RESEARCH ARTICLE

Identification of substance abuse among medical students in a Nigerian University

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ABSTRACT

Objective: The aim of the study was to identify substance abuse among medical students of the College of Medicine, University of Lagos, Nigeria, and correlate it with their urine samples. **Methods:** A cross-sectional study was conducted among 150 undergraduate students of the College of Medicine University of Lagos, Nigeria. Ethical approval was obtained for the study and informed consent obtained from the participants before the commencement of the study. Data on the knowledge and prevalence of drug addiction were collected from the undergraduate students using a validated self-developed questionnaire while standard sample bottles were used to collect the students' urine samples. Data collected were summarized using descriptive statistics. Chi-square was used to establish an association between the variables. **Results:** Sixty-three (42.2%) male and 87 (57.8%) female medical students participated in this study out of which 99 (65.9%) had good knowledge of drug addiction, 21 (15.6%) admitted that they have taken drugs not prescribed by a physician while 33(24.4%) claimed to have previously done drug test. The prevalence of drug abuse among the students was 15.6%. The age with the highest rate of drug abuse was 11–18 years. Tramadol was the most abused drug by the students while the most preferred route of drug abuse was oral route 20 (14.8%). **Conclusion:** There was a low prevalence of substance abuse among the medical students. BIOEASYTM immunoassay Multi-Drug Test Card was effective in screening the student's urine. There is an urgent need for interventions like health education and training to be established in our higher institutions.

Keywords: Identification, Substance abuse, Undergraduate medical students

INTRODUCTION

Substance abuse is a major public health issue that has scavenged the lives of most adolescents in both developed and developing countries.[1] It is a common phenomenon in the world that has invaded human society as social damage.[1,2] Substance abuse is a non-adaptive model of drug use that results in adverse problems, the consequences of which includes a set of cognitive, behavioral, and psychological symptoms.[1,3] Drug issues have been referred to as the largest business next to petroleum and arms trade, with no restriction on regions, races, sections, colors, languages, and with a turnover of $500 billion worldwide.[4] The opioid crisis opened new problems which have taken its toll on families, especially children, forcing an unprecedented number to enter foster care due to parental substance use.[5]

Recent reports estimated that annual costs for illicit drug use in the United States are approximately

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$193 billion.[6] These costs include lost wages and productivity, criminal activity, and health-care expenses. In 2001, it was reported that about 190 million people all over the world consume drugs illicitly one way or the other.[4,7] In Africa, especially, in Nigeria, the consumption of illegal drugs and the harmful use of other psychoactive substances such as alcohol, pharmaceutical drugs, inhalants, and solvents have increased at an alarming rate over the years.[8,9] Other reports claimed that Nigeria is currently the highest user of cannabis and amphetamine in Africa.[9] In 2014, the WHO published that harmful use of alcohol led to 3.3 million deaths each year, with an estimated toll of substance abuse on people causing drug use disorders in about 15.3 million persons worldwide.[10] Deaths as a result of opioid overdose have continued to be on the increase with the social impacts such as direct and indirect escalation in the cost of healthcare.[11]

The most commonly abused substances include alcohol, tobacco, marijuana, cocaine, methamphetamine, heroin, and prescription drug misuse (i.e., pain relievers, tranquilizers, stimulants, and sedatives) with alcohol, tobacco, and marijuana having the highest prevalence rates across all age groups.[11] The prevalence rate of marijuana use was seen to be higher in early adolescence while early adulthood showed a greater prevalence rate of alcohol use.[11] In Nigeria, the prevalence rate of alcohol has been predicted to be more than 1.5 million cases each year.[11] Addiction to substance abuse has been associated with its recreational and euphoric effects. The age group associated with substance abuse has shifted to teenagers and children. In Nigeria, studies have shown that the most endangered group is children in secondary schools.[9] This is mainly due to the lack of awareness of the effects of substance abuse. Reports from South America (Trinidad and Tobago) also revealed the use of marijuana and cocaine among secondary school children.[9] The abuse of substances by school children is becoming a global public health issue. It has also been observed that some undergraduate students drink more than their mates who are not in school.[12]

Medical students have great responsibility and hold enviable position in the society. Substance abuse can have serious implications in the effectiveness and quality of practice medical students render to their patients in future (Raj *et al.*, 2008).[13] Substance abuse usually starts early in the students' days and if not checked can encroach in their careers and hinder their capacity and fitness to practice effectively. Several studies on addiction and substance abuse have centered on the increasing rate of use of these substances, the high rate of criminal activities, increase in mortality and morbidity rate as a result of these substances.[9-11] Having a good knowledge of the adverse effects of substance abuse on health has been linked to a change in behavior.[12] There is an assumption that if students have adequate knowledge of the risks associated with substance abuse, they will totally abstain from or reduce the rate at which they consume them. Furthermore, early detection of substance abuse will help rehabilitate students and prevent the tendency of addiction and dependence. It is essential to develop means of identifying substance abuse early to develop intervention to prevent its addiction and dependence. This study, therefore, aimed to identify substance abuse among undergraduate students in the College of Medicine, University of Lagos, Nigeria.

