

Prevalence and associated risk factors of Kola nut chewing among secondary school students in Osogbo, Nigeria

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Abstract

The objectives of this study were to determine the prevalence and pattern of Kola nut use among secondary school students in Osogbo, Osun State, Nigeria. The study also aimed to determine the association of socio-demographic variables (of the students and their parents) with kola nut chewing. A questionnaire consisting of socio-demographic variables, the stimulant use section of the WHO Students Drug Use Questionnaire was administered on three hundred and eighty-five (385) randomly selected students of the two Local Government Areas of Osogbo. The prevalence rate of kola nut use was calculated and some socio-demographic variables were determined. The 30-day prevalence rate of kola nut use was 11.2%. The one-year prevalence of kola nut use was 29.1 percent and the lifetime rate was 74.8 percent. Majority of users started at age 14 years or below. Kola nut use was associated with lower age group, poor school attendance, polygamous background, low education of mother, high education of father and the description of mother as being too permissive. The findings suggest the need to increase the awareness of the dangers of kolanut use among adolescents. Control program are urgently needed to prevent student wastage.

Introduction

There is sustained global interest in epidemiological studies of substance use among secondary school pupils for various reasons. Firstly, in the process of negotiating the different

stages of adolescent development and the attendant crises, students are prone to experimenting with various high-risk activities, including substance use. Therefore, primary prevention is more likely to be effective if targeted at this formative stage. Secondly, the school population is easily accessible, and data can be easily generated within a short period of time 1.

Several secondary school substance use surveys have been conducted in Nigeria to complement data generated from other sources such as hospitals, law enforcement agencies and prisons. From these surveys, four substances have been identified as commonly used by secondary school students in Nigeria. These include stimulants, alcohol, tobacco and hypnotosedatives.³⁻⁸ These four substances deserve to be extensively studied individually because of their high rates of use by these students. Adelekan and Ndom⁹ had studied the use and psychosocial correlates of non-prescription use of hypnotosedatives by students in northern Nigeria.

Stimulants are a group of psychoactive substances which are widely used in all cultures for their arousal and/or mood lifting qualities, and for the energetic feeling of wellbeing which they impact. They are drugs that increase the activities of the sympathetic nervous system and produce a sense of euphoria. They include substances such as caffeine (coffee, kola nut, proplus etc), cocaine, theophyllin, khat, etc. Of these, the most widely consumed in the world is caffeine.¹⁰ Throughout the world, caffeine consumption is well integrated into daily cultural practices (e.g., the coffee break in the United States, tea time in the United Kingdom, and kola nut chewing in Nigeria).¹¹ Most individuals who indulge in the consumption of stimulants do so for any, or a combination of various reasons. These include educational and social reasons, and use by members of certain occupations such as long distance drivers and farmers to increase efficiency at work.^{12,13} Previous reports indicate that 1 in 5 students in Nigeria consume stimulants.^{7,8}

Academic difficulty has been reported to be associated with current and lifetime use of stimulants.^{8,14,15} One question that requires an answer is the exact relationship (cause and effect) between poor academic performance and stimulant use. While poor academic performance may cause emotional reactions, which may lead to stimulant use, it is also possible for stimulant use to cause sleep deprivation, which in turn may lead to poor academic performance.¹⁶

Kola nut, a seed part of a tree; from the Sterculiaceae family. The trees are native to Central and Western Africa, but are now found in the West Indies and Brazil, where they were introduced by African slaves. All three species are used as a stimulant as it contains high amounts of caffeine; it helps combat fatigue

