



Review

Investigation of the prevalence and factors influencing tobacco and alcohol use among adolescents in Nigeria: A systematic literature review

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ABSTRACT

The increase in tobacco and alcohol prevalence among Nigerian teenagers necessitates the need to understand the factors influencing use. The aim of this systematic literature review was to synthesis evidence from studies on tobacco and alcohol use among Nigerian adolescents and young adults in order to determine factors influencing tobacco and alcohol use. Six databases MEDLINE, Embase, CINAHL, PsycINFO, PubMed, ScienceDirect, and Google Scholar were used to search for peer-reviewed articles reporting the prevalence and predictors of tobacco and alcohol use among adolescents/youths published between 2010 and 2022. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guided this review.

From our search, twelve articles from the 6 geopolitical zones within Nigeria were included. The high prevalence of tobacco and alcohol use among Nigerian adolescents necessitates the need to understand the factors influencing use. A high prevalence rate was recorded among the male gender. Gender, age, and curiosity appear to place adolescents at extra risk for tobacco and alcohol use. Lack of parental monitoring, peer influence, low socio-economic status, low education level, stressful life events, advertisements, availability, and accessibility are factors identified to influence adolescents' alcohol and tobacco use. Alcohol and tobacco use remains a major public health issue as it continues to contribute largely to the growing occurrence of diseases globally. Our review showed that adolescents' alcohol and tobacco use behaviour is triggered by various factors on the personal, interpersonal, organisational, community, and policy levels, and these factors are understood to predict or protect against alcohol and tobacco use.

1. Introduction

Despite significant and continues efforts to prevent and reduce alcohol and tobacco use globally, their consumption continuous to increase, especially among adolescents and young adults around the world (Gowing et al., 2015; World Health Organisation., 2015). A report presented to the emergency department in England estimated that about 15% of adolescents in England, aged 11–15, were concurrent users of alcohol and tobacco (Donoghue et al., 2017). Similarly, the most recent data on smoking prevalence among adolescents aged 15–18 in America and Canada (2017–2018) recorded prevalence rates of 20.8% and 8% respectively (Hammond et al., 2019). While there might be some

cultural and attitudinal differences in the adoption of alcohol and tobacco use among Russians and Americans, their adolescents' habits of alcohol and tobacco use and the increasing consumption rates are comparable (Gunning et al., 2009). However, this increase is becoming alarming and evident as alcohol and tobacco use has been observed to have both physical and economic consequences.

Furthermore, accruing evidence has shown the enormous contribution of tobacco and alcohol to the increasing universal occurrence of mortality and mental health, neurological, and alcohol and tobacco use disorders (MNS) in the younger generation (Charlson et al., 2015; Barbus and Murray, 2010), with approximately 18.6% disability-adjusted life (DALY) recorded in ages 15–49 years globally (Degenhardt et al.,

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2018). Alcohol and tobacco use is believed to account for about 2% of the global mortality rate resulting from mental health illnesses experienced by teenagers and young adults between the ages of 10–24 years old (Ajayi and Somefun, 2020). Congruently, in most low and middle-income economies, early initiation into tobacco and alcohol use equally accounts for the high occurrence of mental disorders experienced in adolescents (Pengpid and Peltzer, 2019; de la Torre-Luque et al., 2021). According to Pengpid and Peltzer (2019), pre-adolescent initiation to alcohol and tobacco use occurs in 10.6% of pre-adolescents for tobacco use, 8.1% for alcohol consumption, and 4.2% for canaabis use in most of the economies of the Association of the South-East Asian Nations (ASEAN), with mild to severe psychological disorder reported in most cases.

However, Ogundipe et al. (2018), shows the general prevalence of alcohol and tobacco use in the sub-Saharan region of the African continent to be 41.6%, with tobacco and alcohol accounting for 23.5% and 32.8% of the prevalence respectively. Alcohol and tobacco use remains a major public health issue as it continues to contribute largely to the growing occurrence of diseases globally. It is recognised as the leading global cause of illness and death, and a risk factor for the four major Non-Communicable Diseases - cancer, cardiovascular diseases, diabetes, and chronic respiratory diseases (Wu, 2010; Thakur et al., 2011; Parry et al., 2011; Idowu et al., 2018). Furthermore, tobacco and alcohol use account for nearly 54% of the global non-communicable disease Disability-Adjusted Life Years (DALYs) recorded (McKee et al., 2014). Regrettably, the occurrence of tobacco and alcohol use does not only affect the individuals' health but also negatively impacts the quality of life of those around them, especially in the case of tobacco. Records from the World Health Organization (WHO) show that 600,000 people died from second-hand exposure to tobacco (Wang et al., 2017).

