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REVIEW ARTICLE OPEN ACCESS

Patterns, Risk and Protective Factors of Substance Use among Adolescents in South-West Nigeria: A Systematic Review

Oyinloye MA[1], Aina JO[1], Oluwasanmi GO[1]

[1]*School of Nursing Science, Babcock University, Ilishan-Remo, Ogun State, Nigeria*

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Abstract

Background: Substance use among adolescents is an escalating public-health problem in Nigeria with implications for mental health, injury and social dysfunction. We synthesised evidence from studies conducted in South-West Nigerian states to describe substance-use patterns, identify risk and protective factors, and appraise methodological quality to inform prevention and research priorities.

Methods: We conducted a systematic review of original, open-access quantitative studies published 2007 to 2024. Searches of Web of Science, PubMed, Google Scholar and EBSCOhost were performed; reference lists were hand searched. Eligible studies reported prevalence, patterns or determinants of substance use among adolescents or youth in South-West Nigeria; alcohol-only studies, reviews, and case reports. Study quality was appraised using the Joanna Briggs Institute (JBI) checklist for cross-sectional studies. Due to heterogeneity of populations, outcome definitions and measurement, we present a structured narrative synthesis. (PRISMA guidance followed.)

Results: Database searches identified 66 records; after deduplication, 55 records were screened. After full-text assessment (n = 28), eight studies were included. The eight studies (seven cross-sectional; one pilot) examined secondary-school and tertiary-level populations, a clinical sample, and community youth; sample sizes ranged from 249 to 11,799. Reported substance use prevalence varied (range across study reports), with overall high proportions in several samples (where reported: 40%–78% in some student samples). Commonly reported substances included alcohol/over-the-counter medicines, tobacco, tramadol (and other opioids), cannabis, amphetamines, inhalants and low-prevalence heroin/cocaine. Recurrent risk factors were male sex, older adolescent age, peer substance use/peer pressure, parental substance use/low parental monitoring, school disengagement/academic stress, mental-health symptoms (depression, anxiety), curiosity/experimentation and community availability. Protective factors included religiosity, parental guidance and monitoring, school-based positive behavioural programmes, and supply-reduction policies. Using the JBI checklist, most studies were rated low-to-moderate quality because of non-probability sampling, inconsistent outcome measurement (ever vs past-year vs current use), and limited control for confounding.

Conclusions: Substance use among adolescents in South-West Nigeria is prevalent across multiple substances and shaped by interlocking individual, family, peer and community factors. To inform prevention, surveillance must adopt standardised measures and representative sampling; longitudinal and intervention studies are needed. Family- and school-centred prevention and community supply-reduction efforts are priority actions.

Keywords: Substance-Related Disorders, Adolescent, Risk Factors, Protective Factors, Nigeria

Background

Adolescent substance use causes immediate harms (injury, risky sexual behaviour, acute intoxication) and long-term sequelae, including dependence and mental health disorders. Global reports indicate rising use and an expanding burden among young people, with one UNODC report estimating hundreds of millions of people used illicit drugs in recent years and an increasing burden from drug-use disorders (1, 2, 3). In Nigeria, clinical services and rehabilitation demands reflect an increasing public-health

Correspondence:
Oyinloye, Mojirade A
School of Nursing Science,
Babcock University,
Ilishan-Remo, Ogun State,
Nigeria.
+2348072090192, oyinloyeade@babcock.edu.ng

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signal, particularly among adolescents and youth, with consequences for crime, infectious-disease transmission and social disruption (4, 5, 6, 7).

Despite national attention, the evidence about *how* substances are used by adolescents within South-West Nigeria, and *why* some young people start while others do not, remains fragmented. Many primary studies are cross-sectional, vary in age ranges and outcome definitions, and focus on school-attending populations, limiting generalisability to out-of-school adolescents. Prior broad reviews have addressed prevalence at the national level, but region-specific syntheses that assemble both patterns and determinants are scarce (8, 9, 10, 11, 12, 13). Not all developmental assets equally protect young people from harmful behaviours; some assets appear less predictive of mental-health outcomes than others, underscoring the need to identify which family- and school-based resources matter most in local settings (14).

