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Article *in* International Neuropsychiatric Disease Journal · March 2020

DOI: 10.9734/INDJ/2019/v13i3-430114

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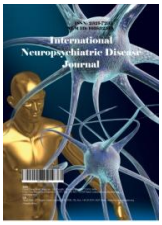

International Neuropsychiatric Disease Journal

13(3-4): 1-10, 2019; Article no.INDJ.54744
ISSN: 2321-7235, NLM ID: 101632319

Psychoactive Substance and Psychopathological Symptoms among Nigerian Secondary Schools Adolescents

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Authors' contributions

This work was carried out in collaboration among all authors. Authors DOO and BCA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors DOO and BCA managed the analyses of the study. Authors OAA and DOO managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/INDJ/2019/v13i3-430114
Editor(s):
(1) Zhefeng Guo, University of California, Los Angeles, 710 Westwood Plaza, CA 90095, USA.
Reviewers:
(1) Marzanna Farnicka, Zielona Góra University, Poland.
(2) Gabriella de Andrade Boska, University of São Paulo, Brazil.
Complete Peer review History: http://www.sdiarticle4.com/review-history/54744

Original Research Article

Received 12 December 2019
Accepted 20 February 2020
Published 02 March 2020

ABSTRACT

Aim: Abuse of psychoactive substances among secondary school adolescents is a huge problem globally. This study examined the influence of psychoactive substance use on psychopathological symptoms among secondary school adolescents in Ede, Osun State, Southwestern Nigeria.
Study Design: Cross-sectional survey design.
Place of Study: Redeemer's University Ede Osun state, Southwestern Nigeria.
Methodology: Four hundred and ninety-six (496) secondary school adolescents (mean age 15.7 years) were purposively selected from five secondary schools in Ede metropolis. Substance Abuse Inventory (SABI) and Awaritefe Psychological Index (API Form-X) were used for data collection. Descriptive and inferential statistics were used for data analysis. Four hypotheses were tested using a Regression Analysis, Pearson Product Moment Correlation and Independent Sample t-test and at 0.05% level of significance.

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Results: A high prevalence of psychopathological symptoms was observed among the participants. Psychoactive substance use was observed to jointly and significantly predict psychopathological symptoms (R^2 = .106, p = .001). Sex has significant influence on manifested psychopathological symptoms with female adolescents reporting higher mean scores on insomnia, intellect disorder, heat disorder, mood disorder, alimentary track disorder and general psychopathology. Age was observed to be inversely correlated with psychopathological symptoms. Significant difference was found between drug users and non-user on severities of psychopathological symptoms.
Conclusions: This research finding indicates a high prevalence of psychopathological symptoms; that the use psychoactive substance is significantly linked the psychopathological symptoms and that age of involvement in psychoactive substance is also a significant risk factor for psychopathology among adolescents.

Keywords: Psychoactive substance; psychopathology; adolescents; Nigeria.

ACRONYMS

API : Awaritefe Psychological Index
NIAAA : National Institute of Alcohol Abuse and Alcoholism Drug Abuse
UNODC: United Nations Office on Drugs and Crime
SABI : Substance Abuse Inventory
IHME : Institute of Health Metrics and Evaluation
DALYs : Disability-Adjusted Life Years
NIDA : National Institute on Drug Abuse

1. INTRODUCTION

According to World Health Organization (WHO) [1], psychological or mental health include but limited to subjective wellbeing, perceived high level of self-efficacy, autonomy, competence and self-actualization. Adolescents who possess healthy psychological state of mind are happy, have high resilience and possess high intellects [2]. In addition, individual wellbeing is a crucial factor which prepared individual with skills and strategies to cope with stress and hassle of life; therefore healthy psychological state of mind equipped individual with skills to be a successful in life. As a developmental stage of transition from childhood to adulthood, adolescence has been labeled by many researchers as a delicate period in which most adolescents engage in risk related behaviors that may have detrimental effect on their future [3].

The use of psychoactive substances by adolescent has various health implications and using these drugs can also lead to dependence syndrome [4,5]. Dependence syndrome of drugs abuse is so bad that it can lead to strong willingness to abuse drug, unable to control its consumption despites its health consequences [2]. Studies show that involvement in drugs use at adolescence stage not only predisposes to health related problems but also has detrimental effect on future possible achievement [5,6]. According to National Institute of Alcohol Abuse and Alcoholism Drug Abuse (NIAAA) [7], drug use impairs psychological health and predisposes user to mental disorder such as depression and anxiety. The United Nations Office on Drugs and Crime (UNODC) reports that in 2010 approximately 5 per cent of the world's population, most of which are young people, used an illicit drug [8]. It is estimated that alcohol abuse results in 2.5 million deaths per year and that heroin, cocaine and other drugs are responsible for 0.1 to 0.2 million deaths per year [8,9].