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and is most commonly used as a central nervous system stimulant that focuses on the cerebrospinal centers.¹² It is chewed in many West African cultures and Sudan, individually or in a group setting as masticatory¹⁷ and may also be used to counteract hunger pangs, thirst and restore vitality. It is often used ceremonially, presented to tribal chiefs or presented to guests.¹⁸ It is an important part of the traditional spiritual practice of culture and religion in West Africa, particularly Nigeria.¹⁹ It is also used as a religious object and sacred offering during prayers, ancestor veneration, and significant life events, such as naming ceremonies, weddings, and funerals. In a traditional divination system called Obi divination, kola nuts that are divided into four lobes and cast upon a special wooden board and the resulting patterns are read by a trained diviner.²⁰ This ancient practice is currently enjoying increased growth within the United States and Caribbean. It is preferred among African Muslim, especially northern part of Nigeria, who are forbidden to drink alcohol.¹⁸

Kola nut is one of the most widely used caffeine in Nigeria,¹¹ and a cheap source of stimulant especially in the Southwest Nigeria, it is widely consumed in this region,^{5,8} for instant, rate of consumption especially by students is very high as a principal stimulant to keep awake and withstand fatigue.²¹

Earlier studies on student substance use were on alcohol, tobacco, hypnotosedatives and other stimulants,³⁻⁸ however there paucity of information on use of kola nut as a stimulant among students in this environment hence this study was conducted to determine the prevalence and associated risk factor of kola nut chewing among secondary school students in Osogbo. It is hoped that the findings will be useful in planning preventive measures against kola nut use and possibly help in the control of mental health problems that may develop from their use among secondary school students.

Materials and Methods

Setting of the study

The study was conducted in the two Local Government Areas of Osogbo, the capital of Osun State, South West Nigeria. Olorunda is a Local Government Area in Osun State, Nigeria. Its headquarter is in Igbona, on the outskirts of the state capital Osogbo. It has an area of 97 km² and a population of 131,761 at the 2006 census. Osogbo (or rarely, Oshogbo) is the capital of Osun State and a Local Government Area. The Local Government Area has an area of 47 km² and a population of 156,694 at the 2006 census. There are 12 public secondary schools in Osogbo Local Government Area and 11 in Olorunda, the second Local Government Area.

Subjects

The subject consisted of senior secondary school students in classes 2 and 3 (SS2 & SS3) attending public schools in Osogbo. This population was earmarked because they would understand the content of the questionnaire well enough.

Procedures

The sample size (360) was computed based on the consolidated prevalence rate of stimulants use (37.5%) from a previous report.⁷ This was rounded up to 400 in order to make allowance for attrition. Approval of the Research and Ethical Committee of the Obafemi Awolowo University Teaching Hospitals Complex was obtained. Permission of the Local Inspectors of Education of the two Local Government Areas was also obtained. In addition, the consent of the principals and classroom teachers of selected schools was obtained. During the survey, written informed consent was obtained from each student who agreed to participate.

A pilot study was conducted among senior secondary school students in one secondary school not selected for the main study. Problems encountered during the pilot study were looked into, and appropriate modification was made. For example, the pilot study revealed the tendency for the students to compare responses whenever they felt that they were not being watched, contrary to the instruction given to them. This observation necessitated increasing the number of supervisors assigned to each classroom without distracting the subjects during the main study. Also, the pilot study showed that a few items of the questionnaire needed to be modified in order to increase the level of understanding of the respondents.

For the 23 schools in Osogbo, the sampling frame consisted of 7,492 students in the two

upper classes. The sample (400) represented about 5 percent of the sampling frame. During the main study, a 2-stage proportionate sampling techniques was used to select the final sample. This involved initially dividing the co-educational schools into 2 groups, based on Local Government location (Osogbo or Olorunda). Out of the 11 co-educational schools in Osogbo Local Government, three were selected by simple random sampling (balloting) method and another three selected from 12 co-educational schools in Olorunda Local Government. In each selected school, proportionate representative by class (SS2 or SS3) and sex (male or female in the co-educational schools) was taken into consideration in the selection of the sampling size from the sampling frame (multi-stage stratified random sampling). Thereafter, individual participants were selected from nominal list of students in the class based on calculated sample for the class by simple random sampling techniques (balloting). The questionnaires were administered to selected students in the morning, and in the classrooms. Their teachers were not allowed to stay with them during the exercise. The administration of the questionnaires was done by the authors and 4 trained assistants who were resident doctors in psychiatry. Necessary assistance was offered to the students when necessary. The questionnaires were retrieved as soon as they were completed same day.

