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HEALTH IMPLICATIONS OF ALCOHOL AND OTHER PSYCHOACTIVE SUBSTANCE USE PREVALENCE AMONG SECONDARY SCHOOL ADOLESCENTS IN SOKOTO METROPOLIS

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Abstract

BACKGROUND: PSU is both a chronic clinical condition and a complex social phenomenon, often following a lifelong course if not adequately addressed, with initiation commonly occurring during early adolescence. PSU reflects the dynamic interaction between human vulnerability, social environments, and broader ecological and policy contexts, making it a multisectoral concern rather than a purely individual health issue. Age plays a critical role in the distribution and patterns of psychoactive substance use, with distinct trajectories observed across different substances. Against this backdrop, the present study focused on the Health Implications of Alcohol and Other Psychoactive Substance Use Prevalence Among Secondary School Adolescents in Sokoto Metropolis.

METHODS: Two hundred and thirty-three respondents were recruited through multi-stages sampling technique. Data were collected using an adapted socio-demographic questionnaire and MINI International Neuropsychiatric Interview (M.I.N.I. KID Version 5) were used via the online Open Data Kit (ODK). The collated data was analyzed using SPSS 25 (Statistical Package for Social Sciences version 25).

RESULTS: None of the respondents reported past year use of alcohol, while 21.9 percent use other psychoactive substances in the past year. The prevalence of dependence use disorder of psychoactive substances was three per cent, while abuse was four per cent.

CONCLUSION: The findings of this study suggested that there is high past-year prevalence of non-alcohol substance use, very low percentage of substance abuse and substance dependence respectively. Alcohol use, abuse, and dependence were notably absent among all respondents.

Keywords: Adolescents, Alcohol, Psychoactive Substance Use Disorders, Senior Secondary School

INTRODUCTION

Psychoactive substance use (PSU) constitutes a major global public health challenge, imposing substantial burdens on affected individuals, their families, communities, and national health systems. PSU is both a chronic clinical condition and a complex social phenomenon, often following a lifelong course if not adequately addressed, with initiation commonly occurring during early adolescence. PSU reflects the dynamic interaction between human vulnerability, social environments, and broader ecological and policy contexts, making it a multisectoral concern rather than a purely individual health issue.

Age plays a critical role in the distribution and patterns of psychoactive substance use, with distinct trajectories observed across different substances. Initiation into substance use has been reported as early as 10–14 years, with a sharp increase between 15 and 19 years (older adolescence) and a peak between 20 and 24 years (young adulthood) (Berman et al., 2009; Degenhardt et al., 2013; Gore et al., 2011). In Nigeria, secondary schools represent institutions with a high concentration of adolescents within this vulnerable developmental period. Senior secondary school students largely fall within the 15–19-year age bracket, consistent with the World Health Organization (WHO) and UNICEF definitions of adolescence, with relatively few students outside this range (Gore et al., 2011). Although broader age groups have been identified by the United Nations Office on Drugs and Crime (UNODC) as being at risk for substance use, the present study deliberately focused on adolescents aged 10–19 years attending senior secondary schools in Sokoto metropolis, northern Nigeria, given the critical developmental, social, and environmental transitions characteristic of this stage of life.

Globally, the burden of psychoactive substance use continues to rise. The UNODC World Drug Report 2022 estimated that approximately 284 million people aged 15–64 years used drugs worldwide in 2020, representing a 26% increase over the previous decade, while an estimated 11.2 million people injected drugs (Nations, 2022). These global trends have significant implications, as increased substance use contributes to mental health disorders, infectious disease transmission, social instability, and environmental harms related to drug production and distribution.

In Nigeria, the magnitude of the problem is particularly concerning. The first National Drug Use Survey, conducted in collaboration with the European Union (EU) and UNODC, estimated that 14.4% (approximately 14.3 million) of Nigerians aged 15–64 years had used drugs, a prevalence more than twice the global average of 5.6% (UNODC, 2018). Based on data from 38,850 household respondents and 9,344 high-risk drug users across all states, the survey provided robust national and subnational estimates of drug use. Importantly, it revealed a substantial treatment gap, with nearly three million Nigerians living with some level of drug dependence and extremely limited access to counseling and treatment services—highlighting systemic weaknesses in the human health component.

