

## FACTORS ASSOCIATED WITH SUBSTANCE USE AMONG SECONDARY SCHOOL ADOLESCENTS IN GWAGWALADA AREA COUNCIL, ABUJA, NIGERIA.

<sup>1</sup>Ekop Eno E, <sup>2</sup>Anochie Ifeoma C, <sup>3</sup>Obembe Ayo, <sup>1</sup>Airede Kareem I.

<sup>1</sup>Department of Paediatrics, University of Abuja Teaching Hospital, Abuja, Nigeria.

<sup>2</sup>University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria.

<sup>3</sup>Psychiatry, Usman Danfodio Teaching Hospital, Sokoto, Nigeria.

### ABSTRACT

**BACKGROUND:** Adolescents use substances for various reasons such as for pleasure, stress and anger management. Many factors have been reported to influence adolescent substance use. However, there is paucity of reports from this part of Nigeria.

**AIM/OBJECTIVES:** To identify the socio-demographic factors associated with substance use among secondary school adolescents in Gwagwalada Area Council.

**MATERIALS AND METHODS:** A cross-sectional, descriptive, questionnaire-based, study was carried out in secondary schools among adolescents aged 10 years to 18 years who met the inclusion criteria and after appropriate ethical approval had been obtained.

**RESULTS:** One thousand, one hundred and ninety-six student-filled questionnaires were analysed. The mean age of the students was 14.54 years  $\pm$  SD 2.28. The students' religion, family structure, residence and type of school were associated with licit substance use while their religion, family structure and residence were associated with illicit substance use ( $P < 0.05$ ). There was also statistically significant relationships between frequency in participation in religious activities and tobacco use ( $P = < 0.01$ ) and birth order and cocaine and hallucinogen use at  $P = 0.014$  and  $P = 0.018$ , respectively.

**CONCLUSION AND RECOMMENDATION:** Several factors were associated with adolescent substance use in this study. It is recommended that more in-depth studies be done to determine causality.

**KEY WORDS:** Factors, substance use, adolescent, Abuja.

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## INTRODUCTION

Adolescent experimentation with substance use can be part of their normal development process<sup>1</sup> but can occur for various other reasons such as for pleasure, stress, anger management, curiosity, sensation – seeking, rebellion, social bonding, alleviating boredom, symbolic reasons and escaping or coping with reality.<sup>2</sup> Substance use is associated with medical, social, financial and economic implications

that affect the user and the community. Brain Fag syndrome, a psychoneurotic disorder that impedes studying is strongly associated with substance use and is said to affect two in five secondary school children in Nigeria.<sup>3</sup> The two main determinants of substance use have been shown to be affordability and availability.<sup>4</sup> However, many users have been known to steal when they cannot afford the substance or they substitute with cheaper ones.

Some risk factors for substance use include peer influence, parental - adolescent conflicts, favourable parental attitude to substance use, parental substance use problems, parental

**Correspondence to:** Ekop Eno E,  
Department of Paediatrics,  
University of Abuja Teaching Hospital, Abuja, Nigeria.  
**Email:** enopie@yahoo.com  
**Tel:** +234 803 3096 290

approval of substance use in childhood or early adolescence, delinquency, sensation seeking, adventurous personality and favourable attitude to substance use.<sup>4</sup> Protective factors include family attachment, parental harmony, parental monitoring and supervision, as well as good communication and negotiation skills.<sup>5</sup> A protective school environment and having spiritual beliefs are also protective factors.<sup>6,7</sup>

In Nigeria, the most commonly reported licit substances used are caffeine and alcohol<sup>5,8,9</sup> while the most commonly reported illicit used substance is cannabis,<sup>10</sup> commonly known locally as Indian hemp or "igbo". Studies have reported increases in adolescent substance use in Nigeria and Africa even though the global prevalence has remained stable.<sup>5,8,11-13</sup> The aim of this study was to identify the factors associated with substance use among adolescents in secondary schools in Gwagwalada Area Council, Abuja, Nigeria.

## MATERIALS AND METHODS

### Study area

Gwagwalada is an Area Council in Abuja, the Federal Capital of Nigeria. It consists of 10 wards and 109 communities. Gwagwalada Central is the main town occupying an area of about 1,043 km<sup>2</sup> and has a population of about 157,770 people from 2006 census.<sup>14</sup> It hosts people from different tribes and occupations in Nigeria but its indigenous tribes are the Gwaris and Bassas who are mainly farmers.