Research questionnaire

The research questionnaire consisted of 2 parts. The first part contained socio demographic information of the respondents and their parents. These included age, sex, religion, parents' occupation, family size, respondents' best description of parents, etc. The second section consisted of items from the World Health Organization (WHO) Questionnaire for Student Drug Use Surveys.¹ This questionnaire has been widely used in Nigeria.⁵⁻⁸ Several drugs are covered by the drug use section of the WHO questionnaire. These include tobacco, alcohol, cannabis, cocaine, amphetamine and other stimulants, hallucinogens, organic solvents, heroin, opium and other opiates, and tranquilizers. For each substance, age of first use and frequency of usage are inquired about. The respondent is also required to indicate if he/she has ever used the substance before or if he/she used it in the past 1 year or in the past 30 days. The questionnaire has been reported to have a high validity and a mean test-retest reliability of 86.7 percent among Nigerian students.⁸ Only the stimulants' use section of the WHO questionnaire was administered to the respondents. The stimulant presented to the respondents was kola nut which contain caffeine. Other stimulants surveyed were amphetamine and its related compounds or derivatives such as dexa, pep pills and ephedrine report of which had been reported earlier.²²

Data analysis

Data was processed and analyzed using the statistical package for Social Sciences (SPSS) version 11. Descriptive frequencies and Chi-square test was used to test the association between different variables.

Results

Four hundred questionnaires were administered. Out of these, 15 were rejected on account of many missing data or inconsistent responses, leaving 385 (96.3%) for analysis. The socio-demographic characteristics of the respondents are summarized in the Table 1. The age range of the respondents was between 14 and 17 years with mean age of 16.65 (s.d ± 0.97). One hundred and ninety five (50.6%) were in senior secondary school class 3 (SS 3) while 54.8% were males. Majority (51.7%) belonged to the Islamic faith while 57.7% of all respondents claimed to be *just religious*. Majority (80.3%) attended school regularly for most of the year. More respondents (57.4%) lived with parents and slightly more (51.9%) came from monogamous homes.

In the sample, the 30-day (current) prevalence of kola nut use was 11.2%. The one-year prevalence of kola nut use was 29.1 percent and the lifetime rate was 74.8 percent. The proportion of the respondents that started using kola nut at age 13 or less (62.1%) was much higher than those who started between 14 to 16 years (11.4%), who in turn was higher than those who started at 17 years (1.3%).

Comparison of Kola nut users with non-users (Table 2) showed that they were not different on class, sex, type of religion, level of religious inclination, and place of abode. Even though, higher proportions of respondents belonged to the higher age group (16-17 years) in both groups, the proportion of respondents who were younger was significantly higher among the stimulant users ($P < 0.05$) and they were more likely to come from polygamous homes ($P < 0.01$).

Table 3 shows the comparison of the socio-demographic characteristics of parents of users and non-users. Fathers of users tended to be more educated (i.e. attained secondary school education or above). Mothers of stimulant users tended to be of lower education. Description of fathers by respondents varied between the two groups. Higher proportions of non-users described their fathers as either loving or wicked while more stimulant users described their fathers as kind and too strict. Description of mothers by respondents also varied between the users and non-users. However, the level of permissiveness in mothers of stimulant users was much higher than what obtained in the mothers of non-users.

The relationship between the parents of the two groups was observed not to significantly differentiate them as only slightly more proportion of non-users (76.8%) described their parents' relationship as friendly compared with 75.7 percent of users.

