	Licit substance			
	Kola nut	Alcohol	Sniffed and inhaled	Tobacco
	n (%)	n (%)	n (%)	n (%)
10	231 (19.3)	51 (4.3)	31 (2.9)	9 (0.8)
11 - 12	164 (13.7)	55 (4.6)	19 (1.8)	7 (0.6)
13 -14	88 (7.4)	44 (3.7)	17 (1.6)	4 (0.3)
15 -16	36 (3)	30 (2.5)	7 (0.7)	5 (0.4)
17 –18	11 (0.9)	6 (0.1)	4 (0.4)	1 (0.1)
Total	530	186	78	26

Age pattern at first use for illicit substances

The age at first use for illicit substances was also highest in the age group 10 years or less and lowest in the age groups 15-18 years. The most illicit substances used were cocaine and cannabis with 8 (0.7%) subjects each reporting first use at age 10 years or less while hallucinogen (n=5; 0.4%) and heroin (n=4; 0.4%) were in second and third positions respectively. The age distribution at first use for illicit substances is shown in Table VI.

Table VI: Age at first use for illicit substances

Age (years)	Illicit substance			
	Cannabis	Cocaine	Hallucinogen	Heroin
	n (%)	n (%)	n (%)	n (%)
10	8 (0.7)	8 (0.7)	5 (0.4)	4 (0.4)
11-12	4 (0.3)	3 (0.3)	2 (0.2)	1 (0.1)
13-14	4 (0.3)	2 (0.2)	3 (0.3)	2 (0.2)
15-16	0	1 (0.1)	0	1 (0.1)
17-18	1 (0.1)	0	1 (0.1)	0
Total	17	14	11	8

COMPARING THE PREVALENCE OF SUBSTANCE USE BETWEEN STUDENTS IN PUBLIC AND PRIVATE SCHOOLS

One thousand and fifty-two (1,052) and 144 students were selected from public and private schools respectively. The prevalence rates for lifetime use of the 8 substances tested for were higher in public schools for only cocaine (1.2%) while the prevalence of lifetime use was higher in private schools for kola nut (55.6%), sniffed and inhaled substances (11.8%), alcohol (27.1%) and hallucinogen (1.4%). The prevalence was similar in public and private schools for tobacco (2.1% and 2.8%), cannabis (1.4% and 1.4%) and heroin (0.7% and 0.7%)   However, the difference in prevalence for lifetime substance use and type of school was only statistically significant for alcohol use (p = < 0.001). The comparisons between the prevalence rates for licit and illicit substances are shown in Table VII.

The null hypothesis that there is no significant difference between the proportion of adolescent students who indulge in substance use in public and private schools in Gwagwalada Area Council using an

Table VII: Relationship between prevalence rate s of substance use and type of school

SUBSTANCE	TYPE OF SCHOOL				
	PUBLIC	PRIVATE	Fischer's exact	Z	p value
	n (%)	n (%)			
Kola nut	450 (42.8)	80 (55.6)	2.373	1.555	0.121
Alcohol	147 (13.9)	39 (27.1)	16.942	3.43	< 0.001*
Sniffed or inhaled substances	61 (5.8)	17 (11.8)	5.119	1.87	0.061
Tobacco	22 (2.1)	4 (2.8)	0.295	0.4	0.626
Cannabis	15 (1.4)	2 (1.4)	0.001	-0.04	0.97
Cocaine	13 (1.2)	1 (0.7)	0.308	-0.69	0.493
Hallucinogen	9 (0.9)	2 (1.4)	0.407	0.53	0.595
Heroin	7 (0.7)	1 (0.7)	0.07	-0.09	0.93

DISCUSSION

The overall lifetime prevalence for substance use in this study was 72.7%. This is lower thanreported from studies in South Western[1], South Southern[3] and North Western Nigeria[4] and also lower than 75.6% reported in a study[5] in USA.The prevalence rates for licit substances used in this study ranged from of 2.2% to 44.3% and 0.5% to 11% for lifetime and current use respectively and for illicit substances, 0.7% to 1.4% and 0.5% to 0.8% respectively. These rates are also lower than previously reported studies in the country.[1,2,4,6]

The substance use with the highest prevalence rate was kola nut, similar to other studies[1,2,4] that assessed for this substance. However, all prevalence rates for kola nut in this study were much lower than other

reported studies. [1,2,4] The reason is unclear but may be because kola nut use is not as popular in the culture in North Central area of Nigeria as it is in the South Eastern, South Southern, South Western and Northern parts of the country.

Alcohol had the second highest prevalence rates for lifetime, current and annual use in this study. The prevalence rates for lifetime and current use were however lower than other reported studies[3,4,7,8] The prevalence rates for current use in this study was also lower than the 31% by Flisher et al.[9] in South Africa and the 14.8% reported by Pengpid and Peltzer in Thailand.[10] The prevalence rates in this study appear to be the lowest reported in any study in Nigeria. This may be due to under reporting of substance use.