Psychoactive Substance usage among Nigerian adolescents is a huge problem [10,11,12]. According to a number of researches, psychoactive substance usage causes significant social burden and is linked with a range of adverse outcomes including poor educational attainment, criminality, mental health problems and delinquency [13]. Consequences of drug misuse as highlighted by National Institute of Drug Abuse (NIDA) [14] include increases in body temperature, dramatic changes in appetite, withdrawal syndromes which may lead to various adverse health effects, such as restlessness, mood swings, muscle and bone pain, insomnia, fatigue, cold flashes, mental health problems, vomiting, diarrhea and so on. Psychoactive substance use can cause changes in brain areas that are disrupted in mental disorders as schizophrenia, mood, anxiety or impulse-control disorders [15,16]. Mental illness particularly schizophrenia and depression are strongly linked to use of tobacco products [17,18,19].

Adolescents with substance use disorders also have high rates of co-occurring mental illness

[20]. Data reveal high rates of comorbid substance use disorders and anxiety disorders [21,22,23,24], psychotic illness [25,26], depression and bipolar disorder [20,21], Attention-Deficit Hyperactivity Disorder (ADHD) [24,25,26,27], borderline personality disorder [28] and antisocial personality disorder [25,27,28,29, 30,31].

Psychoactive substance use and related issues continues to receive research attentions across the globe. Epidemiological studies showed that much of the substance abuse among adolescents takes place in schools [32,33]. Research studies have reported high prevalence of psychoactive substance use among the Nigerian adolescents [10,11,12], also some findings especially in western clime reported strong correlate of substance usage and mental illness [20,21,22,23,24]. Considering the Nigerian social-cultural setting a crevice of literature exists on the prevalence rate of psychopathological symptoms as well as the relationship between psychoactive substance use and mental health status of the Nigerian secondary school adolescents.

Based on the foregoing, this study aims at adding to existing literature through the examination of the relationships between psychoactive substance use and psychological health of Nigerian secondary school adolescents. Consequent on the foregoing the objectives of this present study include to observe the extent to which psychoactive substance use predict severities of psychopathological symptoms (Insomnia, Intellect disorder, Heat disorder, Mood disorder, Alimentary track disorder, Head region disorder and somatic disorder) and to find out the link between age and psychopathological symptoms, as well as difference in sex, psychoactive substance user and non-user difference on psychopathological symptoms among the Nigerian school adolescents.

1.1 Research Questions

1. What is the prevalence of psychopathological symptoms among Nigerian adolescents?
2. To what extent will psychoactive substance use significantly predict psychopathological symptoms of adolescents?
3. Will there be significant difference between male and female adolescents on psychological health?
4. What is the relationship between age and psychopathological symptoms among the participants?
5. Would there be significant psychopathological symptom difference between adolescent drug users and non-users?

1.2 Hypotheses

1. Psychoactive substance use will significantly predict psychopathological symptoms of adolescents.
2. There will be a significant difference between male and female on psychological health among adolescents.
3. There will be a significant relationship between age and psychopathological symptoms.
4. There will be a significant difference between drug users and non-users on composite psychopathological symptom score.

2. MATERIALS AND METHODS

2.1 Participants

A cross sectional research survey design was employed in the study. A sample of 550 secondary school students was selected using two-stage sampling techniques. In the first stage five public secondary schools were randomly selected from Ede metropolis in Osun State Southwestern Nigeria. In the second stage, a non-random convenient sampling was employed to select 110 participants from each of the selected secondary schools. Of the returned instruments 496 were properly completed and used for data analysis of this study.

2.2 Measures

A battery of two standardized psychological assessment instrument were adopted and used for this study, they are:

Substance Abuse Inventory (SABI) developed by Omoluabi [34]. It is a 32-item instrument developed to measure the frequency of use and abuse of different drugs within 30 days. The scale has a test re-test reliability of r = 0.51, p = .001. The scoring involves summation of respondent scores on each item to arrive at aggregate composites scores. The higher the scores the higher the degree of drug abuse.

