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ORIGINAL ARTICLE

Substance Use: Prevalence, Pattern and Risk Factors among Undergraduate Students in a Tertiary Institution in Southwest Nigeria

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Keywords

Awareness; Correlates; Prevalence; Substance use; Undergraduate students; Nigeria.

ABSTRACT

Background: Substance use is a global public health problem with increasing burden among university students. This study assessed the prevalence, pattern and risk factors of substance use among undergraduate students of Afe Babalola University, Ado-Ekiti, Nigeria.

Methods: This was a cross-sectional study of undergraduate students of Afe Babalola University, Ado-Ekiti. A multi-stage sampling technique was used to select respondents. Data collection tool was a structured self-administered questionnaire. Data analysis was done using Statistical Package for the Social Sciences (SPSS) version 23. Statistical significance was set at p value <0.05

Results: The respondents' mean age was 19.5 ± 2.0 years and all 416 (100.0%) were aware of substance abuse. The prevalence of substance use was 299 (71.9%). Alcohol 133 (32.0%) and over-the-counter drugs (29.9%) were the two most commonly used substance. Being male (p=0.017) and in 400 level (p=0.047) were associated with substance use while curiosity 112 (37.5%), peer pressure 95 (31.8%) and school stress 85 (28.4%) were reasons given. Predictors of substance use were being a female (aOR: 2.54; 95% CI=1.89-3.66; p=0.011), civil servant mother (aOR: 5.75; 95% CI=1.90-17.4; p=0.002) and mother with secondary education (aOR: 5.27; 95% CI= 2.20- 12.65; p<0.001).

Conclusion: There was high prevalence of substance use with curiosity, peer pressure and school stress being influencers of substance use among the study population. Predictors of substance use were being a female, civil servant mother and mother with secondary education. The University authority should institute measures to prevent access to alcohol and other substances by the students.

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INTRODUCTION

Substance use amongst young adults has assumed a worrisome dimension and become a topic of concern to the general public.[1] The interplay of biological factors, psychological factors and social factors contribute to the aetiology, management and prognosis of substance use. These factors either predispose the individual to use, initiate use or perpetuate the use.[2] When these substances are used frequently, they tend to initiate some

disorders seen in individuals, including a compulsion to seek and take the substances, loss of control of intake, the emergence of a negative emotional state, and relapse after abstinence.[2] Substance use disorder (sometimes called drug addiction), is a disease that affects a person's brain and behaviour and leads to an inability to control the use of a legal or illegal drug or medication.[3]

Substances commonly used like alcohol, marijuana, cannabis, and nicotine are also considered.[2,4] drugs and according to the 2020 World Drug Report, 35.6milllion people suffer from disorders related to substance use and this corresponds to a global prevalence of 0.7% among the population aged 15-64 years.[5] The Americas remain the region with the highest prevalence of cannabis use with a prevalence of 8.8% among the population aged 15-64 years.[5] Recent trends also indicate that the use of substances have dramatically increased worldwide, particularly in developing countries.[6,7] In Africa, cannabis also remains the most widely used illicit substance with the highest prevalence of between 5.2% and 13.5% being reported in West and Central Africa.[4] The overall prevalence of substance use in sub-Saharan Africa was 41.6%, with the highest being in Central Africa at 55.5%. The prevalence of use of caffeine-containing products (including coffee or kola nut) was at 41.2% (95% CI 24.3-58.1) but limited to West Africa.[8]

Also, among university students in Sudan, an overall prevalence of substance use of 31% was obtained and tobacco was the most commonly used with a prevalence of 13.7%. This is followed by cannabis with a prevalence of 4.9% and curiosity was found as the major reason for substance use among the students.[9] In Benin City, Nigeria, 46.6% of university students studied have taken drugs for non-medical purposes at least once with associated factors like peer pressure, poor parental upbringing and poor teacher-student relationship identified.[10] In Port-Harcourt, Nigeria, a cross-sectional study of undergraduate students revealed that alcohol (74.9%) was the most used and the least was heroine (1.3%). [11] Males were more among the abusers than the females and the top three factors identified for use of substance were experimentation (23.1%), group conformity (23.1%) and curiosity (20.5%). [11] A similar study in Ekiti State, Nigeria found age, performance in school, parental guidance as some of the

factors associated with substance use among private university students.[12]