The report further demonstrated important social and demographic dimensions of PSU in Nigeria: one in four drug users was female, one in five high-risk users injected drugs, and one in five past-year drug users met criteria for drug dependence. Dependence rates were particularly high among cannabis users, pharmaceutical opioid users, and amphetamine users (UNODC, 2018). Regional disparities were also evident, with the lowest prevalence observed in the North-Central (10.0%) and North-West (12.0%) zones, and the highest prevalence in the South-West (22.4%), with Lagos State recording a prevalence of 33.0%. These geographic differences underscore the influence of environmental availability, urbanization, cultural norms, and regulatory enforcement, all of which are central to a One Health understanding of substance use.
Young people remain disproportionately affected by PSU globally. Evidence indicates that adolescents and young adults are using alcohol and other psychoactive substances at higher rates than previous generations, with individuals under 35 years constituting the majority of those receiving treatment for drug use disorders in Africa and Latin America (Nations, 2022). PSU is also a major contributor to mental health morbidity and mortality, particularly during adolescence-a period marked by neurodevelopmental vulnerability and heightened sensitivity to social and environmental influences.

Against this backdrop, the present study focused on the Health Implications of Alcohol and Other Psychoactive Substance Use Disorders Prevalence Among Secondary School Adolescents in Sokoto Metropolis. Similarly, this study recognizes adolescent PSU as a multifaceted public health issue shaped by human developmental factors, social structures such as schools and families, and environmental influences including availability, cultural norms, and policy context. Understanding these interconnections is essential for developing effective, culturally appropriate, and sustainable prevention and intervention strategies.

Methodology

This descriptive cross-sectional study was conducted within four weeks periods (March 2024) among 233 respondents, aged 10–19 years, recruited from 7 public and 4 private senior secondary schools registered by the Sokoto state government located within the two out of the 4 metropolitan LGAs, who met the inclusion criteria. Using the multi-stages sampling technique, the sample size was calculated using the formula for a cross-sectional study in a single proportion. Ethical clearance was obtained from the Sokoto State Ministry of Health (**SKHREC/026/026/2023**) and approval to conduct the study was also obtained (**MOBSE/SSS/GEN/2605/VOL.1/P60**, **MST/SMS/59/VOL.1**). Respondents who refused to participate in the study and the students who have not been in the school for at least one calendar year were excluded. Only students who provided informed consent participated, and confidentiality was strictly maintained. Data were collected using an adapted socio-demographic questionnaire and MINI International

Neuropsychiatric Interview (M.I.N.I. KID Version 5) were used via the online Open Data Kit (ODK). The collated data was analyzed using SPSS 25 (Statistical Package for Social Sciences version 25).

Study instruments

An adapted socio-demographic questionnaire and MINI International Neuropsychiatric Interview (M.I.N.I. KID Version 5).

Socio-Demographic Questionnaire

This adapted instrument was made to be an interviewer-administered, based on the ages of the respondents to be accessed in order to avoid unfilled responses. It consists of questions in different segments that were adapted and modified from two different validated questionnaires, including the student drug use questionnaire, which was developed by the W.H.O. in collaboration with the United Nations Fund for Drug Abuse Control (Abubakar et al., 2021; Smart et al., 1980). The questions were suitably modified where necessary to fit Nigeria's socio-cultural context and the current study i.e. only the socio-demographic section. Pilot tests with the questionnaire in various countries, including Nigeria, revealed that its reliability and validity were high and has been used in epidemiological studies among Nigerian students (Adelekan & Odejide, 1989). Items 1-9 of the adapted socio-demographic questionnaire address questions about the respondent's socio-demographic and educational characteristics (Age, sex, tribe, religion, year of study, school type etc.).

The validity of the questionnaire was assessed by checking for:

- **Content Validity:** The appropriateness of the questions in the questionnaire was assessed by the principal researcher's supervisors and three (3) public health physicians at Usmanu Danfodiyo University Teaching Hospital, Sokoto.

The reliability of the questionnaire was assessed by checking for:

- **Test-Retest Reliability**: This was assessed by calculating the intra-class correlation coefficient (ICC) of the questions, which was achieved by re-administering the questionnaire to the same respondents selected for pretesting the instrument after two weeks. The ICC ranged between 0.811 - 0.845, indicating a range between optimal and excellent.