Awaritefe Psychological Index (API Form X) developed by Awaritefe [35] to measure psychopathological symptoms. It consists of 76 items with seven sub-scales, including 2 lie scales scored on a 3 point likert scale of Yes = 2, No = 0 and ? = 1. API Form X has acceptable reliability coefficient (Cronbach Alpha) of .87, retest reliability coefficient of .86 for males and .80 for females at 21 day interval [35], as well as a split-half reliability coefficient of .85. The sub-scales reported Guttman split half reliability coefficient of insomnia (r=.57), Intellect disorder (r=.58), Heat disorder (r=.91), Mood disorder (r=.87), Head region disorder (r=.79), Alimentary track disorder (r=.78) and General Somatic disorder (r=.86) [36].

3. RESULTS

3.1 Demographic Characteristics of the Sample

The summary of the participant's socio-demographic reveals that 265(53.4%) of total participants are male and 231(46.6%) were female. Other demographic distributions of family type, show that 437 (88.1%) of total respondent are from monogamous family while 59 (11.9%) were from polygamous homes. Age distributions shows that 4(0.8%) of total respondent are within the age range of 10-13 years, 127(25.6%) are within 14-17 years, 362(73.0%) are within 18-21 years. The mean age of the participants is 17.3 years old. The analysis result shows that majority of the study participants are within 18-21 years.

Judging from the official norms of API, those who scored above the norms were considered to be psychopathological. Hence, the summary of Table 1 reveals that 44.8% of the participants manifested insomnia, 37.7% had intellectual disorder, 26.6% had heat disorder, reported mood disorder was 87.9% and alimentary track disorder was 58.9%. Furthermore 71.0% had head region disorder, 71.6% manifested somatic disorder and 92.7% had general psychopathology.

Table 1. Prevalence of psychopathology among adolescents

Psychopathological symptoms	Prevalence (%)
Insomnia	222(44.8%)
Intellect disorder	187(37.7%)
Heat disorder	172(26.6%)
Mood disorder	436(87.9%)
Alimentary track disorder	292(58.9%)
Head region disorder	352(71.0%)
General somatic disorder	355(71.6%)
General psychopathology	460(92.7%)

Hypothesis One: Psychoactive substance use will significantly predict psychopathological symptoms of adolescents.

To test this hypothesis, multiple regression analysis was employed; the level of significant was set at 0.05%. The respondent level of psychoactive substance use (Beer, Cigarettes and marijuana) are predictors variables while the dependent variable is psychopathological symptoms; the result presented in Table 2 reveals that psychoactive substance use significantly predict the level of psychopathological symptoms among adolescents [$F(3,496)=19.52$, $p=.001$, $R^2 = 10.6$]. This shows that 10.6% variation of psychopathological symptoms is jointly explained by psychoactive substance use (Beer, Marijuana and cigarette smoking). It is observed that beer drinking (β=.15, $p = .008$) and Cigarette smoking (β=.22, $p = .013$) were significant independent predictors while Marijuana (β= -.01, $p = .870$) was a weak independent predictor of psychopathology among the secondary school adolescents.

Hypothesis Two: There will be a significant difference between male and female on psychological health among adolescents.

The study employs an independent sample t-test to test the hypothesis. Male and female study participant's scores on psychopathology scale

Table 2. Multiple regression of psychoactive substance use on severities of psychopathological symptoms among secondary school adolescents

	B	β	t	Sig	R^2	F	p
(Constant)	22.35		21.44	.000			
Beer	.3.50	.15	2.65	.008			
Marijuana	-.29	-.01	-.16	.870	.106	.19.52	.001
Cigarette	.4.71	.22	2.50	.013			

and its dimension were subjected to test of comparison, the analysis result are summarized and presented in Table 3.

Table 3 shows that sex has significant influence on insomnia [t(494)= -3.83, *p*= .001], intellect disorder [t(496)= -2.57, *p* =.011], Heat Disorder [t (496) = - 3.52, *p*=.001], Mood Disorder [t (496) = -3.89, *p* = .001], Alimentary track disorder (t (496) = -4.51, p= .001] and composite psychopathology symptoms score [t (496) = -3.66, *p* = .001], with females reporting significant higher mean (± SD) scores in all than males. No significant sex difference was observed in Head region disorder and somatic disorder among the participants.

Hypothesis Three: There will be a significant relationship between age and psychopathological symptoms.

The study employs a Pearson Product Moment Correlation to test the hypothesis and analyses the data, the respondent age and their corresponding scores on psychopathological symptoms were subjected to test of relationship, and the result is summarized in the Table 4.