METHODS

Study site

The study was carried out in the College of Medicine, the University of Lagos, situated in Idi-Araba, Surulere Local Government Area of Lagos State. The college of medicine has three faculties which are the Faculty of Basic Medical Sciences, Faculty of Pharmaceutical Sciences, and Faculty of Clinical Sciences with several departments offering different courses.

Study design

The study was a cross-sectional study carried out among undergraduate students of the College of Medicine, University of Lagos, Nigeria.

Study population

The study population was medical students of the College of Medicine, University of Lagos.

Inclusion criteria include medical students of the College of Medicine, University of Lagos who gave their informed consent to participate in the study; students of the College of Medicine Lagos between the ages of 18–50 years, and students with a history of drug use. Part-time students and students without history of drug abuse and were excluded from the study.

Sampling/sampling technique

The medical students that participated in the study were randomly selected. The sample size was calculated using the Cochrane formula where

$$n = \frac{Z^2 PQ}{d^2}$$

Where n is the minimum sample size, Z is the standard normal variate corresponding to a 95% level of confidence (=1.96), P is the percentage of students involved in tramadol, and the percentage of students involved in non-medical use of cough syrup (4.7% or 0.047, respectively) as published by the United Nations Office on Drugs and Crime in 2018, Q is the percentage of students not involved in Tramadol (95.3% or 0.953) and the percentage of students not involved in non-medical use of cough syrup (97.6% or 0.976) as published by United Nations Office on Drugs and Crime in 2018, and d is the degree of accuracy desired or maximum allowable margin of error (±5%).

Using the above formula, a minimum sample size of *n* = 68 was obtained.

The minimum sample size for the non-medical use of cough syrup (codeine) was estimated using formula P + Q = 1; *P* = 0.024. Using the formula above, *n*= 35.

The average sample size of the drug of abuse (tramadol) and non-medical use of cough syrup was obtained as *n* = 52.

Ethical consideration

Ethical approval for this study was obtained from the Health Research Ethical Committee review board (HREC) of the College of Medicine, University of Lagos: ADM/DCST/HREC/APP/3407. Informed consent was obtained from the students before the commencement of the study.

Study instrument

A self-developed questionnaire was used to collect data for the study. The questionnaire consisted of four sections. Section A consisted of the sociodemographic characteristics of the patient. This comprised five-items. Section B consisted of the knowledge and awareness of drug addiction. This had three parts. The first part comprised of five-items with Yes and No options and the second part consisted of the reason youths abuse drugs. This comprised of seven-items with Yes and No options and the third part consisted of biological matrices for drug abuse. This comprised of seven-items. Six of the items have Yes and No options while one of the items is an open-ended question. Section C consisted of an assessment of common drug abuse. This section had two parts. The first part is comprised of six-items with mixed options. The second part comprised of questions on drugs abused by the students. This consisted of ten-items with Yes and No option. Section D consisted of questions on the knowledge of instruments for the detection of the drug. This had two parts. The first part is comprised of two-items with Yes and No options. The second part had information on the instrument mostly used for screening drug abuse in urine. This comprised of six-items with three options: Yes, No, and I do not know. The questionnaire was validated and pre-tested on ten students that did not partake in the study.

Data collection

The questionnaire was distributed to the students by face to face contact with the researcher. Some were filled and collected back immediately but some others at a time not later than 2 weeks. Data were collected from September to December 2020.

Urine collection procedure

The medical students were directed on how to collect their urine to prevent contamination. They were taught about the midstream method of collection of urine. Sterile clean bottles were provided to the participants and they were advised not to take any substance during the period of collection to obtain accurate results. The quantity of urine needed for

the test was about 30–40 mls. Once collected, the sample was documented and sealed. The collected urine was subjected to an immunoassay test using BIOEASYTH urine test kits.