Discussion

From the results, 29.1% of the respondents had used kola nut within the past one year. This finding conforms to previous rates reported of stimulant use from secondary school samples in Nigeria.^{7,8} The pattern of consumption indicates that the commonly available form like. Kola nut were more commonly used by the students. Kola nut is readily available, cheap and its use is acceptable in the society. This observation of high level of use of commonly available type is in agreement with most findings reported from Nigeria in the past 20 years.^{6,8} A plausible explanation for this change in trend to readily available one like kola nut is that those forms of stimulants are no longer freely accessible because Government has controlled their sales. Thus, controlling availability may be a potent tool for the prevention of substance abuse in Nigeria. Although, the substances commonly abused by the students (kola nut and coffee) are acceptable and freely used in the community, and cannot be sanctioned through legislation, it is important to increase the awareness of the dangers posed by their use or misuse. One important observation among Nigerian students is that these substances are consumed by them to keep awake and be able to study for long hours. This type of use, as stated earlier, can be hazardous to the mental health of these students. It may even lead to the foreclosure of the education of affected students. It is important to teach students effective study habits which they can adopt instead of resorting to the use of psycho-stimulants to enhance study. An earlier observation on the significant association of stimulant use with the symptoms of BFS²² appears to lend credence to this fear. Also, majority of kola nut chewer started at age 14 years or less. This observation is in keeping with previous observation on the age of initiation into drug use.^{5,7,8} The observation that respondents who were 14 or 15 years old were more represented among current kola nut users compared to those who were 16-17 years old may be linked to the lower age of initiation into stimulant use. Another plausible reason for this observation is that after experimenting with kola nut use, a sizeable proportion of students discontinue after the age of 15 years. The implication of these findings is that preventive strategies must start at an early age.

The observation of higher proportion of kola nut users with poor school attendance may indi-

Table 1. Socio-demographic variables of the respondents (N=385).

Variable	Frequency	Percentage
Age		
14yrs	57	14.8
15yrs	99	25.7
16yrs	149	38.7
17yrs	80	20.8
Class		
SS 2	190	49.5
SS 3	195	50.6
Sex		
Male	211	54.8
Female	174	45.2
Religion		
Christians	186	48.3
Muslims	199	51.7
Religiosity		
Very religious	113	29.4
Just religious	222	57.7
Not religious	50	13.0
Studentship		
Not a student for most of the year	14	3.6
Poor school attendance	62	16.1
Good school attendance	309	80.3
Place of Abode		
With parents	221	57.4
With guardians	164	42.6
Family set-up		
Monogamy	200	51.9
Polygamy	185	48.1

Table 2. Comparison of socio-demographic characteristics of kola nut users and non-users in the past year.

Parameters	Non-User in the past year f (%)	User in the past year f (%)	Total	X ² test
Age group				
14-15	103(36.4)	53(47.3)	156(40.5)	x ² =4.43 df=1, P<0.05
16-17	170(63.6)	59(52.7)	229(59.5)	
Class				
SS 2	135(49.4)	55(49.3)	190(49.4)	x ² =0.01, df=1, P>0.05
SS 3	138(50.6)	57 (50.7)	195 (50.6)	
Sex				
Male	147 (53.1)	64 (57.5)	211 (54.8)	x ² =0.71, df=1, P>0.05
Female	126 (46.9)	48 (46.5)	174 (45.2)	
Religion				
Christians	134 (51.9)	51 (45.5)	186 (48.3)	x ² =3.22, df=1, P>0.05
Muslims	138 (48.1)	61 (54.5)	199 (51.7)	
Religiosity				
Very religious	84(31.8)	28(25.3)	113 (29.4)	x ² =2.25, df=2, P>0.05
Just religious	152 (54.8)	70 (62.3)	222 (57.7)	
Not religious	36 (13.4)	14 (12.3)	50 (13.0)	
Place of Abode				
With parents	155 (56.9)	66 (58.2)	221 (57.4)	x ² =0.06 df=1 P>0.05
With Guardians	118 (43.1)	46 (41.8)	164 (42.6)	
Studentship				
Not a student for most of the year	6(1.7)	8(6.8)	14 (3.6)	x ² =7.35 df=2, P<0.05
Poor school attendance	43(15.5)	19(17.1)	62 (16.1)	
Good school attendance	224(82.8)	85(76.0)	309(80.3)	
Family set-up				
Monogamy	155 (59.4)	45 (39.7)	200 (51.9)	x ² =14.07 df=1, P<0.01
Polygamy	188 (40.6)	67 (60.3)	185 (48.1)	

Table 2. Comparison of sociodemographic parameters concerning parents of kola nut users and non-users in the past year.