Even at that, the rate of alcohol and tobacco use continues to increase among adolescents and young adults, particularly in Sub-Saharan African economies like Nigeria (Adeyemo Florence et al., 2016; Itanyi et al., 2018). As stated by the Nigerian National Drug Law Enforcement Agency (NDLEA), about 20% of adolescents receiving education in Lagos have consumed at least one form of psychoactive substances including alcohol and tobacco use (Bassi et al., 2017). The Nigerian Centre for Disease Control stated that over 15% of adolescents aged 12–18 years are regular tobacco consumers (Atoyebi and Atoyebi, 2013). Considering this, several studies carried out in Nigeria identified tobacco and alcohol to be two of the most misused substances among adolescents and young adults in the country. These studies further identified determinants for use and equally emphasized the need for urgent interventions (Bassi et al., 2017; Atoyebi and Atoyebi, 2013).

Studies related to the prevalence of tobacco and alcohol use among Nigerian adolescents have indicated a rise in these behaviours, emphasizing the need for urgent intervention. National representative data is needed to develop effective national policies and interventions, but this is lacking. Hence this review aimed to synthesis existing evidence on studies conducted on both tobacco and alcohol use and predictors among Nigerian adolescents.

1.1. Aim and objectives

This systematic review aims to evaluate existing studies on the prevalence and predictors of Alcohol and Tobacco use among adolescents and young adults in Nigeria.

The objectives of the systematic literature review were to:

1. Assess the prevalence of tobacco and alcohol use amongst adolescents and young adults in Nigeria.
2. Identify factors that strongly contribute to the continuous consumption of tobacco and alcohol amongst Nigerian adolescents and young adults.
3. Make recommendations for research and practice.

2. Materials and method

This review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidance (Moher et al., 2009).

2.1. Search strategy

A comprehensive, structured search of MEDLINE, Embase, CINAHL, PsycINFO, PubMed, and ScienceDirect databases was conducted for relevant articles published between 2010 and 2022. We also searched Google Scholar and references from included articles for additional studies. Searching was carried out from December 15–20, 2022. The review team iteratively developed the search string and tested it prior to use.

2.1.1. Keywords

“Adolescents OR teenagers OR young adults”, “alcohol and tobacco use OR tobacco use OR illicit drug OR cigarette OR smoking”, “alcohol use OR illicit drug OR alcohol use OR alcohol drinking”, “factors OR reasons OR influences OR determinants” and “(Nigeria*)”.

2.1.2. Inclusion and exclusion criteria

The inclusion and exclusion of retrieved articles were determined using the following criteria:

Primary studies that examine the factors contributing to or influencing the prevalence of tobacco and alcohol use, or alcohol/tobacco use in adolescents with restrictions narrowed down to peer-reviewed articles, specific to Nigeria, published between 2010 – 2022, mixed gender, and written in English. To retrieve the most up-to-date studies on the subject of interest, we restricted our search to studies published in the last 12 years. As per the World Health Organization (1977), the age range for adolescents is between 10 and 19 years of age and young adults is between 19 and 24 years of age, therefore, studies with participant age range of 10–24 years were selected for review. To be considered for inclusion in the present review, studies must have at least 90% of the recommended sample. In an ideal quantitative study, the size sample should encompass 95% (Martínez-Mesa et al., 2014). Additionally, to be eligible for inclusion in the review, a qualitative study must have achieved or addressed the level of saturation.

2.1.3. Exclusion criteria

Studies that did not examine the topic of interest as part of their objectives as well as studies conducted outside Nigeria and published in other languages. Gender-based studies were also not included. Studies were also excluded if they were reviews, dissertations, theses, or case reports. Studies were excluded if they did not use a large population sample and if study participants were selected based on convenient sampling or any other non-probability sampling method.