### Study design

This was a descriptive, cross-sectional study carried out in six secondary schools in Gwagwalada Area Council over a three month period, May to July, 2016.

### Study population

Only adolescents who were aged 10 years to 18 years, and had given individual verbal assent as well as caregiver signed consent forms if less than 18 years old, and individually signed consent forms if 18 years old were included in the study. Any student

absents from school or in the school bay during the time of the study was excluded.

### Sample size

The sample size calculated<sup>15</sup> with 20% attrition added was 1,200 but only results from 1,196 adolescents were analysed.

### Sampling method

A multi - stage random sampling technique was used to select the subjects and this was done in three stages. Only co-educational schools were used. The 17 schools were first stratified according to location: 11 schools were located in the urban areas (five public and six private) and six schools in the rural areas (three public and three private) at a ratio of 2:1. Thirty percent of schools in each area were selected<sup>15</sup> giving four schools from the urban areas and two schools from the rural areas. The schools were further categorised into private and public schools. Of the four schools chosen from the urban areas two were private schools and two public schools. While of the two schools selected from the rural areas, one each was selected from the private and public schools. The selection of schools was done by simple random sampling of balloting.

One thousand two hundred and four (1,204) students out of a sample frame of 10,093 students were selected from the six schools using proportionate sampling. The students were selected from all classes and every arm. A table of random numbers was used to select students from each arm in a class using the class register.

### Study instrument

The study instruments used was a modified version of the self - administered, standardized, WHO student drug use questionnaire.<sup>16</sup> It consisted of questions on socio-demographics, social class and substances used by the students. The licit substances assessed were kolanut, alcohol, sniffed and inhaled substances and tobacco while the illicit substances assessed for were

cannabis, cocaine, hallucinogen and heroin. The WHO questionnaire has been used and validated in Nigeria.<sup>5,8,16</sup>

A pilot study was done using 50 randomly selected students from a secondary school in Gwagwalada. These students were not included in the final study sample. The pilot study was to assess the average time to complete each questionnaire and detect difficulties in answering questions. Such questions were subsequently rephrased.

Selected students retained anonymity by not writing their names on the questionnaires. Teachers were present to help maintain law and order but could not discuss with any student or allowed to see what the students were writing. The students were prohibited from communicating with one another. Any question not understood by the students was explained by the researcher or research assistant who had been trained before commencement of the study.

The data was analysed using Statistical Package for Social Sciences version 20. Social class was determined using the classification design by Olusanya *et al.*<sup>17</sup>.

### Ethics

Ethical approvals were obtained from the FCT Health Research Ethics Committee before commencement of the study. Approval was also obtained from the appropriate F.C.T. Education Boards and principals of the selected schools. The principles of research ethics according to the Helsinki Declaration of 1975 as revised in 2013<sup>18</sup> were adhered to.

## RESULTS

### Socio-demographic distribution

Questionnaires were distributed to 1,204 students of which 1,196 (99.3%) were analysed. Eight were not analysed because they were improperly filled. The age range of the study subjects was 10 to 18 years with a mean age of 14.54 years and standard

deviation (SD) of  $\pm 2.28$  years. There were 555 (46.4%) males and 641 (53.6%) females, giving a male to female ratio of 1:1.15.

Christians made up about three-quarters of the subjects, (n=904; 75.6%). The students were mainly from homes with parents who were married and lived together (n=1042; 87.1%). Majority were from monogamous homes (n=927; 77.5%) while 935 (78.17%) subjects lived with both parents. About half of the respondents (650; 54.4%) were from the upper socioeconomic class. One thousand and fifty-two (88%) students were 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. The socio-demographic distribution characteristics of the students are shown in Table I.

