Smoking Behavior, Alcohol Intake and Depressive Symptoms among Adolescents attending Public Secondary Schools in Abeokuta, Southwest Nigeria

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ABSTRACT

Background: *The growing prevalence of substance abuse and other defective behaviors linked with depression among adolescents has resulted in greater concern.*

Objective: *This study assessed smoking behavior, alcohol intake and depressive symptoms among adolescents attending public secondary schools in Abeokuta.*

Methods: *This cross-sectional study was conducted among secondary school adolescents in Abeokuta, Ogun state, Nigeria. A modified Global School-based Student Health Survey questionnaire was used to obtain information on socio-economic and demographic characteristics, and alcohol and drug use. The Patient Health Questionnaire-9 was used to assess depressive disorder symptoms. Data were analyzed using descriptive and inferential statistics in SPSS version 21. Statistical significance association was established at $p \leq 0.05$.*

Results: *The results revealed that 76.9% were within the age range of 15-19 years. Although majority (87.4%) reported not smoking cigarettes, 54.4% had ever taken alcohol, 29.5% consumed alcohol within the previous month and 33.1% reported age ≤ 13 years at first intake of alcohol. Prevalence of mild to moderately-severe symptoms of depression was 44.0% with mild (36%) and moderate (7.3%) symptoms being the most common. The age of respondents ($X2 = 7.646$, $p=0.024$), father's occupation ($X2 = 9.76$, $p=0.045$), who the respondent lived with ($X2 = 8.81$, $p=0.003$), age at first cigarette trial ($X2 = 17.015$, $p = 0.000$), use of other tobacco products ($X2 = 11.374$, $p = 0.003$) and number of days smoked ($X2 = 10.117$, $p = 0.006$) were significantly associated with depressive symptoms.*

Conclusion: *There was higher prevalence of alcohol use compared to cigarette smoking or use of other tobacco products among the adolescents. Mild and moderate depressive disorder symptoms are common suggesting a need for intervention programs to aid early detection and treatment in schools along with mental health education.*

Keywords: Adolescents, Depressive disorder, Smoking.

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INTRODUCTION

Adolescence is an important developmental phase characterized by significant physical, cognitive, emotional, social, and behavioral changes. High reward sensitivity, sensation seeking, impulsive conduct, and a decreased ability to manage emotions and behaviors are some of the cognitive traits of adolescence (1). These may contribute to the high rates of participation in harmful behaviors, such as the initiation and increase use of psychoactive substances (2). According to Halladay

et al. (3), early onset of substance use and multi-substance use are powerful indicators of subsequent substance use disorders and related problems. Some of these substances influence how the body functions and metablises food, often resulting in inadequate food intake and poor absorption of nutrients (4).

Alcohol and tobacco are the most prevailing substances used among adolescents in Sub-saharan Africa (5), with 155 million (26.5%) of adolescents,15-19-year-olds worldwide being current drinkers (6). Alcohol abuse is a major global risk factor for population health and directly affects some Sustainable Development Goals (SDGs) relating to health, including mental health, infectious illnesses, HIV, and maternity and child health (6). It is estimated that one in eight people (equivalent to over 970 million people) suffers from mental disorders (7). Among young people 10-19 years old, depression and generalized anxiety are among the most prevalent mental health issues and the leading causes of illness and disability among adolescents (8). Almost half of all mental health diseases start during adolescence (41.5% by age 14 years and 50% by 18 years) but are often undetected or untreated resulting to impaired physical and mental health (9).

Depression is associated with negative outcomes and an increased risk for morbidity and mortality (10). In adolescents, these negative outcomes not only affect the adolescent but may also significantly impact parents, families, and society. It is a major contributor to global disability and suicide deaths, estimated at close to 800,000 per year (11). Although suicide occurs across different age groups, it is the third leading cause of death among 15-29-year-olds (12). In a study involving the analysis of contents of newspaper reports of suicide between the years 2010 and 2019, 21.7% were between 15–24-year-olds with the highest reports from the South-Western region of the country. In a rural community in South West Nigeria, a 12.6% prevalence rate of depression was reported among adolescents (13); another study found a prevalence of 21.2% (14) while a one-month prevalence rate of 16.8% was reported in another study (15).