MINI International Neuropsychiatric Interview for Children and Adolescent (M.I.N.I KID)

M.I.N.I KID is a short diagnostic-structured interview designed for use in clinical and research contexts for psychiatric disorders in children and adolescents (Lecrubier et al., 1997). It is an interviewer-administered questionnaire that requires minimal training for clinicians but more thorough training for lay interviewers (Ajiboye, Yussuf, Issa, Adegunloye, & Buhari, 2009). It adheres to the ICD-10 and DSM-IV diagnostic criteria for mental disorders. The MINI consists of 17 modules, each labeled by a letter, and each

representing a diagnostic category that can be used to diagnose psychiatric disorders, including alcohol and other psychoactive substance use disorders (Pettersson, Modin, Wahlström, Af Winklerfelt Hammarberg, & Krakau, 2018). The M.I.N.I. KID version 5.0 (ICD-10 and DSM-IV) was used to assess psychoactive substance use disorders among the respondents in this study, as it has been validated and used in many parts of Nigeria for the diagnoses of various psychiatric illnesses (Adeyemo et al., 2020; Ajiboye et al., 2009).

Statistical analysis

The data gathered through the interviewer-administered questionnaire via ODK was already in XML soft copy format. The data was analyzed using SPSS-25 (Statistical Package for Social Sciences, version 25). Figures, charts, and tables were used to summarize the information gathered. Descriptive data for continuous variables (age, mean of monthly allowance category) was presented using mean and standard deviation, while percentages and frequencies were used for categorical variables (sex, class of study etc.).

Results

Socio-Demographic Characteristics of Respondents

The respondents were aged between 14 and 19 years, with a mean (±SD) of 16.78 (±1.52) years. The majority of the respondents were males 71.2%, as compared with females 28.8%. The monthly allowance category (₦) of respondents was 80.7% for those earning between 500-5000, 15.0% for the 5001–10,000 category, and only 4.3% earned >10000 with a mean (±SD) of ₦4374 (±4254). (Table 1)

Table 1: Socio-Demographic Characteristics of Respondents

Variables	Frequency (*n* = 233)	Percent (%)
Age (years)		
14 – 16	100	42.9
17 – 19	133	57.1
Sex		
Male	166	71.2
Female	67	28.8
Tribe		
Hausa	195	83.7
Fulani	16	6.9
Yoruba	8	3.4
Igbo	3	1.3
Others*	11	4.7

Religion		
Islam	223	95.7
Christianity	10	4.3
Religiosity (frequency of religious activities)		
Rarely or never	3	1.3
Sometimes	65	27.9
Often times or regularly	165	70.8
Monthly allowance category (₦)		
500 – 5000	188	80.7
5001 – 10000	35	15.0
>10000	10	4.3

***Others** = Ebira (Number – 2), Igala (Number – 1), Nupe (Number –3), Dakarkari (Number –1), Nkarigwe (Number –1), Kanuri (Number –1), Margi (Number - 2)

School Educational Characteristics of Respondents

There was almost equal representation of Year 4 (SSI), Year 5 (SSII), and Year 6 (SSIII), at 31.3%, 34.8%, and 33.9% respectively. The majority of them were from public schools at 80.3%, as compared with private schools, 19.7%. Boys only schools represented 54.1%, mixed 33.9%, and girls only 12.0%. Day students represented 62.7%, while boarding students were 37.3%. (Table 2)

Table 2: School Educational Characteristics of Respondents

Variables	Frequency (*n* = 233)	Percent (%)
Year of study		
Year 4/ SS1	73	31.3
Year 5/ SS2	81	34.8
Year 6/ SS3	79	33.9
School type		
Public	187	80.3
Private	46	19.7
School type by student		
Boys only	126	54.1
Girls only	28	12.0
Mixed	79	33.9
Type of student		
Day	146	62.7
Boarding	87	37.3

None of the respondents had any form of alcohol use or alcohol use disorders in the past one year. However, the past year prevalence of psychoactive substance use (non-alcohol) among respondents, as assessed using the MINI International Neuropsychiatric Interview (M.I.N.I. KID Version 5), was 21.9% as shown in **figure 1**.
In addition, 4% of the respondents had substance abuse (non-alcohol) as shown in **figure 2**, while 3.4% of the respondents had substance dependence (non-alcohol) as shown in **figure 3**. The most used (past year prevalence) substances among the respondents were miscellaneous 17.6%, narcotics 4.7%, tranquilizers 3.0%, and marijuana/cannabis 2.1%. Substance dependence (non-alcohol) for the most used substances was marijuana/ cannabis 1.7% and narcotics 0.9%. Substance abuse (non-alcohol) for the most used substances was miscellaneous 4.3%, tranquilizers 0.9%, and narcotics and stimulants 0.4%.