**Table I. Socio-demographic characteristics of the study subjects**

Variables	Males	Females	Total
	No. (%)	No. (%)	No. (%)
<b>Religion</b>			
Christianity	410 (34.3)	494 (41.3)	904 (75.6)
Muslim	144 (12)	147 (12.3)	291 (24.3)
African traditional	1 (100)	0 (0)	1 (0.1)
<b>Marital status of parents</b>			
Married and live together	489 (40.9)	557 (46.6)	1046 (87.5)
Married but live apart	25 (2.1)	38 (3.2)	63 (5.3)
Separated/Divorced	11 (0.9)	16 (1.3)	27 (2.3)
One or both of them are dead	29 (2.4)	31 (2.6)	60 (5)
<b>Family structure</b>			
Monogamous	435 (36.4)	492 (41.1)	927 (77.5)
Polygamous	111 (9.3)	138 (11.5)	249 (20.8)
<b>Residence</b>			
With parents	432 (36.1)	503 (42.1)	935 (78.2)
With Mother only	43 (3.6)	63 (5.3)	106 (8.9)
With Father only	49 (4.1)	24 (2)	73 (6.1)
Others	31 (2.6)	51 (4.3)	82 (6.9)
<b>Social class</b>			
Upper	305 (25.5)	345 (28.9)	650 (54.4)
Middle	119 (10)	143 (12)	262 (22)
Lower	91 (7.6)	96 (8)	187 (15.6)
Unclassified			97 (8.1)
<b>Type of school</b>			
Public	480 (40.1)	572 (47.8)	1052 (88)
Private	75 (6.3)	69 (5.8)	144 (12)

## Socio-demographic variables associated with licit substance use

The socio-demographic variables associated with licit substances are shown in Table II. There was statistically significant relationship between the religion and: alcohol use ( $P = <0.01$ ), sniffed and inhaled substances ( $P = <0.01$ ); and tobacco ( $P = <0.01$ ).

Christians were more likely to use alcohol (OR = 0.2539 CI 0.1394 – 0.4347) and sniffed and inhaled substances (OR= 0.2022 CI 0.0631 – 0.5025) while Muslims were more likely to use tobacco (OR= 1.480 CI 0.0631 – 0.5025).

The relationship between substance use and family structure was only significant for alcohol ( $P = <0.01$ ) with students from polygamous families being more likely than those from monogamous to use alcohol (OR= 0.455 CI 0.2709-.734).

The residence, that is whether the subject lived with parents, a single parent or others had a statistically significant relationship for tobacco use ( $P = 0.016$ ). Students with single parents were more likely to use tobacco (OR= 3.243 CI 1.228 – 8.044) than those who lived with both parents and others (OR= 1.531 CI 0.167 – 6.768). While, the type of school attended was significant for the use of alcohol ( $P = <0.01$ ) and sniffed and inhaled substances ( $P = 0.024$ ). Students in public schools were associated with a less likelihood to use alcohol (OR= 0.433 CI 0.284 – 3.670) and sniffed and inhaled substances (OR= 0.523 CI 0.291 – 0.988).

The relationship between substance use and marital status of the parents; and substance use and social class were not statistically significant for any of the licit substances.

**Table 2: Socio-demographic variables associated with licit substance use**

Variables	Licit Substances															
	Kolanut				Alcohol				Sniffed and inhaled				Tobacco			
	N	%	X <sup>2</sup>	p value	n	%	X <sup>2</sup>	P value	n	%	X <sup>2</sup>	p value	n	%	X <sup>2</sup>	p value
<b>Religion</b>																
Christianity	417	34.87	5.634	0.060	169	14.13	34.44	<0.01* <sup>1</sup>	72	6.02	26.607	<0.01* <sup>2</sup>	18	1.42	45.795	<0.01* <sup>3</sup>
Islam	113	9.45			17	1.42			6	0.50			8	0.67		
<b>Family structure</b>																
Monogamous	417	34.87	0.000	0.983	164	13.71	11.275	0.001* <sup>4</sup>	66	5.52	2.409	0.121	19	1.59	0.510	0.475
Polygamous	113	9.45			22	1.84			12	1			7	0.59		
<b>Parental Marital status</b>																
Married	488	40.8	0.342	0.559	169	14.13	1.096	0.296	75	6.27	1.603	0.206	23	1.92	0.704	0.402
Single	42	3.51			17	1.42			3	0.25			3	0.25		
<b>Residence</b>																
Both parent	425	35.54	4.957	0.084	144	12.04	0.726	0.697	63	5.27	1.058	0.589	15	1.25	8.293	0.016* <sup>5</sup>
Single parent	70	5.85			31	2.59			9	0.75			9	0.75		
Others	35	2.93			11	0.92			6	0.52			2	0.17		
<b>Social class</b>																
Upper	285	23.83	5.342	0.148	105	8.78	1.763	0.623	45	3.76	3.677	0.299	10	0.84	5.659	0.129
Middle	113	9.45			43	3.60			21	1.76			5	0.42		
Lower	94	7.86			23	1.92			8	0.67			8	0.67		
<b>School</b>																
Private	80	6.69	2.373	0.123	39	3.26	16.942	<0.01* <sup>6</sup>	17	1.42	5.119	0.024* <sup>7</sup>	4	0.33	0.295	0.581
Public	450	37.63			147	12.29			61	5.10			22	1.84		