Procedure for testing urine using BIOEASYTH TESTKIT

BIOEASYTM Multi-Drug Test Card (a competitive immunoassay) was used to screen for the presence of various drugs and drug metabolites in urine. When the drug within the urine sample is below the detection level of the test, a colored test line was produced in the test region of the strip indicating a negative result. When drug sample levels are above the detection level, there was of a distinct colored band indicating a positive result.

Data analysis

Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows software version 20.0 (SPSS 20, Chicago, Illinois). Data obtained were summarized using descriptive statistics. The results were presented as mean, frequency, and percentages. The association between the variables was established using Chi-square. The results are presented in charts and tables.

RESULTS

Demographic characteristics of the respondent

One hundred and fifty students from 200 level to 600 level participated in the study. Out of the 150 students, 63 (42.2%) male and 87 (57.8%) female participated in the study. Only 52 (34.7%) of the students submitted their urine samples for potential detection of substance abuse. Details of the demographic characteristics of the respondents are shown in Table 1.

Assessing the knowledge of the respondents on drug addiction

The results showed that across the five classes of the medical students, 99 (65.9%) had good

knowledge of drug addiction while only 3 (2.2%) had low knowledge of drug addiction. Detailed analysis is shown in Table 2.

Prevalence and pattern of drug abuse by the Medical students

The prevalence of drug abuse in this study was 15.6%. Only 21 (15.6%) medical students stated that they have taken drug not prescribed by a physician. A good number of the students started abusing drugs from 15 years 6 (4.4%). The most preferred route of drug abuse by the students was the oral route 20 (14.8%). The highest frequency of drug abuse as stated by the students was once daily 5 (3.7%). Assessing the pattern of drug abuse,

Table 1: Demographic characteristics of the respondents

Characteristics	Frequency	Percent
Gender		
Male	63	42.2
Female	87	57.8
Age Group		
11–20 years	59	39.3
21–30 years	91	60.7
Tribes		
Yoruba	99	65.9
Igbo	33	22.2
Hausa	5	3
South-south	13	8.9
Courses		
MBBS	150	100
Levels		
200	30	20
300	30	20
400	30	20
500	30	20
600	30	20

Table 2: Assessing the knowledge of the respondents' drug addiction

Characteristics	High (percent)	Moderate (percent)	Low (percent)
All students	99 (65.9)	48 (31.9)	3 (2.2)
200	19 (63.3)	11 (36.7)	0
300	17 (56.7)	13 (43.3)	0
400	23 (76.9)	7 (23.1)	0
500	19 (63.6)	8 (27.3)	3 (9.1)
600	21 (70.4)	8 (25.9)	1 (3.7)

among the medical students revealed that Tramadol 6(4.4%) was the most abused drug by the students followed by Methylenedioxymethamphetamine 4 (3.0%) and Cannabis (THC) 4 (3.0%). The analysis is shown in Table 3.

Screening for the presence of the drug in the students' urine

The 52 urine samples submitted by the medical students were screened for the presence of drug

abuse using the BIOEASYTM immunoassay Multi-Drug Test Card. The result of the screening showed the absence of any of the abused drugs in the urine samples of the students. The analysis is shown in Table 4.

DISCUSSION

Substance abuse is a non-adaptive model of drug use, resulting in adverse problems and consequences, which include a set of cognitive,

Table 3: Prevalence and pattern of drug abuse by the medical students

Characteristics	Yes (%)	No (%)	I don't know (%)
Have you ever taken a drug of abuse without prescription	21 (15.6)	114 (84.4)	N/A
Age of commencement of drug abuse			N/A
11	1 (0.7)	N/A	N/A
12	2 (1.5)	N/A	N/A
13	1 (0.7)	N/A	N/A
14	1 (0.7)	N/A	N/A
15	6 (4.4)	N/A	N/A
16	2 (1.5)	N/A	N/A
17	1 (0.7)	N/A	N/A
18	(0.7)	N/A	N/A
Route of administration of the abuse drugs			N/A
Oral	20 (14.8)	N/A	N/A
IM	2 (1.5)	N/A	N/A
IV	1 (0.7)	N/A	N/A
Did you abuse more than one drug at the same time?	5 (3.7)	19 (14.1)	N/A
How many drugs have you abused?			N/A
1	3 (2.2	N/A	N/A
2	4 (3.0)	N/A	N/A
3	2 (1.5)	N/A	N/A
How frequently do you abuse these drugs and substances?			N/A
Once a day	5 (3.7)	N/A	N/A
Twice a day	2 (1.5)	N/A	N/A
Thrice a day	1 (0.7)	N/A	N/A
Tick one of the following classes of the drug if yes			
Benzodiazepines?	3 (2.2)	46 (34.1)	N/A
Morphine?	2 (1.5)	47 (34.8)	N/A
Tramadol?	6 (4.4)	44 (32.6)	N/A
Cocaine?	2 (1.5)	47 (34.8)	N/A
Barbiturate?	3 (2.2)	45 (33.3)	N/A
Amphetamine?	3 (2.2)	45 (33.3)	N/A
Methylenedioxymethamphetamine?	4 (3.0)	45 (33.3)	N/A
Methamphetamine?	2 (1.5)	43 (31.9)	N/A
Methadone?	2 (1.5)	43 (31.9)	N/A
Cannabis	4 (3)	43 (31.9)	N/A
Have you done a drug test before?	33 (24.4)	102 (75.5)	N/A