This review addresses that gap. We aimed to: (1) synthesise the pattern and prevalence of substance use reported in studies conducted in South-West Nigerian states among adolescents and young people; (2) identify and summarise reported risk and protective factors; and (3) appraise study quality and recommend priorities for surveillance, research and interventions in the region.

Methods

This review follows PRISMA recommendations. The protocol was not registered; methods and inclusion criteria are described below.

Eligibility criteria

We included original, open-access quantitative studies published 2007-2024 that reported prevalence, pattern or determinants of substance use among adolescents or youth in South-West Nigeria. Adolescent age is conventionally 10-19 years, but we accepted studies whose participants were predominantly within teenage and young-adult ranges (many included 15-24-year groups), provided age ranges were reported. Excluded were alcohol-only studies, case reports, narrative/systematic reviews, non-English articles and studies outside Nigeria.

Information sources and search

We searched Web of Science, PubMed, Google Scholar and EBSCOhost using combinations of the terms: “substance abuse”, “drug use”, “illicit drug”, “psychoactive substance”, “risk factors”, “protective factors”, and Nigeria (searches performed to May 2024). Reference lists of included articles were hand-searched.

Study selection and data extraction

Two reviewers independently screened titles/abstracts and full texts and extracted data using a pre-piloted extraction template (items: author/year, state, setting, population, sample size, age range, study design, substances measured, prevalence/outcome definition, risk/protective factors, and key limitations). Disagreements were resolved by discussion.

Quality assessment

We appraised included studies using the Joanna Briggs Institute (JBI) critical appraisal checklist for analytical cross-sectional studies, focusing on sampling strategy, measurement validity, identification/handling of confounding, and appropriateness of statistical analyses. Given heterogeneity, we present a narrative summary of overall quality.

Synthesis strategy

Heterogeneity in population, sampling and outcome definitions precluded meta-analysis. We performed a structured narrative synthesis: tabulation of study characteristics, thematic aggregation of determinants (grouped into individual, family, peer, school and community domains), and counting the number of studies reporting each factor where possible.

Results

Study selection (PRISMA)

Searches retrieved 66 records (Web of Science 10; PubMed 25; Google Scholar 15; EBSCOhost 11). After deduplication, 55 records remained. Screening of titles/abstracts excluded 17 records; 28 full texts were assessed for eligibility, and 20 were excluded (reasons: alcohol-only studies n = 5; narrative/systematic reviews n = 6; non-adolescent populations n = 3; non-Nigeria studies n = 6). Eight studies met the inclusion criteria (seven cross-sectional; one pilot study). Figure 1 summarises this process.

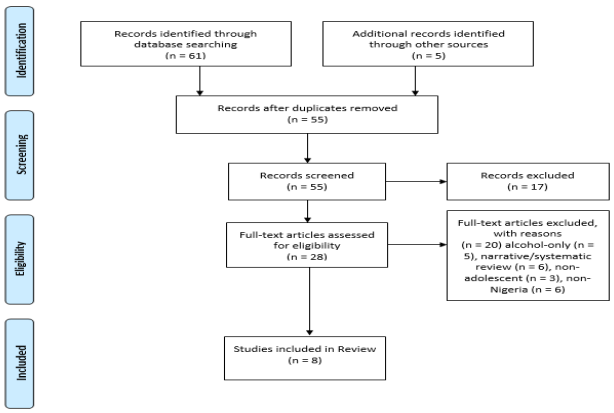


Figure 1: PRISMA flowchart

Characteristics of included studies (Table 1)
Eight studies conducted in South-West Nigeria were included: one each from Ekiti and Oyo, three from Ogun, one from Lagos and one using national survey data subset (NARHS). Populations included undergraduate students (n = 3 studies), secondary-school students (n = 3), a community youth survey (n = 1) and a clinical sample of patients with mental health issues (n = 1). Sample sizes ranged from 249 to 11,799. Study years varied, and most used self-report questionnaires. Table 1 summarises these characteristics and the principal substances and prevalence measures reported.