Various factors have been associated with adolescent depression such as being female, older adolescents, large family, substance abuse, and inactivity (14,16). The growing prevalence of substance use, suicides, and other defective behaviors within this age group has resulted in greater concern. This study was therefore conducted to assess substance use and the prevalence of depressive symptoms among adolescents.

MATERIALS AND METHODS

Study Setting

The study was conducted in Abeokuta, Ogun State, South Western Nigeria. Abeokuta town consists of two local governments, Abeokuta-South and Abeokuta-North, with a total of 38 public secondary schools.

Study Design

This study employed a cross-sectional, descriptive study design. Respondents were adolescents between 10 and 19 years of age attending public secondary schools in the study area.

Sampling Technique

A multi-stage sampling technique was employed in selecting 303 respondents. The list of all public secondary schools in the two local governments (20 schools in Abeokuta-South and 18 schools in Abeokuta-North) was obtained from the State education board. The first stage involved selection of 6 schools from each of the local government areas using simple random sampling technique. Stratification by classes was done, followed by random selection of two classes (one junior and one senior class) in each school. The number of eligible students per class, obtained using probability proportional to size based on calculated sample size was randomly selected using the class register as sampling frame.

Data Collection

A pre-designed 'Global School-based Student Health Survey' GSHS questionnaire developed by the WHO (17) was adapted to obtain information on socioeconomic and demographic characteristics, alcohol, and drug use. Patient Health Questionnaire- 9 (PHQ-9), a multi-purpose, nine-item questionnaire designed for screening, diagnosing, monitoring, and assessing the severity of depression (18) was adopted to assess depressive disorder. Respondents were asked questions on depression and loss of interest within the previous two weeks. The questions were on a four-point scale: "Not at all" = 0, "Several days" = 1, "More than half the days" = 2, and "Nearly every day" = 3. Total column scores were summed and categorized as scores between 1-4: minimal; 5-9: mild; 10-14: moderate; 15-19: moderately severe and 20-27 as severe depressive symptoms respectively.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS) version 20 was used for data analysis. Descriptive statistics for continuous normally distributed data were expressed as mean plus or minus standard deviation (SD). Categorical data was presented as frequencies and percentages. Chi-square test was used to test for significant associations at $p \leq 0.05$.

Ethical Approval

Approval to conduct the study was obtained from the department of Planning, Research and Statistics, Ogun State Ministry of Education. Permission of the zonal coordinators and the heads of the selected schools were also obtained. The purpose of the study was duly explained to the students and written informed consent was obtained from each respondent before participation. Code numbers were utilized to preserve anonymity in place of participant names, and confidentiality was guaranteed. Additionally, no individual data were disclosed; all outcomes were based on population-wide categories like gender and age.

RESULTS

Table 1 shows that the majority (76.9%) of the adolescents were between the ages of 15 and 19 years, with a mean age of 15.7 ± 1.88 years. More than half of the respondents were females (54.8). The highest level of education of parents was secondary school (52.1% of mothers and 48.8% of fathers). Seventy-six percent lived with their parents, About 6 out of 10 were from monogamous families with a family size of 6-10 individuals. Both parents were mostly (62.7%) regarded as the most responsible for needs among the adolescents.

Less than a quarter of the adolescents (12.7%) reported to have ever smoked cigarettes with 3% stating age at first trial at 7 years or younger and 6% at between 8 to 13 years (Table 2). About one-third of the adolescents (33.1%) had their first intake of alcohol at 8 to 13 years, 12.3% were between 14 – 17 years, 7% were less than 7 years, and 2% at 18 years or above.

Table 1: Demographic and Socio-economic Characteristics of Respondents.

Variable	Frequency (n = 303)	Percentage (%)
Age (years)		
10 – 14 years	70	23.1
15 – 19 years	233	76.9
Mean Age = 15.7±1.88		
Gender		
Male	137	45.2
Female	166	54.8
Mothers' highest level of education		
No education	20	6.6
Primary education	63	20.8
Secondary education	158	52.1
Tertiary education	61	20.1
Others	1	0.3
Fathers' highest level of education		
No education	19	6.3
Primary education	39	12.9
Secondary education	148	48.8
Tertiary education	91	30
Others	6	2
Family structure		
Monogamy	191	63
Polygamy	112	37
Respondent live with		
Parents	229	76.3
Grandparents	21	7
Relatives	45	15
Others	5	1.7
Family size		
1 – 5	109	36.2
6 – 10	179	59.5
11 – 15	9	3
16 – 20	4	1.3
Mothers' occupation		
Civil servant	48	15.8
Trader	204	66.7
Artisan	43	14.2
Others	47	15.5
Fathers' occupation		
Civil servant	60	19.8
Trader	50	16.5
Businessman	72	23.8
Artisan	101	33.3
Others	20	6.6
Provider of Social needs		
Both parents	190	62.7
Only my father	19	6.3
Only my mother	65	21.5
Others	29	9.6