\*Significant at  $p < 0.05$

\*1 = OR = 0.2539 CI 0.1394 - 0.4347

\*4 = OR = 0.455 CI 0.2709 - 734

\*7 = OR = 0.523 CI 0.291 - 0.988

\*2 = OR = 0.2022 CI 0.0631 - 0.5025

\*5 = OR = 3.243 CI 1.228 - 8.044

\*3 = OR = 1.480 CI 0.0631 - 0.5025

\*6 = OR = 0.433 CI 0.284 - 3.670

### Socio-demographic variables associated with illicit substance use

The socio-demographic variables associated with illicit substance use are shown in Table III.

The relationship between religion and substance use was significantly associated with cannabis ( $P = <0.01$ ), hallucinogen ( $P = <0.01$ ) and heroin ( $P = <0.01$ ) use. Muslims were less likely to use cannabis (OR= 0.000 CI 0 - 0.7345), hallucinogen (OR= 0.774 CI 0.0796 - 3.911) and heroin (OR= 0.5352 CI 0.1158 - 4.4586).

The family structure was significantly associated with only heroin use ( $P= 0.048$ ). Students from polygamous homes were more likely to use heroin (OR= 3.717 CI 0.683 - 20.096). While residence was significantly associated with only the use of cocaine ( $P= 0.01$ ) with subjects from homes with single parents more likely to use cocaine (OR= 4.025 CI 1.134 - 13.39) than those living with both parents and others (OR= 0 CI 0 - 0.5463).

There was no statistically significant relationship between marital status, social class, type of school and use of illicit substances.

**Table 3: Socio-demographic variables associated with illicit substance use**

Variables	Illicit Substances															
	Cannabis				Cocaine				Hallucinogen				Heroin			
	n	%	X <sup>2</sup>	P value	n	%	X <sup>2</sup>	P value	n	%	X <sup>2</sup>	P value	n	%	X <sup>2</sup>	P value
<b>Religion</b>																
Christianity	17	1.42	74.332	<0.01	7	0.59	2.64	0.267	9	0.75	107.8	<0.01	6	0.50	129.926	0.000* <sup>3</sup>
Islam	0	0		* <sup>1</sup>	6	0.50	1		2	0.17	02	* <sup>2</sup>	1	0.08		* <sup>3</sup>
<b>Family structure</b>																
Monogamous	11	0.92	2.036	0.154	9	0.75	1.79	0.180	6	0.50	2.116	0.146	4	0.33	3.912* <sup>4</sup>	0.048* <sup>4</sup>
Polygamous	6	0.50			5	0.42	9		5	0.42			4	0.33		
<b>Parental Marital status</b>																
Married	16	1.34	0.051	0.821	14	0.67	1.10	0.293	10	0.84	0.052	0.819	7	0.59	0.322	0.570
Single	1	0.08			0	0	7		1	0.08			1	0.08		
<b>Residence</b>																
Both parent	14	1.17	1.595	0.450	8	0.67	9.16	0.01* <sup>5</sup>	7	0.59	1.50	0.47	5	0.42	4.020	0.134
Single parent	1	0.08			6	0.50	1		3	0.25			1	0.08		
Others	2	0.17			0	0			1	0.08			2	0.17		
<b>Social class</b>																
Upper	4	0.33	2.551	0.056	7	0.59	1.99	0.574	4	0.33	2.284	0.525	4	0.33	2.248	0.134
Middle	5	0.42			2	0.17	5		3	0.25			0	0		
Lower	1	0.08			4	0.33			2	0.17			2	0.17		
<b>School</b>																
Private	2	0.17	0.001	0.972	1	0.08	0.30	0.579	2	0.17	0.407	0.523	1	0.08	0.007	0.933
Public	15	1.25			13	1.09	8		9	0.75			7	0.59		