Table 1: Study characteristics and reported substance-use patterns (included studies)

Study (year)	Setting / State	Population (age)	Sample size	Design	Outcome(s) reported (prevalence where given)	Main substances reported
Durowade et al. (2021) (15)	Afe Babalola Univ., Ado-Ekiti (Ekiti)	Undergraduate students (mean age 19.5)	430	Cross-sectional	"Substance use" 71.9%	OTC drugs (29.9%); curiosity, peer pressure, and school stress reasons
Amoo et al. (2020) (13)	NARHS II national survey (subset)	School-going adolescents (aged 15–24)	11,799	Secondary analysis	"Drug use" 65.9%	Cocaine 1.0% reported; religiosity listed as protective
Makanjuola et al. (2007) (9)	Univ. of Ilorin (North Central but included)	Medical students (mean 22.4)	1,420	Pilot study	Substance use 78%	Mild stimulants 33.3%, sedatives 7.3%, tobacco 3.2%
Ojieabu et al. (2015) (2)	Sagamu LGA, Ogun State	Youth 15–49	300	Cross-sectional	Substance use 76%	Valium 22.0%; coffee 64.3%; cannabis 17.0%; cigarette 27.3%
Onigbogi et al. (2023) (16)	Eti-Osa LGA, Lagos	Secondary school students (mean 16.3)	422	Cross-sectional	Substance abuse 8.3%	Codeine cough syrup/tramadol 11.6%, tranquilizers 9%
Idowu et al. (2018) (17)	Ogbomoso North, Oyo	Secondary schools (mean age 19)	249	Cross-sectional	Substance abuse 40%	Caffeine 29%; tramadol 39%; cocaine 12.9%; heroin 10%
Onofa et al. (2016) (18)	Abeokuta tertiary institutions, Ogun	College/Univ. students (mean 23.6)	1,233	Cross-sectional	Substance abuse 69.2%	Tobacco 14.4%; hypnosedatives 8.8%; cannabis 6.2%
Adejimi (2021) (19)	Federal Neuropsychiatric Hospital, Abeokuta, Ogun	Patients with mental health issues	458	Cross-sectional	Substance abuse 59.17%	Not specified

Outcome definitions varied (some reported "substance use" broadly, others specified "substance abuse"); prevalence denominators and timeframes were heterogeneous.

Quality assessment (JBI summary)

In appraising the methodological quality of the included studies, we applied the Joanna Briggs Institute (JBI) critical appraisal checklist for analytical cross-sectional studies. Overall, most studies demonstrated clearly articulated research objectives and employed structured questionnaires to collect data, reflecting a genuine effort to systematically examine substance use within their respective populations. These strengths indicate that investigators were intentional about defining their research questions and gathering primary data in an organised manner.

However, several recurring methodological limitations were identified. Many studies relied on non-probability sampling techniques or did not fully describe their sampling procedures. This raises concerns about representativeness and limits the extent to which findings can be generalised beyond the specific institutions or communities studied. In addition, outcome definitions were often inconsistent. Some studies measured "ever use," others "past-year" or "current use," and only a few clearly distinguished between these categories. The limited use of standardised or validated measurement instruments further complicates comparison across studies and may introduce measurement bias.

Analytically, several reports provided only descriptive statistics or bivariate analyses, with minimal adjustment for potential confounding variables. Where regression models were used, the selection and handling of confounders were not always clearly justified. Finally, because all included studies employed cross-sectional designs, temporal relationships between risk factors and substance use could not be established. As such, the findings support associations rather than causal inferences. Taken together, while the studies contribute valuable descriptive insights into adolescent substance use in South-West Nigeria, methodological constraints reduce confidence in the precision and causal interpretation of the reported associations.

Taken together, the overall methodological quality of the included studies can be characterised as low to moderate. While most studies addressed relevant research questions and contributed useful descriptive data, recurring concerns regarding sampling methods, measurement consistency, control of confounding, and cross-sectional design limit the strength of the evidence base. A detailed, study-by-study appraisal is presented in Table 2, where specific methodological strengths and weaknesses are outlined to provide greater transparency in our assessment.