2.1.4. Screening and selection of studies and quality assessment

Quality assessment was completed for all included papers and used to describe reporting quality rather than for inclusion/exclusion purposes. Titles and abstracts were screened against the inclusion/exclusion criteria. Articles meeting these criteria were selected for full-text screening.

Guideline from Coughlan et al. (2007) appraisal tool was utilized to evaluate and appraise the quality of the articles selected. The Coughlan et al. (2007) appraisal tool provided a significant approach to assessing quantitative studies. This tool utilizes a two-in-one approach to critique quantitative studies. The first part of the approach allowed for evaluating the validity and dependability of the qualitative studies while the second offered a clear pathway to identifying the relevance as well as assessing the strengths and weaknesses of the quantitative research articles. See Appendix A for the results of the quality appraisal.

This critiquing tool was equally used for data abstraction from all the

quantitative studies identified and the results were presented in the data abstraction in Table 1.

2.1.5. Study selection, data abstraction, and analysis

Three reviewers (HJ, HAS, and MSE) independently screened each title and abstract. Full text was retrieved for any article considered potentially relevant. To ensure accuracy, two reviewers (AB, SFB) independently screened 50% (6 out of 12 articles) of the full-text papers, and any disagreements were resolved through discussion with the team (HJ, HAS, MSE, AB, SFB, OO, MN, and EM) to achieve consensus. Data abstraction was performed by HJ, HAS, and MSE and was independently checked for accuracy and completeness by four reviewers (AB, SFB, OO, MN, and EM). The abstracted data included citation, study aim(s), study population, sample size/sampling technique, study design, data analysis method, and study outcomes (see Table 1). Study information was systematically tabulated and patterns within and between studies were explored to identify commonalities, differences, and potential explanations for these.

2.2. Theoretical framework

This systematic review draws on the Socio-Ecological Model postulated by McLeroy et al. (1988) to evaluate the different factors associated with alcohol and tobacco use in order to identify the factor that continuously increases the prevalence of alcohol and tobacco use. In this model, the concept of health was broadly theorized to provide an understanding of the main factors that impact health. According to the model, an individual's health is impacted by the intricate interactions between the individual's characteristics, the community, and the environment. The fundamental assertion of this theory is that a variety of factors interplay at different stages of analysis, from intrapersonal to interpersonal to organizational, community, and policy, to influence an individual's behaviour.

The model explicitly identified the five levels of interactions to encompass, (1) intrapersonal factors - an individual's characteristics and personal history factors, such as attitudes, abilities, knowledge, education, and income; (2) interpersonal factors - an individual's formal and informal social networks as well as main social grouping including family, working groups, and friends; (3) institutional factors - the organizational traits, formal or informal rules, and regulations of an individual's social institutions; (4) community factors - an individual's defined relationship boundaries in institutions, informal settings, and organization; and (5) public policy - laws or policies at regional, state, and federal level., and national laws. Fig. 1

3. Findings

3.1. Characteristics of included studies

The 12 articles selected are a representation of the six geographical zones that make up Nigeria. Nigeria is a Federal Republic comprising 36 States and its Federal Capital Territory, Abuja (Udo, 2023). The states are grouped into six geopolitical zones, the North-Central (NC), North-East (NE), North-West (NW), South-West (SW), South-East (SE), and South-South (SS). Additionally, the regions have varying economic, political, strategic, and governance structures. The six geopolitical zones and their states form the basis for the distribution of economic, educational, and political resources among Nigerians (Udo, 2023).

All included articles were quantitative studies. Three of the selected studies (Odukoya et al., 2018; Adekeye et al., 2015; Elegbede et al., 2012) were from the south-west region, two from the south-east (Itanyi et al., 2020; Anyanwu et al., 2016), two from south-south (Alex-Hart et al., 2015; Arute et al., 2015), two from the north-central (Alhassan et al., 2019; Fawibe and Shittu, 2011); two from north-east (Ogundeko et al., 2020; Yahya et al., 2010), while one (Adesina et al., 2020) was from the north-west. All selected articles used titles that provided insight

into the study carried out. However, four (Elegbede et al., 2012; Itanyi et al., 2020; Arute et al., 2015; Fawibe and Shittu, 2011; Yahya et al., 2010) articles particularly talked about tobacco use, five (Odukoya et al., 2018; Anyanwu et al., 2016; Alhassan et al., 2019; Ogundeko et al., 2020; Adesina et al., 2020) discussed alcohol and tobacco use in general, and two articles (Adekeye et al., 2015; Alex-Hart et al., 2015) discussed alcohol use.