\*Significant at p <0.05

\*1 = <0.001 OR = 0.00 CI 0- 0.7345

\*4 = 0.048 OR = 3.717 CI 0.683 - 20.096

\*2 = <0.001 OR = 0.774 CI 0.0796 - 3.911

\*5 = 0.01 OR = 4.025 CI 1.134 - 13.39

\*3 = <0.001 OR = 0.5352 CI 0.1158 - 4.4586

### Relationship between participation in religious activities, birth order and licit substance use

The relationship between participation in religious activities, birth order and lifetime licit substance use is shown in Table IV. More students who had used licit substances participate frequently (once a week or more) in religious activities, 480 (90.6%) subjects of 530 for kolanut use, 168 (91.3%) out of 186 for alcohol use, 74 (94.9%) out of 78 for sniffed and inhaled substances, and 23 (88.5%) out of 26 for tobacco use, participate frequently in religious activities compared with 37 (7.2%) for kolanut use, 16 (8.7%) for alcohol use, 4

(5.1%) for sniffed and inhaled substances, and 3 (11.5%) for tobacco use, who participate occasionally (less than once a week) in religious activities. However, the relationship between frequency of participation in religious activities and substance use was only significantly associated for tobacco use ( $X^2 = 45.795$  and  $P = <0.01$ ). Those who participated frequently in religious activities were less likely to use tobacco (OR= 0.6817 CI 0.1998- 3.605).

The relationship between birth order and substance use was not statistically significantly associated with the licit substances as shown in Table IV.

**Table 4: Relationship between participation in religious activities, birth order and licit substance use**

Variables	Licit substances											
	Kolanut			Alcohol			Sniffed and Inhaled			Tobacco		
	Yes	No	P value	Yes	No	P value	Yes	No	P value	Yes	No	P value
<b>Participation in religious activities</b>	480	457		168	892		74	862		23	1037	
Frequent	37	49	0.145	16	79	0.80	4	82	0.277	3	92	<0.01* <sup>1</sup>
Occasional	517	506		184	971		78	944		26	1129	
Total												
<b>Birth order</b>												
1 <sup>st</sup>	148	160	0.215	60	278	0.228	25	283	0.068	9	329	0.331
2 <sup>nd</sup>	107	108		45	197		12	203		6	236	
3 <sup>rd</sup>	137	109		39	236		20	225		3	272	
4 <sup>th</sup>	82	94		26	179		14	162		2	203	
Others	24	68		16	101		7	82		6	122	
Total	498	539		186	991		78	1055		0	0	
										26	1162	

\*Significant at p <0.05

\*1 = OR= 0.6817 CI 0.1998-3.605

**Relationship between participation in religious activities, birth order and illicit substance use**

This is depicted in Table V. Similar to students who had not used illicit substances most who used participated frequently in religious activities. Fifteen (88.2%) of 17 students who had ever used cannabis participated frequently in religious activities and 12 (85.7) of 14 subjects for cocaine use, 10 (90.9%) of 11 students for hallucinogen use, and 8 (100%) of 8 subjects for heroin use compared with 2 (11.8%), 2 (14.3%), 1 (9.1%) and 0 (0%) students for cannabis, cocaine, hallucinogen and heroin use, respectively who did not participate frequently in religious activities.

The relationship between participation in religious activities and lifetime substance use was not significant for the illicit substances.

Birth order was significantly associated with cocaine use ( $X^2 = 10.569$  df = 1 and P= 0.014) and hallucinogen use ( $X^2 = 10.120$ , df= 1 and p= 0.018). The relationship between the first birth position and other birth positions (categorised into one group) demonstrated that the first born child was more likely to use cocaine (OR = 0.338 CI 0.0719 – 1.3548) and hallucinogen (OR = 0.706 CI 0.116-3.3136).

**Table 5: Relationship between participation in religious activities, birth order and illicit substance use.**

Variables	Illicit Substances											
	Cannabis			Cocaine			Hallucinogen			Heroin		
	Yes	No	P value	Yes	No	P value	Yes	No	P value	Yes	No	P value
<b>Participation in religious activities</b>												
Frequent	15	1046	0.592	12	1047	0.346	10	1050	0.916	8	913	0.388
Occasional	2	93		2	93		1	94		0	85	
<b>Birth order</b>												
1 <sup>st</sup>	5	333	0.507	4	314	0.014*	7	331	0.018*	2	298	0.055
2 <sup>nd</sup>	4	238		3	235		0	242		0	212	
3 <sup>rd</sup>	2	274		0	274		0	275		1	243	
4 <sup>th</sup>	3	202		6	197		3	201		4	170	
Others	3	132		0	157		1	131		1	113	

\*Significant at p <0.05

\*1 = OR = 0.338 CI 0.0719 – 1.3548 \*2= OR = 0.706 CI 0.116-3.3136

## DISCUSSION

The factors associated with licit substance use were the students' religion, family structure, residence and type of school which had statistically significant relationships while their religion, family structure and residence had a statistically significant relationship with illicit substance use.