Parameters	Non-user in the past year f (%)	User in the past year f (%)	Total	X ² test
Father's education				
No formal education	33 (13.1)	5 (4.8)	38 (9.9)	$\chi^2=15.38$,
Primary	76 (29.2)	21 (18.5)	96 (25.1)	$df=3$,
Secondary	125 (44.5)	64 (56.8)	188 (49.2)	$P<0.05$
Post secondary	38 (13.1)	22 (19.9)	60 (15.7)	
Mother's education				
No formal education	48 (15.7)	31 (27.4)	77 (20.2)	$\chi^2=14.55$,
Primary	97 (34.9)	46 (41.8)	143 (37.5)	$df=3$,
Secondary	95 (37.0)	25 (22.6)	120 (31.5)	$P<0.05$
Post secondary	31 (12.3)	10 (8.2)	41 (10.8)	
Parents' relationship				
Friendly	148 (76.8)	85 (75.7)	233 (76.4)	$\chi^2=0.50$,
Not friendly	45 (23.2)	27 (24.3)	72 (23.6)	$df=1$,
				$P>0.05$.
Father's description				
Loving	86 (39.1)	23 (20.3)	109 (32.2)	$\chi^2=17.73$,
Too strict	58 (25.1)	34 (30.9)	92 (27.2)	$df=4$,
Kind	51 (21.4)	40 (36.6)	91 (26.9)	$P<0.05$.
Wicked	18 (8.4)	6 (4.9)	24 (7.1)	
Too permissive	13 (6.0)	9 (7.3)	22 (6.5)	
Mother's description				
Loving	87 (37.0)	37 (33.3)	124 (35.5)	$\chi^2=55.79$,
Too strict	71 (32.7)	10 (8.7)	81 (23.2)	$df=4$,
Kind	55 (22.7)	30 (26.8)	85 (24.4)	$P<0.05$.
Wicked	13 (5.2)	10 (8.7)	23 (6.6)	
Too permissive	11 (2.4)	25 (22.5)	36 (10.3)	

cate that kola nut use was associated with study difficult in these students which led to lack of interest in school activities. The association of polygamy with kola nut use may be a direct effect of reduced parental supervision in such homes. Various authors have observed the association of lack of parental supervision and polygamy with the use of hypnotics and stimulants in Nigeria.^{9,24} Respondents whose fathers were more educated and whose mothers had little education tended to use stimulants more than their counterparts. Also, kola nut chewing appears to be commoner among less literate women. Thus, those whose mothers were less literate may have easy access to kola nut. From the foregoing, accessibility may be the ingredient that is responsible for the differences observed with the level of education of the respondents' parents.

From the respondents' description of their mothers (Table 3), higher proportion of mothers of non-users were described as too strict while higher proportion of mothers of users were described as too permissive. It appears that parenting (being too permissive) is important in students' drug use especially with respect to the mothers.

In conclusion, our findings have shown that kola nut use is very common among secondary school students in this environment. Age of initiation into stimulant use is very low. Some characteristics of the respondents and their parents are associated with kola nut use. It is important to formulate strategies to control the use of stimulants like kola nut by secondary

school students in order to prevent the deleterious consequences, especially the brain fog syndrome, which may lead to student wastage.

Limitations

A major limitation of this survey is that it did not cover out-of-school youths. Also it will have been desirable to spread the study to other school in the area, however this had been taken care of with a representative sample used.

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