Table 2: Smoking and Alcohol Intake of Respondents.

Variable	Frequency	Percentage
Age at first cigarette trial		
Never smoked	264	87.4
7 years or younger	9	3.0
8-13 years	18	6.0
14-17 years	5	1.7
18 years or older	6	2.0
No. of days smoked in the last 30 days		
None	284	95.0
1 or 2 days	2	0.7
3 to 5 days	3	1.0
6 to 9 days	3	1.0
10 to 19 days	7	2.3
Tobacco products other than cigarette use in the last 30 days		
None	283	95.6
1 or 2 days	6	2.0
6 to 9 days	3	1.0
10 to 19 days	4	1.4
Age at first alcohol intake		
Never had alcohol	138	45.7
7 years or younger	21	7.0
8-13 years	100	33.1
14-17 years	37	12.3
18 years or older	6	2.0
No. of days alcohol was taken in the last 30 days		
None	212	70.4
1 or 2 days	59	19.6
3 to 5 days	18	6.0
6 to 9 days	7	2.3
10 to 19 days	1	0.3
20 to 29 days	4	1.3

Forty-six percent of the adolescents had no to minimal symptoms of depression (Fig. 1) while 36% and 7.3 had mild and moderate depressive symptoms respectively. Prevalence of depressive symptoms was higher among older adolescents compared to the younger adolescents with a peak observed at 15 years (Figure. 2). Mean age was significantly higher (t = -2.084, p = 0.038) among adolescents with depressive symptoms than those without.

Table 3 shows that there are significant associations between depressive disorder symptoms and the age of respondents (X2 = 7.46, p = 0.022), father's occupation (X2 = 9.76, p = 0.045), "who the respondent lives with" (X2 = 8.81, p = 0.003) and "who is most responsible for needs" (X2 = 6.27, p = 0.044). Gender, mother's occupation, and family structure were not significantly associated with depressive disorder symptoms (p>0.05). Lifestyle factors such as age at first cigarette trial (X2 = 17.015, p = 0.000), use of other tobacco products (X2 = 11.374, p = 0.003) and number of days smoked (X2 = 10.117, p = 0.006) were significantly associated with depressive symptoms.

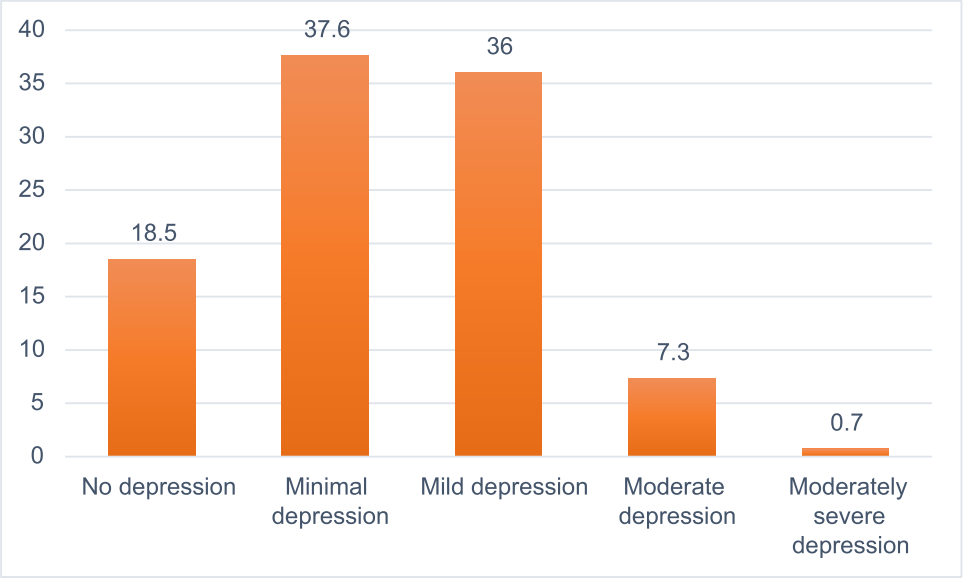

Figure 1: Assessment of depression based on patient health questionnaires.