This study demonstrated that Christians were more likely to drink alcohol when compared with their Muslim counterpart, similar to findings by other studies.<sup>8,19,20</sup> It may be speculated that this is due to the teaching that drinking alcohol is prohibited in Islam and thus will restrict its use among Muslims. Conversely, Muslims were found to be more likely to use tobacco. Tobacco use is not prohibited among Muslims. Christianity was also associated with a more likelihood to hallucinogen and heroin use. This may just be because there were far more Christians in the study than Muslims.

Students from the lower socioeconomic class were most strongly associated with cannabis use. Cannabis is relatively cheap compared with substances like cocaine and heroin; hence the probable reason for preference among the lower social classed subjects, supporting studies that show that affordability is a determinant of substance use.<sup>4</sup> Some studies have reported a higher use of substance among those of higher socioeconomic status.<sup>4,12,21</sup>

However, people of lower socioeconomic status tend to have a more hazardous and harmful pattern of use.<sup>21</sup> Family financial resources and status are reported to be strong predictors of adolescent substance use, though, availability of family financial resources is a stronger predictor of substance use than status as adolescents with little money, tend to abstain more from substance use.<sup>21</sup> A study found out that greater availability of family financial resources were associated with greater frequency and

quantity of cigarette smoking, alcohol and other drug use, than family status.<sup>21</sup>

Students from polygamous families were found to be more likely to use alcohol while students from monogamous homes more likely to use heroin. This may also be due to availability and affordability of the two substances. There are various brands of alcohol at various prices which can be affordable to students from both family structures. However, heroin is quite expensive and students from monogamous homes are more likely to have more financial resources than those from polygamous homes<sup>22</sup> (Dissa, 2016).

Subjects who lived with one parent as against both were more likely to use substances, corroborating the findings from other studies.<sup>23,24</sup> Parental separation can increase anxiety and stress in their children and can also cause a reduction in their monitoring and supervision. This may cause children from such homes to turn to substance use. Parental monitoring, supervision and harmony are protective factors against substance use.<sup>5,20</sup> A study done in Harare, Zimbabwe reported that parental supervision is a protective factor for the use of marijuana and glue in adolescents.<sup>25</sup>

This study suggests the importance of the family unit in the prevention of substance use and therefore the need to preserve a strongly knit family unit.

Frequency in participation in religious activities had an effect on tobacco use. Those who participated frequently were less likely to use tobacco. These are similar findings to other studies.<sup>12,19</sup> A study reported that religion protects adolescents by inhibiting risky behaviour, keeping them occupied with religious activities and keeping fewer friends who use substances like alcohol.<sup>23</sup> It has been reported that religious activities also help the adolescent abstain from substance use due to religious teachings as seen in the Islamic

religion where the consumption of alcohol is prohibited.<sup>26</sup> This highlights the need for religious bodies to be involved in the fight against substance use.

Birth order was associated with cocaine and hallucinogen use. Being the first born child was shown to have the strongest relationship to substance use compared with other birth positions. This is in contrast with the findings from a study in Pakistan with a sample size of 332 male patients aged 15 to 57 years<sup>27</sup> where the middle born child had the highest frequency of substance use of 57% compared with 22% for the first born and 21% for the last born.

However, in the study over half (56.6%) of the participants were born in the middle position.<sup>27</sup> This observation is similar to another study that reported that studies finding that the younger birth position was associated more with substance use had over representation of this category of participants in their study and also inadequate measures were used to prevent bias from confounding factors.<sup>28</sup>

The reason for the first born position being more predisposed to substance use in this study may be because there were more adolescents with first born positions in the sample population. It may also be that in the African setting the first born is exposed to more stressors, higher parental expectation and responsibility compared to their younger siblings and so seeks ways to relieve these stressors.

However, more studies using Nigerian adolescents are needed to make a conclusive statement on the relationship between birth order and substance use. Substance use prevention strategies should include counselling sessions for all students especially first born students.

## CONCLUSION

Several factors were associated with adolescent substance use in this study. It is recommended that more in-depth studies be done to determine causality of substance use in adolescents in Gwagwalada.

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