Table 2: JBI appraisal summary note

Study	Sampling frame	Measurement validity	Confounding	Analysis	Overall risk of bias (summary)
Durowade (2021) (15)	Single-institution convenience/unclear	Self-report: instrument not fully validated	Limited adjustment	Descriptive & bivariate	Moderate
Amoo (2020) (13)	National survey dataset (NARHS)-large sample	Likely standardised survey	Limited causal analysis	Secondary analysis	Moderate (strength: sample size)
Makanjuola (2007) (9)	Pilot study in one medical faculty	Self-report; pilot features	Not reported	Descriptive	Low–moderate
Ojieabu (2015) (2)	Community sample; sampling method not fully described	Self-report	Limited control for confounders	Descriptive	Moderate
Onigbogi (2023) (16)	School survey - sampling reported	Self-report	Some multivariable work is lacking	Descriptive	Low–moderate
Idowu (2018) (17)	Selected public secondary schools	Self-report	Minimal adjustment	Descriptive	Moderate
Onofa (2016) (18)	Multi-institution sample	Self-report	Limited multivariable adjustment	Descriptive	Moderate
Adejimi (2021) (19)	Clinical sample	Clinical setting, probable reliability concerns	Confounding substantial	Descriptive	Low–moderate

Most studies provide valuable descriptive insight but have limitations that reduce confidence in causal statements and prevalence generalisability.

Patterns of substances used

Across studies, the pattern shows a spectrum: common substances reported included over-the-counter medicines and cough syrup (notably codeine), tramadol and other opioids, tobacco and cigarette smoking, cannabis, stimulants (mild stimulants, amphetamines), inhalants, sedatives/hypnosedatives, and low-prevalence reports of heroin and cocaine. Some studies reported very high overall substance-use proportions (e.g., 69-78% in certain student samples), while school-based samples varied (8.3%-40%) depending on definitions and measurement. The heterogeneity in definitions (ever/past-year/current) impedes the pooling of prevalence estimates.

Risk and protective factors (synthesis)

We grouped determinants into five domains and counted how many of the eight included studies reported the factor (Table 3).

Table 3: Reported risk and protective factors: synthesis across included studies

Determinant domain	Specific factor	Number of included studies reporting factor (n = 8)	Representative citations
Individual	Male sex	4	Durowade (15), Onofa (18), Idowu (17), Amoo (13)
Individual	Older adolescent/young adult age	4	Durowade (15), Amoo (13), Idowu (17), Onofa (18)
Individual	Curiosity/experimentation/boredom	4	Durowade (15), Ojieabu (2), Onigbogi (16), Idowu (17)
Family	Parental substance use / low parental monitoring	5	Idowu (17), Onofa (18), Onigbogi (16), Ojieabu (2), Adejimi (19)
Peer	Peer substance use/peer pressure	5	Durowade (15), Ojieabu (2), Idowu (17), Onigbogi (16), Amoo (13)
School	Academic stress/truancy/disengagement	3	Durowade (15), Idowu (17), Onigbogi (16)
Community	Availability/supply and access	3	Ojieabu (2), Onigbogi (16), Onofa (18)
Mental health	Depression/anxiety/schizophrenia	3	Ojieabu (2), Adejimi (19), Idowu (17)
Protective-Family	Parental guidance/supervision	3	Amoo (13), Makanjuola (9), Onigbogi (16)
Protective-Cultural	Religiosity / religious activities	2	Amoo (13), Makanjuola (9)
Protective-School	Positive behaviour programmes/school connectedness	2	Onigbogi (16), Durowade (17)
Policy	Supply reduction/drug policies	2	Amoo (13), Makanjuola (9)

The counts reflect the number of included studies that explicitly reported each factor (as listed in the original papers). Because many studies were descriptive, these counts do not represent pooled effect sizes and instead indicate recurring themes.

Discussion

Principal findings

This synthesis of eight studies from South-West Nigeria shows that adolescent and young-adult substance use spans a wide array of substances, from over-the-counter cough syrups and tramadol to tobacco, cannabis and stimulants. Recurrent determinants include peer influence and parental factors, with school-level stressors and mental-health problems frequently mentioned. Religiosity, parental monitoring, and school-based protective programmes were repeatedly described as protective. Consistent with other regional studies, common correlates of adolescent substance use included peer influence, low parental supervision and school disengagement, risk patterns that have been noted in recent Nigerian adolescent surveys (20, 21). These findings also mirror patterns observed in other Nigerian cohorts, where peer clustering, weak parental monitoring and academic disengagement have emerged as consistent predictors of substance use (22).