The analysis in Table 4 shows that there is significant inverse relationship between age and severities of insomnia [rxy (496) = -.12, *p* =.007], heat disorder [rxy (496) = -.246, *p* =.001], mood disorder [rxy (496) = -.15, *p* =.001], alimentary

Table 3. Independent sample t-test of sex difference on psychological health

Variables		N	Mean	SD	t	p
Insomnia	Male	265	1.47	2.47	-3.83	.001
	Female	231	2.36	2.71		
Intellect disorder	Male	265	1.13	2.05	-2.57	.011
	Female	231	1.62	2.17		
Heat disorder	Male	265	.88	2.29	-3.52	.001
	Female	231	1.75	3.11		
Mood disorder	Male	265	9.36	8.60	-3.89	.001
	Female	231	12.86	11.05		
Alimentary track	Male	265	1.75	2.44	-4.51	.001
disorder	Female	231	2.89	3.12		
Head region disorder	Male	265	3.47	2.96	-.83	.398
	Female	231	3.75	4.30		
Somatic disorder	Male	265	4.31	4.02	-.26	.790
	Female	231	4.42	5.55		
General	Male	265	22.37	19.08	-3.66	.001
psychopathology	Female	231	26.65	24.46		

Table 4. Pearson moment correlation analysis of age and psychopathological symptoms

Variable	N	Mean	SD	r	P
Age	496	18.21	1.76	-.12**	.007
Insomnia	496	1.88	2.62		
Age	496	18.21	1.76	.13**	.003
Intellect disorder	496	2.12	2.12		
Age	496	18.21	1.76	-.246**	.001
Heat disorder	496	1.29	2.74		
Age	496	18.21	1.76	-.15**	.001
Mood Disorder	496	10.99	9.96		
Age	496	18.21	1.76	-.138**	.002
Alimentary track Disorder	496	2.28	2.83		
Age	496	18.21	1.76	-.107**	.017
Head region disorder	496	3.60	3.64		
Age	496	18.21	1.76	-.130**	.004
Somatic disorder	496	4.36	4.79		
Age	496	18.21	1.76	-.189*	.001
General psychopathology	496	25.76	22.03		

Table 5. Independent sample t-test of user difference on psychological health

Variables		N	Mean	SD	t	P
Psychopathological Symptoms	Non-Users	300	19.60	17.66	-7.66	.001
	User	196	35.18	24.62		

track disorder [rxy (496) = -.138, *p* =.002], head region disorder [rxy (496) = -.107, *p* =.017] somatic disorder [rxy (496) = -.130, *p* =.004] and general psychopathology [rxy (496) = .189, *p* =.001] while a significant positive relationship was observed with intellect disorder [rxy (496) = .13, *p* =.003].

Hypothesis Four: There will be a significant difference between drug users and non-users on composite psychopathological symptom score.

The analysis summarized in Table 5 showed that there is significant level of psychopathology difference between adolescents drug users and non-user [t = -7.66, p= .001]. Adolescent who are non-drug users (mean ± SD of 19.60 ± 17.66) display significant lower level of psychopathological symptoms than their counterparts who are drug users (mean ± SD of 35.18±24.62). The analysis result suggests those adolescents who are drug users tend to have poorer level of psychological health than their counterparts who are not drug users.

4. DISCUSSION

The study examines the influence of psychoactive substance use on psycho-pathological symptoms among secondary school adolescents in Ede Osun state. The result returned a high prevalence of psychopathological symptoms among the Nigerian secondary school adolescents. This research finding is in agreement with WHO [37] and Owoyemi [38], who in separate empirical studies also reveal that about 64 million Nigerians manifest psychological disorder. In a related study Akpunne [39] reported a 35.4% prevalence of psychological distress among secondary school students in Ogun state southwestern Nigeria, in a latter finding, Akpunne and Akinnawo [40] reported a 58.7% prevalence of psychological distress among adolescents in correctional facilities in Lagos Nigeria. Literature show that approximately one in five children suffer from a mental disorder [37], that 20 per cent of youth experience a mental-health condition each year [41] and nearly half the world's population is affected by mental illness [42]. Epidemiological research suggests that the majority of individuals with mental-health conditions first experience symptoms prior to age twenty-four [43] and that of adolescents with any mental disorder, an estimated 22.2% had severe impairment [44,45].