The consequence of substance use is diverse, including acute and chronic diseases (like lung cancer, colon cancer), social disorders as well as psychological problems.[13] The harmful use of alcohol results in 3.3 million deaths each year and about 2.5 million people die each year from alcohol-related complications (like liver cirrhosis) and university students accounted for 30% of this population.[14-15] There is disruption of interpersonal relationship, particularly within the family, heightened criminal behaviour, school failure, vocational problems and failure to achieve normal undergraduates' milestones, and yet, these undergraduates are expected to be the leaders of the country in no distant future.[16,17]

Substance use leads to dependence, addiction and poor academic performance among university undergraduates.[10,18] It alters the normal biological and psychological functioning of the body, especially the central nervous system.[18] Studies have shown that within the social learning context, substance use could be socially acquired through learned behaviour patterns, maintained by consequent reinforces that may be psychological; therefore, it seems reasonable to suggest that there may be predisposing factors that could influence substance consumption among university students. While studies[12,19] have been done on substance use among students in Ekiti State, a paucity of information exists on the associated factors and predictors in the available studies. Therefore, this study assessed the prevalence, predictors, in addition to the pattern and types of substance use among the undergraduate students of Afe Babalola University, Ado-Ekiti, Ekiti, Nigeria.

METHODOLOGY

Study area: The study was conducted at Afe Babalola University, Ado-Ekiti, Ekiti State. Ekiti is one of the states located in South-West Nigeria. It is mainly an upland zone rising over 250 meters above sea level. It has 16 Local Government Areas, with Ado-Ekiti as the state's capital. Ekiti people are a culturally homogenous and speak a dialect of the Yoruba language known as Ekiti. Afe Babalola University is a federal government-licensed private university. The University's main campus is located in Ado-Ekiti, Ekiti State. It is the only private university in Ekiti State, which is fully residential for students, and this tends to promote peer influence and

pressure influencing behaviour like indulgence in alcohol and substance use. Despite the strict disciplinary measures adopted by the school, episodic violent social misbehaviour and protest do occur on the campus. The University conducts urine screening for drugs for all returning students at the beginning of every session and those caught are usually suspended or expelled, but despite this, there still seems to be access to substance use by the students. With a student and staff population of 8,500 and 1,255 respectively, the University operates a collegiate system with five undergraduate colleges[20]. These are Sciences, Law, Engineering, Medical and Health Sciences and Social and Management Sciences and a Postgraduate college with strict academic activity.[20]

Study design and sampling technique: The study was cross-sectional, and the study population included undergraduate students within the main campus of Afe Babalola University, Ado Ekiti, Ekiti State. As this study assessed knowledge of effect of substance use, undergraduate medical students were excluded to avoid information bias. The sample size was determined using Fisher's formula,[21] $n = Z^2pq/d^2$ where n = minimum sample size; Z = standard normal deviate at 95% confidence level (1.96); p = prevalence of drug abuse from previous study done (47%) [17]; q = complementary probability = 1 - p; d = acceptable margin of error being estimated (which is equal to 5%) = 0.05. Sample size, n = 383; Using a non-response rate of 10%, sample size = 421.3, however, 430 respondents were recruited for the study.

A multi-stage sampling technique was used to select eligible participants. It involved three stages which were carried out independent of each other. In the first stage, three colleges from the five undergraduate colleges were selected using simple random sampling by balloting. The selected colleges included: College of Social and Management Sciences, College of Engineering and College of Medicine and Health Sciences. In the second stage, using simple random sampling by balloting, three departments were selected from each college, making a total of nine (9) selected departments from this stage. In the third stage, the selection of respondents from the selected departments was made through systematic sampling. Equal allocation of questionnaires was done across all the selected departments. The lists of students in each of the selected departments, which served as the sampling frame, were used

to select participants using systematic sampling after determining the sampling interval. The sampling interval was obtained by dividing the total number of students in all the levels in each department (sampling frame) by the number of questionnaires allocated to that department (sample size). Using the sampling interval obtained, the first participant in each of the departments was chosen using simple random sampling technique by balloting. Thereafter, subsequent respondents were selected using the pre-determined sampling interval.