A common methodological approach of cross-sectional study design was used by almost all the authors (Odukoya et al., 2018; Adekeye et al., 2015; Itanyi et al., 2020; Alex-Hart et al., 2015; Arute et al., 2015; Fawibe and Shittu, 2011; Ogundeko et al., 2020; Adesina et al., 2020; Elegbede et al., 2012; Anyanwu et al., 2016; Yahya et al., 2010) except for one author (Alhassan et al., 2019) who used an ex post facto, cross-sectional study design. Different multi-stage sampling techniques suitable for recruiting study participants were used in the respective survey. Relatively, the study population was either adolescents (Odukoya et al., 2018; Adesina et al., 2020; Itanyi et al., 2020; 2016; Alex-Hart et al., 2015; Arute et al., 2015; Alhassan et al., 2019; Ogundeko et al., 2020) or young adults (Elegbede et al., 2012; Adekeye et al., 2015; Fawibe and Shittu, 2011), in-school or out-of-school population, carried out mostly in urban settings with mixed gender distribution.

A total of 11,108 sample sizes were recorded from all the articles with the range from 179 participants (Alhassan et al., 2019) for the lowest to 4332 participants (Itanyi et al., 2020) for the highest sample size. The age bracket for the participants was 10–24 years as per the World Health Organization (1977). Out of the 12 articles, 3 articles (Elegbede et al., 2012; Adekeye et al., 2015; Fawibe and Shittu, 2011) studied age ranges beyond the stated age range of participants. Also, one author (Alhassan et al., 2019) did not state the age range of participants but the study population was identified as adolescents. Ethical approvals were sought and obtained. While, few articles (Arute et al., 2015; Adekeye et al., 2015; Alhassan et al., 2019) used consenting forms, the majority of the articles (Odukoya et al., 2018; Adesina et al., 2020; Itanyi et al., 2020; Anyanwu et al., 2016; Alex-Hart et al., 2015; Ogundeko et al., 2020; Elegbede et al., 2012; Fawibe and Shittu, 2011) sought approvals from the necessary committees and equally obtained informed written consents from participants as well as their guardians. However, one author (Yahya et al., 2010) did not state the ethical considerations taken to carry out the study.

Data collection processes were described by most of the included articles, and this was done through a semi-structured interview with one article (Elegbede et al., 2012) and the use of questionnaires by the remaining 11 articles. Three (Adekeye et al., 2015; Anyanwu et al., 2016; Yahya et al., 2010) of the articles used modified instruments adapted from standardized questionnaires like that of the World Health Organization, the Youth Risk Behaviour Surveillance System (YRBSS) questionnaire (Odukoya et al., 2018), the UNODC Global Assessment Programme (GAP) school survey questionnaire (Adesina et al., 2020), the Global Youth Tobacco Survey (GYTS) Core questionnaire (Itanyi et al., 2020), the Adolescent Alcohol and alcohol and tobacco use Questionnaire (Alhassan et al., 2019) and the Monitoring The Future (MFT) questionnaire (Alex-Hart et al., 2015) for the surveys, while four (Elegbede et al., 2012; Ogundeko et al., 2020; Arute et al., 2015; Fawibe and Shittu, 2011) articles used self-developed questionnaires.

All the included articles measure on the prevalence of alcohol and tobacco use in their study. Most (Adekeye et al., 2015; Odukoya et al., 2018; Elegbede et al., 2012; Adesina et al., 2020; Anyanwu et al., 2016; Arute et al., 2015; Odukoya et al., 2018; Itanyi et al., 2020; Fawibe and Shittu, 2011; Alhassan et al., 2019) observed the associations between variables and the level of significance in order to identify alcohol and tobacco risk factors. Only two articles clearly stated and effectively tested hypotheses (Adekeye et al., 2015; Alhassan et al., 2019), with one using the quasi-experimental design (Alhassan et al., 2019).