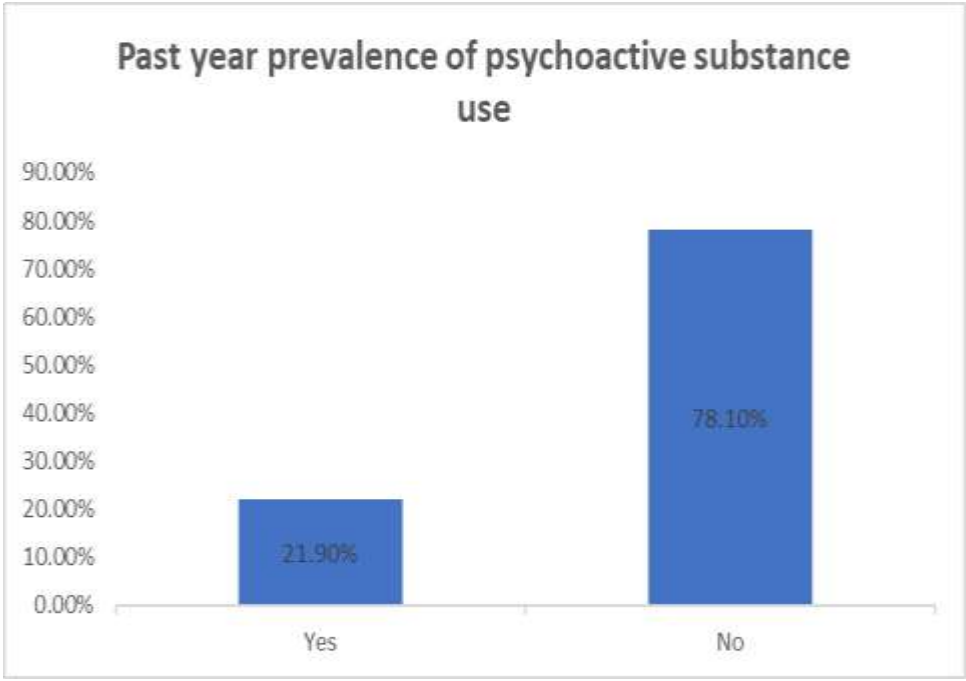

Figure 1: Past Year Prevalence of Psychoactive Substance Use (Non-Alcohol)

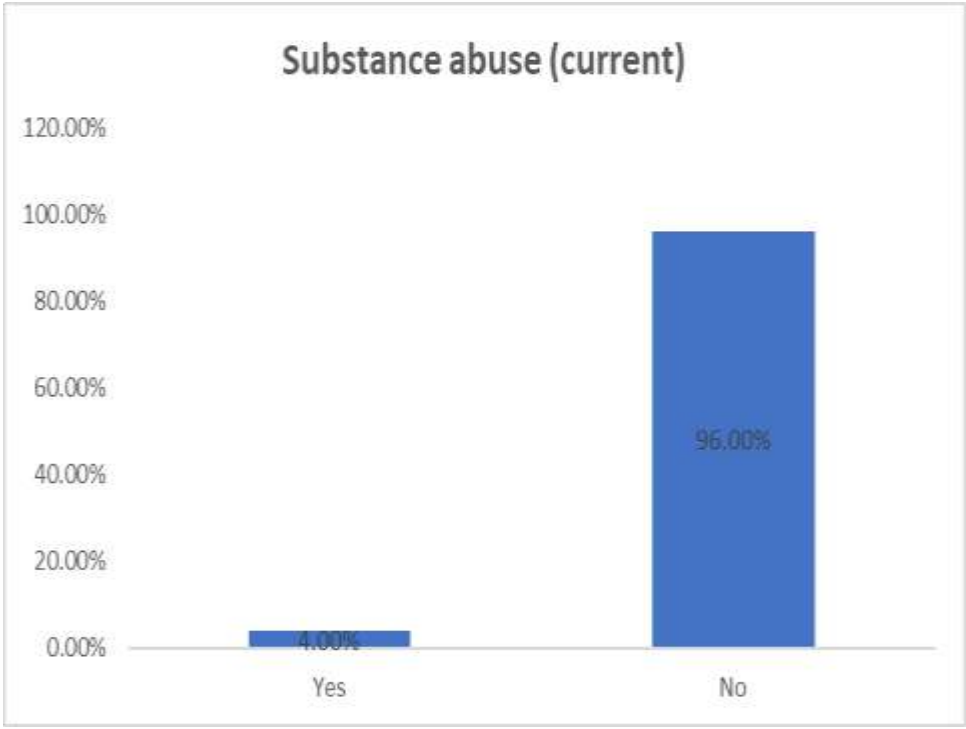

Figure 2: Prevalence of Substance Abuse (Non-Alcohol)