Data collection: A structured, self-administered questionnaire was used for data collection. The questionnaire was structured into five sections: socio-demographic information of the respondent; awareness of substance abuse, the prevalence and types of substance used; reasons for the use of substances and effects on the individual. A pre-test to determine the reliability of the instrument was conducted among students of the School of Nursing Ido-Ekiti, Ekiti State; following which some ambiguous questions were rephrased and the flow of questions modified.

Data analysis: The questionnaire was sorted, coded and checked for errors and completeness. All data collected were analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Multilevel data analysis was conducted with a clear progression from univariate, bivariate to multivariate. The socio-demographic and other categorical data such as awareness, frequency of use of substance, were presented using frequency tables, percentages and charts. For inferential statistics, independent variables like age, sex, level in school, parental education and occupation were cross-tabulated with the dichotomous (yes/no) primary outcome variable (substance abuse) and analyzed using Chi-square test to determine the risk factors of substance use. Binary logistic regression was used to identify predictors of substance use. The level of significance was set at p value of less than 0.05.

Operational Definitions

Substances: This includes alcohol and other drugs, illegal or not, including substances that are not drugs.[4] Examples of non-drug substances include cigarettes, marijuana, cannabis, premium motor spirits, hydrogen sulphide gas, rubber solutions, pawpaw leave and seed etc.

Substance use: Use of drugs or alcohol, and includes substances such as cigarettes, illegal drugs, prescription drugs, inhalants and solvents.[4] For the purpose of this study, substance use is considered as the use of at least one substance for not less than a year.

Ethical considerations: Ethical approval (Protocol number ERC/2020/10/14/424B) dated 19/10/2020 was obtained from the Health Research and Ethics Committee of Federal Teaching Hospital, Ido-Ekiti. The study was conducted between October and December 2020. The purpose and benefits of the study were explained to the respondents, in which verbal, informed consent was obtained from those who agreed to participate in the study. Respondents were assured of confidentiality and privacy for the information provided and had the choice to partake or not in the study if they so desired**.**

RESULTS

Out of the 430 questionnaires administered, 416 were filled appropriately and returned, implying a 96.7% response rate which is adequate for analysis. The 416 questionnaires were analyzed according to the objectives and results presented below using prose, tables and charts. More than half, 212 (51.0%) were less than 20 years old and similarly, 228 (54.8%) were females. The highest proportion of respondents 116 (27.9%) were in 300 level, while majority 332 (79.8%) practiced Christianity (Table 1). All the respondents, 416 (100%) were aware of the term "substance use". Most, 266 (63.9%) became aware of substance use through social media closely followed by those who heard of it from school 261 (62.7%); 181 (43.5%) got information from friends. More than three-quarters were aware of alcohol 411 (98.7%), cigarettes 354 (85.0%) and marijuana 342 (82.2%) (Table 2).

The prevalence of substance use was 71.9% and the substances included alcohol 133 (44.5%), opioids 24 (8.0%), marijuana 12 (4.0%) among others. Majority, 112 (37.5%), of the respondents stated curiosity as their reason for substance use (Table 3). More than half, 174 (58.2%) of respondents had immediate effects to the use of which 98 (56.8%) of them felt relieved, 49 (28.2%)

Table 1: Socio-demographic characteristics of respondents

Variable	Frequency (n=416)	Percent
Age (in years)		
< 20	212	51.0
20 – 29	204	49.0
Sex		
Male	188	45.2
Female	228	54.8
Level		
100	69	16.6
200	87	20.9
300	116	27.9
400	82	19.7
500	62	14.9
Religion		
Christian	332	79.8
Muslim	84	20.2
Tribe		
Yoruba	171	41.1
Igbo	98	23.6
Hausa	28	6.7
Others	119	28.6
Father's Occupation		
Civil Servant	244	58.7
Trading	109	26.2
Politician	50	12.0
Retired/Unemployed	13	3.1
Father's highest education		
Secondary	77	18.5
First degree	227	54.6
Post-graduate	112	26.9
Mother's occupation		
Civil Servant	204	49.0
Trading	180	43.3
Politician	9	2.2
Retired	6	1.4
Full-House Wife	17	4.1
Mother's highest education		
Secondary	79	19.0
First degree	268	64.4
Post-graduate	69	16.6