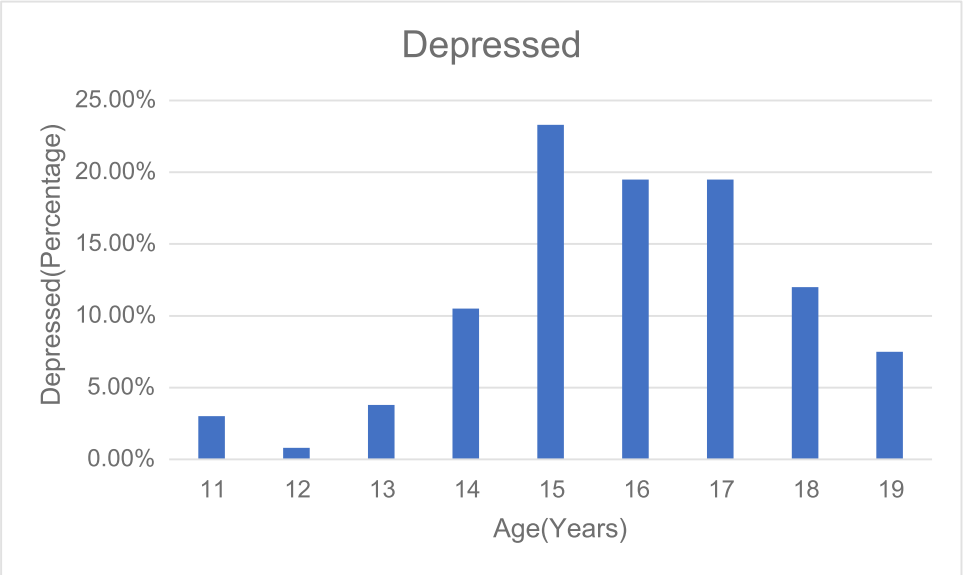

Figure. 2: Graph showing the percentage of depression against the age of the respondent

Table 3: Associations of Depressed Status and Respondent Characteristics.

Variable	Not Depressed (%)	Depressed (%)	X^2	P-value
Age-group				
10-13 years	75.6	24.4	7.646	0.022*
14-16 years	54.5	45.5		
17-19 years	50.9	49.1		
Gender				
Male	50.4	49.6	2.93	0.087
Female	60.8	39.2		
Family Structure				
Monogamous	59.2	40.8	1.64	0.2
Polygamous	50.9	49.1		
Respondent lives with parent				
No	40.5	59.5	8.81	0.003*
Yes	61.1	38.9		
Family Size				
1-5	56	44	0.035	0.983
6-10	56.4	43.6		
>10	53.8	46.2		
Father's Occupation				
Civil Servant	63.3	36.7	9.76	0.045*
Trader	42.0	58.0		
Businessman	51.4	48.6		
Artisan	64.4	35.6		
Others	45.0	55.0		
Mother's Occupation				
Civil Servant	50	50	6.523	0.163
Trader	56.4	43.6		
Housewife	75.0	25.0		
Artisan	65.1	34.9		
Others	16.7	83.3		
Provider of Social needs				
Both parents	61.6	38.4	6.27	0.044*
Single parent	47.6	52.4		
Others	44.8	55.2		
Age at first cigarette trial				
Never smoked	59.8	40.2	17.015	0.000*
13 years or younger	18.5	81.5		
14 years or older	58.3	41.7		
No. of days cigarette was smoked in the last 30 days				
None	58.5	41.5	10.117	0.006*
1 to 5 days	20	80.0		
6 or more days	21.4	78.6		
Tobacco products other than cigarette use in the last 30 days				
None	58.7	41.3	11.374	0.003*
1 to 5 days	16.7	83.3		
6 or more days	21.4	78.6		
Age at first alcohol intake				
Never had alcohol	62.3	37.7	4.295	0.117
13 years or younger	49.6	50.4		
14 years or older	54.5	45.5		
No. of days alcohol was taken in the last 30 days				
None	57.5	42.5	1.253	0.535
1 to 5 days	54.5	45.5		
6 or more days	42.9	57.1		