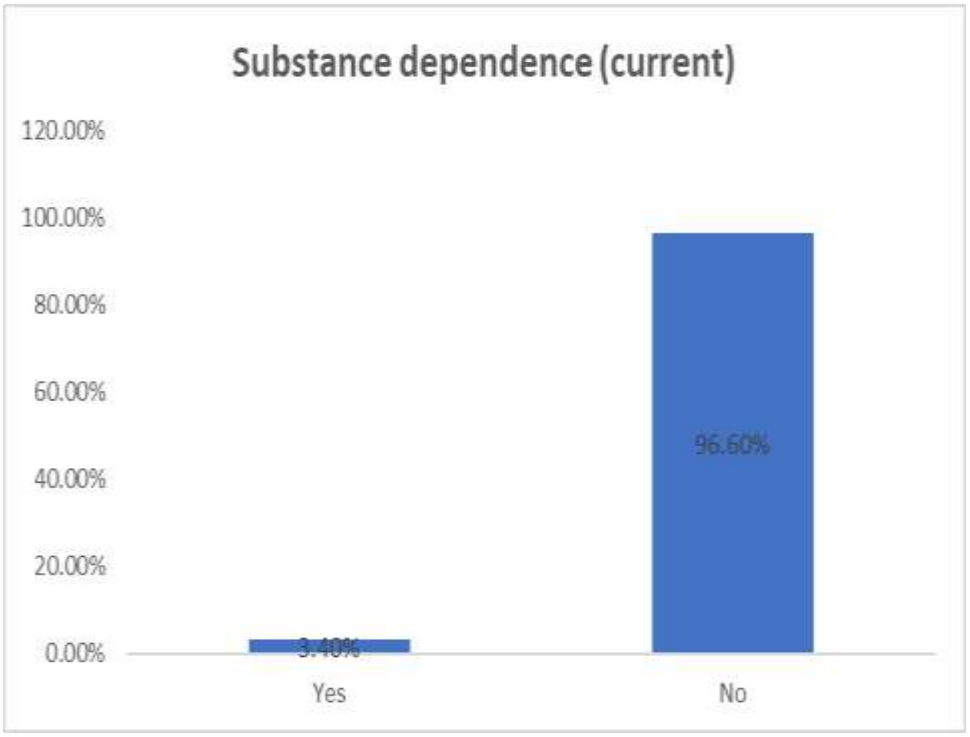

Figure 3: Prevalence of Substance Dependence (Non-Alcohol)

Prevalence of Alcohol and Other Psychoactive Substance Use Disorders by Substances

Table 5 below shows the most used (past year prevalence) substances among the respondents were miscellaneous 17.6%, narcotics 4.7%, tranquilizers 3.0%, and marijuana/cannabis 2.1%. Substance dependence (current) for the most used substances was marijuana/ cannabis 1.7% and narcotics 0.9%. Substance abuse (current) for the most used substances was miscellaneous 4.3%, tranquilizers 0.9%, and narcotics and stimulants 0.4% each.