Mean Age±SD = 19.5±2.0 years

Table 2: Respondents' awareness of substance use

Variable	Frequency (n=416)	Percent
Ever heard about substance use		
Yes	416	100.0
Source(s) of information*		
Social Media	266	63.9
School	261	62.7
Friends	181	43.5
Public Awareness Program	165	39.7
Family	151	36.3
Place of worship	142	34.1
Mass media	137	32.9
Others	11	2.6
Substances aware of*		
Alcohol	411	98.7
Cigarettes	354	85.0
Marijuana	342	82.2
Opioids	279	67.0
Over-the-counter drugs**	213	51.2
Methamphetamine	141	33.9
Others	72	17.3

**Multiple Responses **antitussives, antihistamines, caffeine, benzodiazepines*

felt aroused and 29 (16.7%) felt dizzy. Similarly, only 80 (26.8%) of respondents experienced side effects to the use, of which 27 (33.8%) had body pain and weakness and 22 (27.5%) felt intoxicated. While 107 (35.8%) indicated that the use of substances had affected their lives, 51 (47.7%) reported a positive influence of making them study better (Table 4). Substance use was significantly higher among those 20-29 years, 158 (77.5%), than those less than 20 years 141 (66.5%) (p=0.013). The prevalence was also found to be significantly higher among the 400 level students, 67 (81.7%), than other levels (p=0.047). Substance use was also significantly higher among those whose mothers were civil servants, 170 (83.3%) and graduates, 202 (75.4%), (p<0.001) and (p=0.003), respectively (Table 5).

Female respondents were 2.5 times more likely to have used at least one substance (aOR: 2.54; 95% CI=1.89-3.66; p=0.011), when compared to males. Compared with those whose mothers were full-time housewives, respondents whose mothers were civil servants were 5.75 times more likely to use at least one substance (aOR:5.75; 95% CI=1.90-17.4; p=0.002). Similarly, respondents whose mothers' highest level of education was secondary

Table 3: Prevalence and pattern of substance use among respondents

Variables	Frequency	Percent
Currently using at least one substance (n=416)		
Yes	299	71.9
No	117	28.1
Substances currently being used* (n=299)		
Alcohol	133	44.5
Over-the-counter drugs**	121	40.5
Cigarettes	31	10.4
Opioids	24	8.0
Marijuana	12	4.0
Methamphetamine	5	1.7
Others	62	20.7
Reason(s) they started using substance*(n=299)		
Curiosity	112	37.5
Peer pressure	95	31.8
School stress	85	28.4
Media influence	77	25.8
Stressful life event	58	19.4
Others	86	28.8
Reason(s) they continued using substance (n=299)		
Pleasure	175	58.5
Temporary relief	129	43.1
Relaxation	67	22.4
Others	38	12.7
Frequency of substance use (n=299)		
Daily	87	29.1
Not often	84	28.1
Occasionally	43	14.2
Weekly	33	11.1
Rarely	30	10.1
Monthly	22	7.5

**Multiple responses **antitussives, antihistamines, caffeine, benzodiazepines*

education were five times more likely to use substance than those whose mothers had postgraduate education (aOR: 5.27; 95% CI= 2.20-12.65; p<0.001) (Table 6)

DISCUSSION

This study was conducted among undergraduate students and the mean age obtained for the respondents fit into the World Health Organization (WHO) definition of youths.[22] All the respondents, were aware of the term "substance use". This is a university environment with access to information from peers, through lectures, the internet and social media. Expectedly, the study revealed that social media was the major source of information on substance use.

Table 4: Effects of substance use among respondents

Variable	Frequency	Percent
Had spontaneous effect (n= 299)		
Yes	174	58.2
No	125	41.8
Nature of spontaneous effect(s)* (n=174)		
Felt relieved	98	56.8
Felt aroused	49	28.2
Felt dizzy	29	16.7
Experience of side effects (n= 299)		
No	219	73.2
Yes	80	26.8
Side effects experienced* (n=80)		
Bodily Pain and Weakness	27	33.8
Intoxication	22	27.5
Oversleeping	19	23.8
Vomiting	10	12.5
Loss of consciousness	8	10.0
Difficulty in breathing	4	5.0
Amnesia	3	3.8
Use of the substance has affected your life (n= 299)		
No	192	64.2
Yes	107	35.8
How it has affected your life (n=107)		
It makes me study better	51	47.7
I am not interested in previously enjoyable activities	22	20.6
I am not close to my family anymore	21	19.6
I don't socialize as I used to anymore	20	18.7
I have had troubles with the school authorities	11	10.3
Others	18	16.8