DISCUSSION

Substance abuse and harmful use of alcohol are mentioned in many global strategies and a component of the SDG target 3.5, this concern stems from the global burden of disease caused by their use including liver diseases, cardiovascular disease, cancers, mental illnesses, suicides and HIV/AIDS (6). Alcohol and drug abuse are known to worsen mental health issues, increase the risk of truancy, school dropout, and expulsion, and are frequently associated with suicidal thoughts or attempted suicides (19). Age at first intake of alcohol ≤ 12 years is associated with an increased risk of developing psychiatric disorders and substance use disorders (20). Consistent with previous studies (16,21,22), alcohol consumption is more prevalent than cigarettes. In many communities, alcohol is an important feature of religious ceremonies, rituals of sociability, healing, devotion, comfort, and enjoyment (23). This cultural significance associated with alcohol in most cultures may explain its higher prevalence compared to cigarettes and other substances. The relative availability of alcohol and various marketing strategies such as the use of small affordable sachets, employed by alcohol-producing companies in the country may also contribute to its wider use.

The prevalence rate of depression among adolescents in public secondary schools in this study is higher than 12.6% prevalence rate of depression among adolescents in previous studies in South West Nigeria (13,15). It is however in line with 43.7% reported among Chinese adolescents (24). The rate of mild depression found in this study is also similar to the 34.7% reported in another study in another southwestern state in Nigeria (14), the authors however reported a higher prevalence of moderate to severe cases of depression. The result is lower than the 71.8% among first-year pharmacy, medical, and nursing students at a Nigerian university (25). The differences may be attributed to different tools, classification techniques, and sampled groups used in the studies, a higher prevalence found by (25) may be attributed to the course-related effect on the mental health of the respondents.

In contrast to some previous studies (26,27), this study found no relationship between the gender of respondents and the prevalence of depressive symptoms. However, the insignificant association agrees with the findings of a study using PHQ-9 (14) and a similar survey among senior secondary school students in Ekiti, Nigeria, using the Kessler Psychological Distress Scale (K-10) (16). The prevalence of depression was observed to increase with age with older adolescents showing more symptoms of depression compared to younger adolescents. This is also in line with findings from another study of adolescent samples (14) and a report from the National Survey on Drug Use and Health (28) which reported that adolescents aged 16 to 17 years are more than twice as likely to report symptoms of major depression in the past year compared to younger adolescents of 12 to 13 years. Aside from the ongoing biological, psychological, and social changes associated with adolescence, older adolescents may experience additional challenges such as identity formation, increased peer pressure, and a heightened awareness of societal expectations which may increase the risk of depressive symptoms.

Significant association was observed between who the respondent lives with and depressive symptoms,. Living with parents may serve as a support system or safety net for healthy emotional and psychological development especially during adolescence, the absence of which may increase feelings of loneliness and isolation which can lead to depression. Fellmeth et al. (29) observed that children and adolescents left behind to be catered for by relatives or caregivers had an increased risk of depression, anxiety, and suicidal ideation.

One of the strengths of this study is the probability sampling technique used which enhances its external validity increasing the likelihood of the sample being representative of the population. Being a cross-sectional study, it however cannot establish causality. It is however suitable to evaluate prevalence and identify correlates due to its ability to study a large population at a single point in time. The instrument used in this study is only a screening tool that checks for the presence of symptoms, the instrument cannot diagnose depression. Hence, further clinical interviews may be needed to ascertain the condition of those with depressive symptoms. Also, there may be recall bias as respondents were asked to recall events that happened in the past.

CONCLUSION

In conclusion, alcohol use is more prevalent compared to cigarette smoking or use of other tobacco products among the adolescents. Mild and moderate depressive disorder symptoms are common. Intervention programs to aid early detection and treatment such as integration of

mental health services that include routine screening in schools along with mental health education is therefore recommended. Similarly, the study showed some children get exposed to alcohol under the age of 13 years suggesting that interventions should not be limited to older adolescents but designed to capture those in the early adolescence period as well. Policy to reduce adolescents' access to retailed alcohol should also be looked into.

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