The prevalence rates for current use for sniffed and inhaled substances of 2.0% was similar to a study[1] from Western Nigeria, but the lifetime and annual use prevalence rates in that study[1] were lower than those reported in the current study. The prevalence rates were lower than those reported from studies in northern Nigeria and South Southern, Nigeria.[3,4] This study demonstrated that sniffed and inhaled substances had the third highest prevalence rates for lifetime, current and annual use, higher than that for tobacco use. This could be because of the cheap and easily accessible nature of these substances and the fact that they are not among the usually regulated or controlled substances. The reason could also be because of the ban on advertisements and purchase of tobacco by the under aged. The prevalence rates for sniffed and inhaled substances were quite high compared to tobacco, with similar findings in other studies [6,8] making one suggest that sniffed and inhaled substances may be a new "gateway substance".

Tobacco, the fourth most used substance in this study had lower prevalence rates when compared with other studies from Nigeria,[1,3,4,11] Ghana[7] (7.5% for lifetime use) and Thailand[10] (8.2% for current use). The prevalence rates for tobacco appear to be the lowest reported in the country. This could be because of the higher number of females in this study as males are reported to use tobacco more than their female counterparts.[1,3,4,6,12]

The prevalence rate for current use for cannabis (0.8%) was low but similar to that reported by Umaru (1%) in northern Nigeria.[4] The prevalence for lifetime use of 1.4% in this study was much lower than the 30%,[3] 9.4%,[13] 4.4%,[1] 3.3%,[4] and 2.6%[7] reported from studies in south-southern, north central, south western and north eastern, Nigeria as

well as Ghana, respectively. It is encouraging to see that the use of cannabis, an illicit substance, is quite low in this population. It is, however, worrisome that though sex was not statistically significant, a higher proportion of females (1.72%) than males (1.08%) had used cannabis in their lifetime. This pattern was not documented in any other study in Nigeria and the reason for this pattern cannot be readily explained.

The prevalence rate for current use for cocaine was the same as that reported from a study[4] in Northern Nigeria (0.6%), lower than the 1.9%[1] from Lagos, Western Nigeria but higher than 0.2% from a study[14] in Osun State, also in Western Nigeria. The prevalence rate for lifetime use in the current study of 1.4% was similar to that from North East Nigeria (1.0%),[4] lower than studies from South-South (4.3%)[3] and Southwest Nigeria (3.9%),[1] but again higher than 0.5% from the study[14] in Osun State. The higher prevalence rates for substance use found in this study compared with the study[14] in Osun state may be because that study was done almost 20 years ago when the prevalence of substance use could have been lower.

The prevalence rates for lifetime use and current use of cocaine in this study were higher for females. This pattern was also reported in another study[1] in Nigeria. However, the association of cocaine use with sex in both studies was not statistically significant.

The use of hallucinogen appears to be generally low in the country. Its use however, shows a rising trend. Earlier studies[3,14] reported zero prevalence for current and lifetime use while recent studies such as this and Umaru[4] have reported higher values.

Heroin use also appears to have risen in some parts of Nigeria over time from a zero percent[14] to 3.8%[1] for lifetime prevalence. This study reported low prevalence rates for lifetime, current and annual use similar to some other previous studies. [3,7] This may be because the substance is quite expensive. Availability and affordability have been shown to influence substance use.[15]

The prevalence of substance use was generally higher in males as reported by other studies.[1,3,11,16] It was however higher in females for cocaine and heroin use similar to reports from a study[1] in Lagos. Cocaine and heroin are quite expensive. The reason for the higher use among females may be that these substances are procured for the female users by rich men enticing them or it may be that these females have rich parents who use these substances. A study is recommended for this.

The most common age group at first substance use

was 10 years of age or less. This was similar to other previous studies.[17-20] This demonstrates that this age group should be targeted for substance use prevention programmes.

Majority were single substance users similar to other findings.[3,4] However, some studies[1,6] report higher prevalence of multiple substance users. A study[16] from north central Nigeria reported no multiple users.

The proportion of students who use substances was higher in private schools for four substances: kola nut, alcohol, sniffed and inhaled substances and hallucinogens. This is similar to the finding observed in a study[21] in Puerto Rico where students from private schools used more substances than those in public schools. Only cocaine use had a higher proportion of students using them in public schools. The prevalence of lifetime use was similar for tobacco, cannabis and heroin. However, a statistically significant difference was only seen for the lifetime use of alcohol ($p = < 0.001$). This significant difference in use of alcohol may be because alcohol (depending on the brand) is relatively cheap. It may also be because alcohol use is an acceptable practice in many cultures in Nigeria. However, considering the wide disparity in number of students selected from the two types of schools this result may not be a true reflection of the population.

There appears to be no reported study in Nigeria comparing substance use between public and private schools in Nigeria. It is however difficult to conclude from the finding in this study as there is a wide disparity in the number of subjects from the public and private schools.

CONCLUSION/ RECOMMENDATION

Kola nut use had the highest prevalence rate while heroine had the lowest. The age at onset of substance use was mainly 10 years or less therefore; prevention programmes should start at primary school level while stricter laws and regulations preventing access should be implemented and offenders given stiffer penalties.

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