Table 1
Data Abstraction Table.

Authors and year	Location	Aim of study	Design of study and Methods of data collection used	Sample / Participant	How the data were analysed	Prevalence and Factors / Determinants / Reasons identified
Odukoya et al., (2018)	Lagos State	The purpose of this study is to examine the associations between parental monitoring behaviours and marijuana, alcohol, and cigarette usage among teenagers in school settings in Mushin LGA.	A descriptive cross-sectional study design that utilized a multistage sampling technique to recruit study participants. The sample size was estimated using the standard formula for descriptive studies. An adjusted version of Silverberg's Parental and Small's Monitoring Scale (PMPS) and the Youth Risk Behaviour Surveillance System (YRBSS) questionnaire were used as data collection instruments. The instruments were pre-tested and had a Cronbach's alpha coefficient of 0.84.	437 adolescents, ages 10–19 years and in senior classes were recruited from the six classrooms randomly selected from the two randomly selected schools in Mushin Local Government Area of Lagos State. Approval was obtained from the Lagos University Teaching Hospital's Health Research and Ethics Committee.	Epi-Info Version 3.2 was used for data analysis. Mean scores were calculated for each of the three parental monitoring practice domains. The two questions on parental monitoring were separately assessed on a five-point scale ranging from 1 to 5. T-tests were used to compare variables. Adjusted Odd Ratio and 95% CI was used to determine the relationship between variables.	Prevalence rates were recorded for cigarette smoking (4.3%) and alcohol (21.6%). Lack of parental monitoring. Age Male gender
Adekeye et al., (2015)	South-West	The aim of the study was to determine the prevalence and the factors that predict alcohol and substance consumption among students in Nigerian universities.	A quantitative cross-sectional study that used a stratified random sampling technique to recruit participants. A Survey was conducted in the South-West. Data collection was through the use of an adjusted WHO Alcohol Assessment Questionnaire (AAQ). The Instrument was pre-tested for validity.	431 students, ages 15–25 years were randomly selected from 2 private universities, of which 71% are male and 29% are females. Participants were stratified using current class, gender, age, and parents' alcohol and substance use. Consent forms were signed by participants as participation was voluntary.	The data were analyzed using SPSS version 17. Descriptive and inferential statistical methods were used to express data.	High prevalence rates were recorded for cigarette smoking (81%) and alcohol (72%). Age was identified as a strong predictor of alcohol and other substances. ($\beta = -0.338$; $t = 4.140$, $p < 0.005$) Male gender, Curiosity, Pleasure, Stress relief, Smoking prevalence was found to be 22% (ever smoked) and 13.7% (current smokers) Age Male gender Pleasure Stress relief Peer influence
Babatunde et al., 2012	Ekiti state	The aim of the study was to ascertain the practice of cigarette-smoking among Nigerian students in Ekiti state University and identify its determinants.	A descriptive cross-sectional study that utilized a multi-stage sampling technique to recruit participants. The sample size was estimated using Fisher's formula, $Z2PQ/d2$. The survey was conducted through interviews using semi-structured self-administered questionnaires. Instrument was pretested for validity.	300 students, ages 18–30 years were randomly selected from the 2 universities, of which 67.3% are male and 32.7% are females through systematic sampling. Participants were identified by matriculation number, departments and year of education. The selection was by the use of a sampling frame. Ethical approval was obtained.	Data were first manually edited for errors and then computed and analysed using Epi-Info version 3.4.1.	Alcohol (12.8%) Lower prevalence of tobacco use (11%). Curiosity Age Stress relief Pleasure level of education of parents Friends Stressful life events Availability and accessibility
Adesina et al., (2020)	Kaduna State	The aim of the study was to ascertain the frequency, pattern, and factors related to the use of psychoactive substances among school-going adolescents in Zaria local government area	A cross-sectional analytical study that utilized a two-stage, cluster sampling technique to recruit participants. Sample size was estimated using the Leslie Kish Formula. A survey conducted using semi-structured self-administered questionnaires. A Modified UNODC Global Assessment Programme (GAP) school survey questionnaire was used as the data collection instrument.	639 students, ages 11–19 years were recruited from the randomly selected arms of the 9 different schools (private and public) in Zaria local government area randomly selected by balloting. Approval was gotten from the Ministry of Education, Science and Technology Kaduna State as well as consent from the selected schools' appropriate authorities.	The data were analysed using the SPSS version 23. Data were checked for errors. Descriptive and inferential statistical methods were used to express data. Chi-square was used to determine the associated factors. Binary logistic regression was used to determine the predictors.	Alcohol (12.8%) Lower prevalence of tobacco use (11%). Curiosity Age Stress relief Pleasure level of education of parents Friends Stressful life events Availability and accessibility
Itanyi et al., (2020)	Enugu State	To determine the factors associated with tobacco smoking among	A quantitative cross-sectional study that utilized a stratified two-stage	4332 adolescents, ages 10–19 years were recruited from the 25	The Stata Version 11 was used for data analysis. Weighted prevalence estimates were	Alcohol (13.3%) Lower prevalence of tobacco use (5.8%).