**Multiple responses*

This highlights the role of social media as a powerful platform for the spread of valuable information and/or disinformation in these modern times, especially amongst the youth. It could also be a means through which peer influence thrives through sharing of information. The prevalence of substance use among respondents was high among the students and alcohol was the most commonly used substance followed by over-the-counter drugs (such as antitussives, benzodiazepines, among others) and the least being methamphetamine. Alcohol was the most used because it is readily available and within the reach of the students; so also the over-the-counter drugs, which might be sourced outside the school and smuggled in to the premises. It also reflects the happenings in the larger Nigerian society where access to these substances are not under strict regulation.

Table 5: Factors associated with substance use among the respondents

Variable	Substance use			
	Yes (n= 299) n (%)	No (n= 117) n (%)	Chi square	p-value
Age (years)				
<20	141 (66.5)	71 (33.5)		
20-29	158 (77.5)	46 (22.5)	6.157	**0.013**
Sex				
Male	146 (77.7)	42 (22.3)		
Female	153 (67.1)	75 (32.9)	5.678	**0.017**
Level				
100	46 (66.7)	23 (33.3)		
200	59 (67.8)	28 (32.2)		
300	77 (66.4)	39 (33.6)		
400	67 (81.7)	15 (18.3)		
500	50 (80.6)	12 (19.4)	9.649	**0.047**
Religion				
Christianity	236 (74.2)	82 (25.8)		
Muslim	53 (63.1)	31 (36.9)		
Others	10 (71.4)	4 (28.6)	4.065	0.131
Tribe				
Yoruba	121 (70.8)	50 (29.2)		
Igbo	71 (72.4)	27 (27.6)		
Hausa	20 (71.4)	8 (28.6)		
Others	97 (81.5)	22 (18.5)		
Father's highest education				
Secondary	56 (72.7)	21 (27.3)		
First degree	157 (69.2)	70 (30.8)		
Postgraduate	86 (76.8)	26 (23.2)	2.190	0.335
Mother's occupation				
Trading	114 (63.3)	66 (36.7)		
Civil servant	170 (83.3)	34 (16.7)		
Politician	7 (77.8)	2 (22.2)		
Retired	2 (33.3)	4 (66.7)		
Full housewife	6 (35.3)	11 (64.7)	35.564	**<0.001**
Mother's highest education				
Secondary	59 (74.7)	20 (25.3)		
First degree	202 (75.4)	66 (24.6)		
Postgraduate	38 (55.1)	31 (44.9)	11.567	**0.003**
Father's occupation				
Trading	83 (76.1)	26 (23.9)		
Civil servant	139 (57.0)	105 (43.0)		
Politician	38 (76.0)	12 (24.0)		
Retired	12 (92.3)	1 (7.7)	19.870	**<0.001**

Table 6: Binary logistic regression showing the predictors of substance use among the respondents

Variable	Adjusted Odd Ratio	95% CI Lower - Upper	p-value
Age (in years)			
< 20 (ref)	1.00		
20 – 29	1.17	0.63 – 2.17	0.124
Sex			
Male (ref)	1.00		
Female	2.54	1.89 – 3.66	**0.011**
Level			
100 (ref)	1.00		
200	0.94	0.63 – 1.22	0.920
300	0.48	0.18 – 1.32	0.156
400	0.36	0.14 – 1.30	0.354
500	1.42	0.52 – 3.87	0.498
Mother's occupation			
Trading	1.81	0.59 – 5.54	0.298
Civil Servant	5.75	1.90 – 17.40	**0.002**
Politician	4.94	1.65 – 37.39	**0.038**
Retired	1.40	0.48 – 2.46	0.125
Full house wife (ref)	1.00		
Mother's highest education			
Secondary	5.27	2.20 – 12.65	**<0.001**
First degree	3.54	1.84 – 6.82	**<0.001**
Post-graduate (ref)	1.00		

95% CI = 95% Confidence Interval

This finding is comparable with a study done among secondary school students in Abakaliki by Anyanwu *et al*[23] which also showed alcohol as the most commonly abused substance, with a prevalence rate of 29.0%, while cocaine was the least abused with a rate of 2.1%. The use of alcohol and the resulting intoxication is inimical to the health of the students in addition to having negative effects on their academic performance in school. The difficulty in procuring methampheta-mines or cocaine can be attributed to the various Federal and State Laws prohibiting the possession and/or sale of such substances, hence the low prevalence seen in this study.