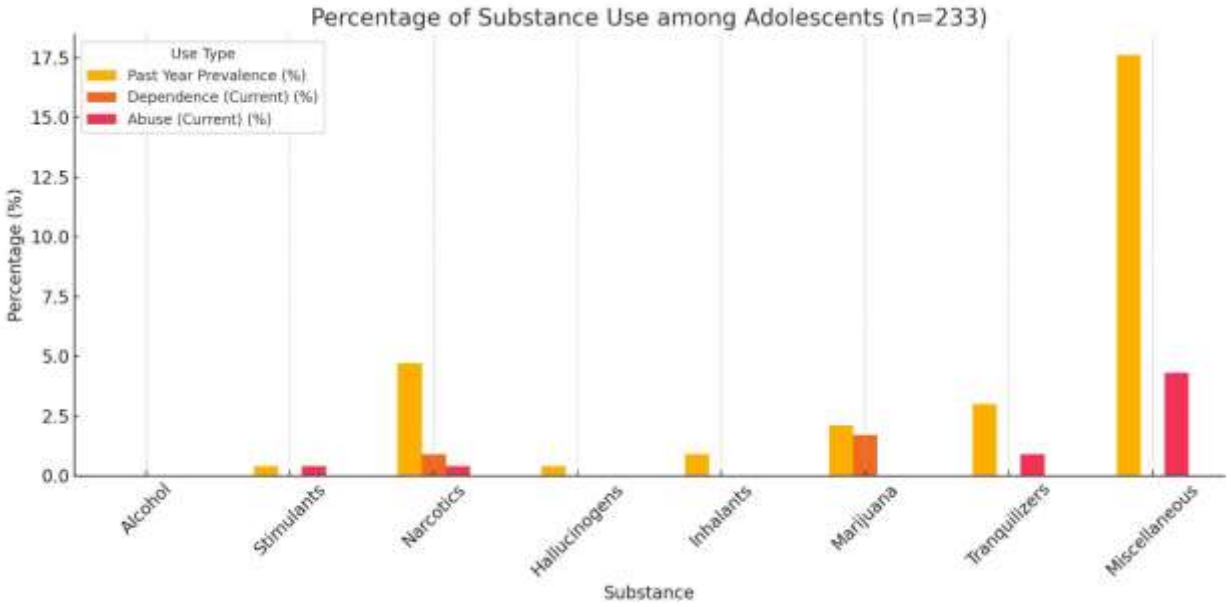

Figure 4: Prevalence of Alcohol and Other Psychoactive Substance Use Disorders by Substances

Discussion

This study demonstrated that the past-year prevalence of any psychoactive substance use among senior secondary school adolescents in the state metropolis was approximately twenty-two percent, indicating that about one in five adolescents had been exposed to psychoactive substances within the preceding year. The finding of this study underscores an important human health concern with broader social and environmental implications, given that adolescent substance use does not occur in isolation but is shaped by complex interactions between individuals, their communities, and their surrounding environments.

Direct comparison of the present findings with previous studies is challenging, as many earlier studies focused on patterns of use without distinguishing between use, disorder, or dependence. Nevertheless, the prevalence observed in this study was comparable to the twenty-one percent reported by Bassi and colleagues in Kaduna State, north-western Nigeria (Bassi et al., 2017), but higher than the sixteen percent reported in Sokoto

metropolis by Abubakar and colleagues (Abubakar et al., 2021). These differences may be partly attributable to methodological variations, including the inclusion of junior secondary school students (JSS I–III) in the Sokoto study and differences in assessment instruments. While the present study employed a globally accepted diagnostic instrument for substance use assessment, the instrument used in the Sokoto study had limited documented validity and acceptability in addiction research. Within a One Health framework, such methodological inconsistencies also reflect system-level challenges in surveillance and monitoring of adolescent substance use, which can undermine coordinated public health responses.

In contrast, several studies conducted in south-western Nigeria have consistently reported higher prevalence rates among adolescent senior secondary school students (Abdurahman et al., 2019; Omotoso et al., 2021; Oshodi et al., 2010). These regional differences highlight the influence of social and cultural environments, including norms around substance use, urbanization, peer influence, and availability of substances—key social determinants emphasized within One Health.

Furthermore, a Nigerian systematic review and meta-analysis reported a markedly higher prevalence of past-year multiple substance use (87.3%), approximately four times higher than the prevalence observed in the current study (Okogbenin & Justyna, 2021). This discrepancy may be related to differences in study design, as systematic reviews aggregate data across heterogeneous populations and settings, often capturing broader exposure patterns. This suggests that macro-level environmental and policy contexts, such as drug availability, enforcement, and socioeconomic instability, may amplify substance use risk at the population level beyond what is observed in single-site studies.

Similarly, a systematic review by Oluwole and colleagues involving twenty-seven studies across sub-Saharan Africa reported an overall prevalence of 42%, nearly double that of the present study, with South Africa recording the highest prevalence (50%) and Gabon the lowest (10%) (Adebanke et al., 2018). Notably, although 40% of the included studies were from Nigeria, only one originated from northern Nigeria, limiting regional representativeness. These findings further emphasize the environmental and contextual heterogeneity of psychoactive substance use across Africa, shaped by differences in legislation, economic conditions, cultural norms, and exposure environments - core elements of the One Health paradigm.

The lower prevalence observed in the current study may also be explained by differences in assessment approaches. While many previous studies relied on screening instruments, this study utilized a diagnostic instrument, which is known to yield lower but more specific prevalence estimates (Maurer et al., 2018). In addition, the absence of past-year alcohol use, abuse, or dependence among respondents contrasts with findings from both northern and southern Nigeria (Namadi, 2016; Sarkingobir et al., 2020; Soremekun et al., 2020). This discrepancy may reflect restricted physical, financial, and sociocultural access to alcohol, particularly in settings where alcohol use is strongly discouraged or

prohibited. These restrictions function as protective environmental and social determinants, illustrating how cultural and religious contexts can mitigate human health risks within a One Health framework.