Interpretation in context
The identified determinants echo global adolescent substance-use literature, where adolescence is a sensitive developmental period characterised by experimentation and social influence. Peer networks and family environments are consistently powerful correlates and prime targets for prevention. The presence of codeine-containing cough syrups and tramadol in several studies mirrors broader patterns across West Africa and regulatory challenges (9, 13, 18).

Quality of the evidence and limitations
Most included studies were cross-sectional and had variable sampling approaches and outcome definitions. The result is high heterogeneity and limited ability to estimate accurate population prevalence or establish causality. Because many studies relied on self-reports, social desirability and recall bias may underestimate or misclassify use. Several studies sampled in-school populations, limiting inference to out-of-school adolescents, an important gap given the vulnerability of that group.

Implications for policy and practice
Surveillance: Regional surveillance using standardised instruments (e.g., WHO ASSIST or a validated adolescent module) and representative sampling is essential to produce comparable prevalence estimates.
Prevention: Family-based interventions that strengthen parental monitoring and communication, and school-based programmes that increase engagement and resilience, are promising theoretically and match the pattern of protective factors reported.
Supply control & regulation: Enforcement of prescription controls for codeine/tramadol and restrictions on OTC sales, alongside community awareness, are needed.
Integration with mental-health services: Given the links with depression and anxiety in several studies, integrating substance-use prevention with adolescent mental-health programmes is pragmatic.

Research priorities
Longitudinal cohorts in the region are needed to elucidate trajectories and causal mechanisms. Intervention trials, school or family-centred, should be piloted and evaluated. Finally, studies must include out-of-school adolescents and use validated outcome measures to improve generalisability.

Strengths and limitations of this review
Strengths
This review brings together evidence from a clearly defined region rather than trying to generalise from the whole country, which makes the findings more actionable for policymakers and programme planners in South-West Nigeria. By deliberately including studies from different contexts, secondary schools, universities and colleges, community surveys and a clinical sample, we capture a richer, more textured picture of how substance use appears across settings and life stages. Methodologically, the review was carried out transparently: we followed PRISMA principles for study selection and used the Joanna Briggs Institute checklist to appraise study quality, which helped us move beyond simple description to a considered judgement about the trustworthiness of the available evidence.

Limitations
Several practical and design constraints narrow the certainty and reach of our conclusions. Our searches focused on open-access databases and four search engines, so some relevant studies behind paywalls or indexed elsewhere may have been missed. By protocol, we excluded non-English papers and studies that considered alcohol only, which reduced the scope and may have omitted important local evidence. The primary studies themselves were heterogeneous in population, sampling and outcome measurement, which made quantitative pooling inappropriate and limited the precision of prevalence estimates. Finally, we relied on the published reports and did not contact study authors for additional data or clarifications; as a result, some study details remain unresolved, and our synthesis reflects the information authors chose to report.

Conclusion
Substance use among adolescents and young people in South-West Nigeria is documented across multiple substances, and is driven by intertwined individual, familial, peer and community factors. While religiosity, parental guidance and school programmes appear protective, the evidence base is constrained by cross-sectional designs, measurement heterogeneity and sampling limitations. Strengthened surveillance with harmonised measures, representative sampling and longitudinal and intervention research are priorities to support effective, locally appropriate prevention and policy responses.

List of Abbreviations
ASSIST: Alcohol, Smoking and Substance Involvement Screening Test

JBI: Joanna Briggs Institute
NARHS: National HIV/AIDS Reproductive Health Survey
OTC: Over-the-counter
PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses
WHO: World Health Organisation

Declarations

Ethics Approval and Consent to Participate
Not applicable; this study synthesised published literature only.

Consent for Publication
All authors gave consent for publication of the work under the Creative Commons Attribution-Non-Commercial 4.0 license.

Availability of data and materials
All essential data supporting the findings of this case are available within the article. Additional data are available upon request from the corresponding author.

Competing interests
The authors declare no conflict of interest.

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Authors' contributions
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Data curation: OMA and OGO
Formal analysis: OMA, AJO and OGO
Writing - original draft: OMA,
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