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Table 1 (continued)

Authors and year	Location	Aim of study	Design of study and Methods of data collection used	Sample / Participant	How the data were analysed	Prevalence and Factors / Determinants / Reasons identified
		adolescents in Nigerian school. To investigate the interaction between school location and socioeconomic status (SES).	cluster sampling technique to recruit study participants. A survey conducted from November to December, 2015 using modified self-administered semi-structured GYTS Core Questionnaire as data collection tool. Instrument was pretested for validity.	schools and classes randomly selected in urban and rural locations through stratification. Approval was obtained from the Ministry of Education and the schools' principals as well as written consents from acting legal guardians of the students.	computed and 95% confidence intervals for each type of tobacco smoking. Bivariate and multivariate analyses were done. Multilevel mixed effects logistic regression models were used to determine predictors of each outcome. School characteristics, sociodemographic characteristics and environmental factors where the covariates examined. Odd ratios were calculated.	Age Male gender Attending rural school, Fathers low socio-economic status Exposure to second hand smoking / Advertisements Peers Parental smoking
Anyanwu et al., (2016)	Ebonyi State	To ascertain the frequency and pattern of substance usage among Abakaliki secondary school students and also identify factors for use.	A quantitative cross-sectional study that used a multi-stage sampling technique to recruit participants. A Survey conducted using 10% of the identified population as recommended by WHO. Data collection was through the use of an adjusted WHO drug use Questionnaire.	620 adolescents, ages 10–19 years were recruited through gender stratification from 5 secondary schools randomly selected through balloting. Approval was obtained from the medical and ethics committee of the Federal Teaching Hospital Abakaliki, the Secondary Education Board and the schools' principals as well as written consents from acting legal guardians of the students.	IBM SPSS Statistics for Windows, Version 20.0. was used for data analysis. The prevalence of was determined using descriptive statistics with significant level at $p < 0.5$	Alcohol (29%) Tobacco (14.4%) Gender Age Stressful life event
Ogundeko et al., (2020)	Bauchi State	The aims are to ascertain the prevalence of substance misuse among adolescents, the most common abuse substances, factors responsible for use, accessibility of these substances, family influence, and the effect of the campaign against the use of substances in Bogoro town.	A survey study that collected qualitative and quantitative data. A survey conducted using structure open and close ended questionnaire as data collection tool. Fisher's equation was used to determine sample size.	480 adolescents of equal gender distribution, ages 11–19 years were recruited from the 4 secondary schools in Bogoro LGA. Approval was obtained from the Offices of Education Secretary of Bogoro LGA and the Ethical Committee of the Chaplaincy College of Health Technology Jos, Nigeria.	The analysis was descriptive and employed histograms, pie charts, and percentages to express data.	Alcohol (71.5%) Tobacco (92.5%) Age Pleasure Lack of parental monitoring Accessibility – close proximity to school Stressful life events
Yahya et al., (2010)	Borno State	The aim of this study is to determine the prevalence and identify the factors that influence the onset of adolescent cigarette smoking in Konduga LGA.	A cross-sectional study that used a multi-stage sampling technique to recruit participants. A Survey conducted in the North-East. Data collection was through the use of an adjusted WHO questionnaire on smoking habits. The Instrument was pre-tested for validity.	400 adolescents (84% male and 16% female) with the majority falling within the age bracket 18–20 years were randomly selected from Konduga local government area in Borno state.	Findings were categorized, examined, and displayed in tables and charts.	Tobacco (21.3%) Age Male gender friends/peers Pleasure Socializing Stress Adverts and availability of funds
Alex-Hart et al., (2015)	.Rivers State	The aim of the study is to ascertain the prevalence and risk factors for alcohol consumption among Port Harcourt's secondary school students	A cross-sectional study that utilized a multistage sampling technique to recruit study participants. A survey conducted in Port-Harcourt in March, 2014 using modified self-administered structured questionnaires from the alcohol section of the Monitoring The Future (MTF) study as a data collection tool. The instrument was pretested for validity. Fisher's Formula was used	1080 senior secondary students ages 12–24 years (48.6% males and 51.4% females) were randomly selected from 10 public secondary schools selected through stratified sampling. Approval was obtained from the University of Port Harcourt Teaching Hospital's ethical committee and administrative heads of selected schools as well as written informed consent	SPSS version 20 was used for data analyses. Descriptive statistics were used to present the results. The significance test was conducted using the Chi-Square Test. The only p-values deemed statistically significant were those below 0.05.	Tobacco (30.6%) Lack of parental monitoring Curiosity Socializing