Curiosity was the most common reason for initiating substance use among the students in this study. The other factors include peer pressure, school stress and media influence. This is expected as curiosity and exploration are hallmarks of people at this stage of life; and it also indicates that both social and individual factors contribute positively to the increased risk of adolescent substance use. After initiation, more than half of respondents stated that they continued because of the pleasure they derived from

it. This suggests the presence of a level of dependence on a particular substance that exists among the respondents and it could also be a reflection of reinforcement as they still see their peers in the school engaged in the act.

This study showed that more than a quarter of the respondents experienced side effects following substance use while more than a third of the respondents reported major social consequences of drug use, such as disruption in social and family lives, loss of productivity and even school problems. This side effects will no doubt result in negative academic outcome among such students. The sustained use of substances, especially alcohol, despite the reported adverse effects, indicates an addiction to these substances. However, almost half of the respondents reported that it made them study better. This finding on perceived positive effects has the potential to favour an increase in the risk of substance use among the students, thereby worsening the problem as this may result in dependence.

This study revealed a higher prevalence of substance use among respondents within the age bracket of 20-29 years. This is an active age group within the population and such use of substance with attendant negative consequences might result in low productivity with long term effect on national productivity. A previous study from India had similar findings.[24] This can be attributed to the various psychological, social, educational and economic stressors that can be associated with the transition to independence in this early stage of adulthood.[25] Thus, resorting to substance use, albeit a harmful practice, yet remains a coping mechanism for such people. Squeglia *et al*[26] in their research found out that consistent use and the negative consequences of alcohol and substance abuse is often related to age, particularly adolescents.

This study showed a higher prevalence of substance use among 400 level students, some of whom are in the final class. Sustained peer influence, the pressure of keeping up with project deadlines and final exams as well as the fear of the uncertainty of postgraduate life are some of the possible reasons for this trend. This could also lead to multitudes of problems after graduation, such as loss of concentration at work and irresponsible family life after marriage and poor parenting. The prevalence of drug use was higher among those students whose

mothers were civil servants than those who were retired and/or full-time housewives. This showed that mothers who are full-time housewives and or retired have more time for their children and might be able to monitor their activities and possibly better able to track their behaviours.

The findings from this study also showed that female respondents were 2.5 times more likely to indulge in substance use than their male counterparts. Females are more sensitive to emotional problems and stressors like academic stress, including failures, and might adopt substance use as a coping mechanism as a way out. In addition, females tend to be more easily influenced socially by their peers, including male peers. Such substance use among females might affect their marital and reproductive life following marriage with adverse outcome. This is, however, in contrast to a study carried out among students in Mekelle University, Ethiopia by Azeb *et al*[27], which showed that males were 3.2 times more likely to use substances than females. This goes to show that both sexes are equally involved in the act of substance abuse, a picture that requires urgent intervention.

Limitations: This study was cross-sectional in design and the observed associations may not be causal. The study may also have been influenced by recall bias and information bias.

Conclusion: The students were all aware of substance use through social media, school and friends. Alcohol was the most common substance which the respondents were aware of and also the most used substance. The reasons for substance use amongst respondents was attributed to youthful curiosity, peer pressure and media influence. Substance use was significantly associated with age, sex and level of the student in school. Other factors associated with substance use among the students were parent's level of education and mother's occupation. The predictors of substance use were being a female student, having a civil servant mother and a mother whose highest educational attainment was secondary education.

Recommendations: Consequently, the university management should open channels of collaboration with student bodies, religious associations, and regular interface with parents towards the creation of more effective awareness campaigns to stem the practice. The school authority should promote health clubs and

substance use support groups within the campus. There is a need to amplify surveillance of sales of alcohol and other identified substances within university campuses while issuing out stiffer penalties to offenders and drug dealers within the school environment in order to serve as a deterrent.

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