The first hypothesis returned that psychoactive substance use significantly predicts the level of psychopathological symptoms among adolescents. This finding is supported by literature [14,15,16,17,18,19]. According to Manwell et al. [4] psychological impairment such as depression, anxiety significantly correlates with the use of psychoactive substance. Some studies have also indicated that certain mental illness is risk factors for psychoactive substance usage and abuse [46]. There is a common hypothesis that people with mild, subclinical and severe mental health disorder may use psychoactive substances as form of self-medication [47,48]. On this basis, self-medication could lead to more substance use disorder. It is also important to emphasize that aside from the effects of illicit drugs, abuse of prescription and Over The Counter (OTC) drugs can also result in psychopathological symptoms [49] as well as complicated health issues such as restlessness, mood swings, muscle and bone pain, fatigue, cold flashes, vomiting, diarrhea, increases in body temperature, dramatic changes in appetite and other withdrawal syndromes [14].

The result of this study revealed that sex significantly influenced psychopathological symptoms among adolescents with female adolescents having higher severities of psychopathological symptoms than males. This research finding supports by previous literature [50,51,52]. Hagen and Rosenstrom [52] reported that sex is a significant predictor of psychopathologies. WHO [37] stated that women when compare to their men counterpart are more likely to experience psychopathology such as depression and anxiety. Related studies show that in most countries mental health disorders are more common for females than males [53, 54].

Additionally result of this study showed that age is significantly inversely correlated with psychopathological symptoms (insomnia, heat disorder, mood disorder, alimentary track

disorder, somatic disorder and general psychopathology). This is in line with NIDA [6, 55] which reported that exposure to drug at younger age leads to impaired psychological health. Health related problems tend to be in high prevalence among adult to the extent that these health problems end their life. WHO [37] assert that mental health has an impact on physical health and vice versa. Although older people tend to have health problems when compare to younger people [54], exposure to psychoactive substances at an earlier age will significantly impact negatively on the psychological health [43,53]. For instance Institute of Health Metrics and Evaluation (IHME) [54] revealed that the higher the age the more severe anxiety disorders, Disability-adjusted Life Years (DALY) rates, bipolar disorders.

Finally, result of the fourth hypothesis showed that adolescents who are psychoactive substance users experience significant higher level of psychopathology than their counterparts who were non-drug users. The findings of the study is in-line with NIDA [55] who reported that adolescents who are drug users are more likely to experience impairment in their psychological health when compare to those who are not users. Their findings suggest that early or child hood exposure to drugs use is highly correlated with development of mental disorder. Early use of psychoactive substances increases the likelihood that individual will developed mental related disorder such as depression, anxiety and psychotic disorder [52].

5. CONCLUSIONS

The findings of this study were able to establish a significant impact of psychoactive substance use on psychopathological symptoms among secondary school adolescents. It is observed that substance abuse is significant risk factors for psychopathology. The findings also established a significant influence of sex on psychopathological symptom with female having higher severities than male in insomnia, intellect disorder, heat disorder, mood disorder and alimentary track disorder. Finally, age of involvement in psychoactive substance is also a significant risk factor for psychopathology among adolescents.

6. RECOMMENDATIONS

Based on the findings of this study and the facts surrounding the difficulties in controlling access to psychoactive substances among the general population, there is need for an improvement of public policies that focus on promoting mental health. Also the sponsorship of public enlightenment campaigns and rallies in public places and especially in schools by both governmental and Non-Governmental Organizations (NGOs) on the dangers of psychoactive substance usage chiefly when engaged in at the childhood and adolescence age would be very effective in prevention as well as reduction of teens engagement and harm reduction. Finally, assertiveness training on how to resist peer suggestion to use psychoactive substances as well as dangers of drug use should be included in school curriculum. Further studies on psychoactive substance use among primary schools in Nigeria should be conducted.

CONSENT AND ETHICAL APPROVAL

The study focused on human as elements of investigation and as a result ethics of research for human subject were observed. The researcher review regulatory and informational documents on human-subject protection and passed a quiz on responsible conduct of human studies and was issued a certificate by the Nigerian National Code of Health research Ethics. Additionally, the researchers' intention was subjected to scrutiny by the Internal Research Committee (IREC) of Redeemer's University, Ede, Osun State Nigeria. Approval to administer to secondary school adolescents was obtained from the ministry of education, Osun State Government. Respondents were also duly informed about the research topic and purpose of the study and no coercion was used. All respondents remain anonymous.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/54744