Supporting this interpretation, a study conducted in south-south Nigeria using similar methodology found alcohol abuse and dependence prevalences of 5.8% and 4.9%, respectively, among older adolescents and young adults (Okoro & Chikezie, 2024). The inclusion of older age groups and a more permissive sociocultural environment likely contributed to the higher prevalence observed. Regional differences in Nigeria, as documented by UNODC, further demonstrate marked north–south variations in substance use patterns, reinforcing the role of environmental exposure, social norms, and regulatory contexts in shaping adolescent substance use (UNODC, 2018).

International comparisons also situate the present findings within a global One Health context. In the United States, a national survey reported a past-year adolescent psychoactive substance use prevalence of 21.9%, nearly identical to that observed in the current study, with cannabis being the most commonly used substance (Health & Services, 2021). Conversely, a systematic review in China reported a higher prevalence of 27.9% for past 30-day substance use (Wang et al., 2017). These differences may again reflect variations in study design, but also broader environmental and policy differences, including drug regulation, urban density, academic stressors, and social acceptability.

Overall, the findings of this study suggest that adolescent psychoactive substance use is the product of dynamic interactions between human vulnerability, social structures, and environmental accessibility. Effective prevention and intervention strategies should therefore extend beyond individual-level approaches to include school-based programs, community engagement, culturally sensitive policies, and environmental controls.

Limitations

Though a community-based study conducted within the state metropolitan LGAs, this study, being school-based, cannot be representative of adolescents in the community. Additionally, being a cross-sectional study, causal relationships cannot be established.

Conclusion

These findings highlight the interconnected roles of human vulnerability, social context, and environmental exposure in shaping adolescent psychoactive substance use. The absence of alcohol use in this study underscores the potential protective influence of religio-cultural restrictions, limited accessibility, and socioeconomic factors within the study environment. Moreover, the use of a diagnostic instrument rather than a screening tool may have yielded more conservative but clinically meaningful prevalence estimates. Overall, adolescent psychoactive substance use in the study setting represents a significant public health concern with implications that extend beyond individual health to include family systems, community norms, and environmental controls. Addressing this

issue requires integrated, multisectoral strategies that combine mental health services, school-based prevention, community engagement, and policy-level interventions.

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Conflict of Interest
The authors declared none.

References

Abdurahman, H., Adejumo, O., & Abdulmalik, J. (2019). Prevalence of psychoactive substance use among male adolescents in Southwest Nigeria. *Journal of Substance Use, 24*(5), 475-480. doi:10.1080/14659891.2019.1604840

Abubakar, A. U., Abubakar, A. A., Sufiyan, M. B., Balogun, M. S., Awosan, K. J., Raji, I. A., . . . Shehu, A. U. (2021). Knowledge of health effects and determinants of psychoactive substance use among secondary school students in Sokoto Metropolis, Nigeria. *Pan Afr Med J, 40*, 109. doi:10.11604/pamj.2021.40.109.22000

Adebanke, O.-I., Ogundipe, O., Amoo, E., & Adeloye, D. (2018). Substance use among adolescents in sub-Saharan Africa: a systematic review and meta-analysis. *South African Journal of Child Health, 12*, 79. doi:10.7196/SAJCH.2018.v12i2b.1524

Adelekan, M. L., & Odejide, O. A. (1989). The reliability and validity of the WHO student drug-use questionnaire among Nigerian students. *Drug Alcohol Depend, 24*(3), 245-249. doi:10.1016/0376-8716(89)90062-8

Adeyemo, S., Adeosun, I. I., Ogun, O. C., Adewuya, A., David, A. N., Adegbohun, A. A., . . . Adeyemo, O. O. (2020). Depression and suicidality among adolescents living with human immunodeficiency virus in Lagos, Nigeria. *Child and Adolescent Psychiatry and Mental Health, 14*, 1-10.

Ajiboye, P. O., Yussuf, A. D., Issa, B. A., Adegunloye, O. A., & Buhari, O. N. (2009). Current and lifetime prevalence of mental disorders in a juvenile Borstal Institution in Nigeria. *Res J Med Sci, 3*(1), 26-30.

Bassi, A., Idoko, L., Ogundeko, T., Ramyil, M., Abisoye-Ogunniyan, A., Ogbole, E., . . . Ishaku, B. A. (2017). Substance abuse and its prevalence among secondary school adolescents in Kagoro, Kaduna State, Nigeria. *World Journal of Research and Review, 5*(1), 262783.

Berman, S. M., Brown, K., Dittus, P., Ferdon, C. D., Gavin, L. E., Harrier, S., . . . Markowitz, L. (2009). Sexual and reproductive health of persons aged 10-24 years--United States, 2002-2007.