Table 4: The result of screened urine samples of the medical students

S/N	Drugs	200 level		300 level		400 level		500 level		600 level	
		+	-	+	-	+	-	+	-	+	-
1	Benzodiazepines?		-		-		-		-		-
2	Morphine?		-		-		-		-		-
3	Tramadol?		-		-		-		-		-
4	Cocaine?		-		-		-		-		-
5	Barbiturate?		-		-		-		-		-
6	Amphetamine?		-		-		-		-		-
7	Methylenedioxymethamphetamine?		-		-		-		-		-
8	Methamphetamine?		-		-		-		-		-
9	Methadone?		-		-		-		-		-
10	Cannabis		-		-		-		-		-

behavioral, and psychological symptoms.[3] This study identified the different types of substances abused among undergraduate medical students of the College of Medicine, University of Lagos, and correlated it with their urine samples.

Assessing the knowledge of the medical students on drug abuse revealed that the students had good knowledge of drug abuse and drug addiction. The past studies had identified knowledge and awareness as an important index in the problems associated with drug addiction, while the primary factors that seem to affect increased or decreased drug abuse were perceived risk, perceived social approval, and perceived availability.[14] In a similar study among undergraduate students in Lagos, Nigeria, a good number of the students claimed that they were aware of drug abuse but on the contrary, they demonstrate poor knowledge and awareness of its consequences.[15] Another study on knowledge of the health effect of substance use among students in tertiary institutions in South-west Nigeria reported a significant relationship between knowledge of health effects with respect for physical, social, and psychological attitudes to health.[16] Likewise, in a study by Atoyebi[17] high knowledge of the inappropriate use of substances were reported by the respondents with the percentages ranging from 67.7% to 82.8%.

The prevalence of drug abuse in our study was 15.6% which was quite low compared to similar studies conducted in Nigerian universities.[18-21] The low prevalence rate in our study may be due to the high awareness and knowledge of drug abuse and drug addiction by the students. As stated in a past study, knowledge of drug use will either increase or decrease students' involvement in drug/substance abuse, thereby decreasing the aftermath consequence on adolescents' mental, psychological, and physical health.[22] Tramadol was the most abused drug by the students as recorded in this study, followed by Methylenedioxymethamphetamine and Cannabis. This contrasts with the results of a similar study by Adeyemo *et al*.[18] in University of Benin which revealed that coffee and alcohol were the most abused substance. Another study[20] recorded alcohol and herbal bitters as the most commonly abused substance followed by marijuana by students at Lagos State University, Ojo. The report of another study[23] revealed that Cannabis was the most commonly used drug. An estimated 10.8% of the population or 10.6 million people had used cannabis in the past year. The average age of initiation of cannabis use among the general population was 19 years. Cannabis use was 7 times higher among men, while the gender gap in the non-medical use of pharmaceutical opioids (such as tramadol) was less marked. An estimated 4.7% of the population, that is, 4.6 million people had used opioids (such as tramadol, codeine, or morphine) for non-medical purposes in the past year.

This study has possible limitations. First was the small sample size used for the study. This could have affected the data collected. Second, many of the drugs abused by students were not assessed in this study.

CONCLUSION

There was a low prevalence of drug and substance abuse among medical students of the College of Medicine, University of Lagos, Nigeria. Tramadol was the most abused drug by the students. BIOEASYTM immunoassay Multi-Drug Test Card was effective in screening the student's urine for presence of substance abuse. There is an urgent need for interventions such as health education, training, support, counseling, and referral system to be established in our tertiary institutions.

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