Degenhardt, L., Whiteford, H. A., Ferrari, A. J., Baxter, A. J., Charlson, F. J., Hall, W. D., . . . Vos, T. (2013). Global burden of disease attributable to illicit drug use and dependence: findings from the Global Burden of Disease Study 2010. *Lancet, 382*(9904), 1564-1574. doi:10.1016/s0140-6736(13)61530-5

Gore, F. M., Bloem, P. J., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., . . . Mathers, C. D. (2011). Global burden of disease in young people aged 10-24 years: a systematic analysis. *Lancet, 377*(9783), 2093-2102. doi:10.1016/s0140-6736(11)60512-6

Health, U. D. o., & Services, H. (2021). SAMHSA Announces National Survey on Drug Use and Health (NSDUH) Results Detailing Mental Illness and Substance Use Levels in 2021. *US Department of Health and Human Services'(HHS)*.

Lecrubier, Y., Sheehan, D. V., Weiller, E., Amorim, P., Bonora, I., Harnett Sheehan, K., . . . Dunbar, G. C. (1997). The Mini International Neuropsychiatric Interview (MINI). A short diagnostic structured interview: reliability and validity according to the CIDI. *European psychiatry, 12*(5), 224-231. doi:https://doi.org/10.1016/S0924-9338(97)83296-8

Maurer, D. M., Raymond, T. J., & Davis, B. N. (2018). Depression: screening and diagnosis. *American family physician, 98*(8), 508-515.

Namadi, M. M. (2016). Drug abuse among adolescents in Kano metropolis, Nigeria. *IJASS, 2*(1), 195-206.

Nations, U. (2022). UNODC World Drug Report 2022. Retrieved 1/2/2023 https://www.unodc.org/unodc/frontpage/2022/June/unodc-world-drug-report-2022-highlights-trends-on-cannabis-post-legalization--environmental-impacts-of-illicit-drugs--and-drug-use-among-women-and-youth.html

Okogbenin, E., & Justyna, K. (2021). Psychoactive Substance use among Adolescents in Nigeria: A Systematic Review.

Okoro, T. E., & Chikezie, U. E. (2024). Prevalence of alcohol and other psychoactive substance abuse and association with depression among medical students in Niger Delta University, Bayelsa State. *Pan Afr Med J, 47*.

Omotoso, A. B., Makanjuola, A. B., & Abiodun, O. A. (2021). Recreational use of psychoactive substances among secondary school students in North-Central Nigeria. *Journal of Substance Use, 26*(1), 73-78. doi:10.1080/14659891.2020.1779361

Oshodi, O. Y., Aina, O. F., & Onajole, A. T. (2010). Substance use among secondary school students in an urban setting in Nigeria: prevalence and associated factors. *Afr J Psychiatry (Johannesbg), 13*(1), 52-57. doi:10.4314/ajpsy.v13i1.53430

Pettersson, A., Modin, S., Wahlström, R., Af Winklerfelt Hammarberg, S., & Krakau, I. (2018). The Mini-International Neuropsychiatric Interview is useful and well accepted as part of the clinical assessment for depression and anxiety in primary care: a mixed-methods study. *BMC Fam Pract, 19*(1), 19. doi:10.1186/s12875-017-0674-5

Sarkingobir, Y., Dikko, M., Namalam, F., & Umar, A. (2020). Evaluation of Substance Abuse Among In-School and Out-of-School Youths in Sokoto State, Northwestern Nigeria. *African Journal of Biomedical Research, 23*(3), 361-365.

Smart, R. G., Hughes, P. H., Johnston, L. D., Anumonye, A., Khant, U., Medina Mora, M. i. E., . . . World Health, O. (1980). A Methodology for student drug-use surveys / R. G. Smart ... [et al.]. Geneva: World Health Organization.

Soremekun, R. O., Folorunso, B. O., & Adeyemi, O. C. (2020). Prevalence and perception of drug use amongst secondary school students in two local government areas of Lagos State, Nigeria. *South African Journal of Psychiatry, 26*.

UNODC. (2018). Drug Use Survey in Nigeria
2018. Retrieved 2024 https://www.unodc.org/documents/data-and-analysis/statistics/Drugs/Drug_Use_Survey_Nigeria_2019_BOOK.pdf

Wang, R.-J., Wang, T.-Y., Ma, J., Liu, M.-X., Su, M.-F., Lian, Z., . . . Bao, Y.-P. (2017). Substance use among young people in China: a systematic review and meta-analysis. *The Lancet, 390*, S14. doi:10.1016/S0140-6736(17)33152-5