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Table 1 (continued)

Authors and year	Location	Aim of study	Design of study and Methods of data collection used	Sample / Participant	How the data were analysed	Prevalence and Factors / Determinants / Reasons identified
Arute et al., (2015)	Delta State	The aim of the study is to ascertain the prevalence and trends of tobacco consumption among students in Senior Secondary Schools in Abraka, Delta State, Nigeria	to calculate the minimum sample size. A cross-sectional study design that utilized a multi-stage sampling technique to recruit study participants. A survey was conducted in Ilorin between February and April, 2014, using self-administered structured questionnaires as a data collection tool. The instrument was peer-reviewed and pretested for validity. Fisher's Formula was used to calculate the minimum sample size.	from the parents of the selected participants. 456 students, ages 11–20 years were recruited through stratified sampling from 4 secondary schools purposely selected from 11 secondary schools in Abraka. Approval was obtained from the principals and written consent from the students.	SPSS version 20. was used for data analyses. Simple frequency tables were generated. Cross tabulation was used to check level of significance.	Tobacco (50%) Age Relief of stress Stressful life events Friends
Alhassan et al., (2019)	FCT and Nasarawa State	This study examined the psychosocial factors associated with substance use among senior secondary school students from public schools in Nyanya and Mararaba suburbs.	An ex post facto cross-sectional study design that utilizes a stratified sampling technique to recruit participants. A survey was conducted in Ilorin between February and April 2014, using questions adapted from the Adolescent Alcohol and Substance Use Questionnaire developed by Knight, Sherriff, Shrier, Harri and Chanq (2002) as a data collection tool. The instrument was pretested for validity. Locus of control was measured using the Nowick and Strickland Locus of Control Scale (N-SLCS) developed by Nowick and Strickland (1973), while, the Rosenberg Self-Esteem Scale (1965) was used to measure self-esteem.	179 participants were randomly selected from two public schools using a stratified sampling technique. Permission was sought and obtained.	Descriptive and inferential statistical methods were used to express data. Hypotheses were tested using Chi-Square, multiple regression analysis and Pearson Product-Moment Correlation. Multiple regression analysis was used to check the association between variables.	Gender Locus of control
Fawibe and Shittu, (2011)	Kwara State	The aim of this study is to ascertain the prevalence and characteristics of Undergraduate smokers in the University of Ilorin in the North Central region of Nigeria.	A descriptive cross-sectional study design that utilized a multistage random sampling technique to recruit participants. A survey was carried out in April 2009 in the North Central region of Nigeria. A self-designed questionnaire was used as a data collection tool. Fisher's Formula was used to calculate the minimum sample size.	1800 students were recruited but 1754 questionnaires were retrieved. Participants include 250 medical and 1550 non-medical students that were randomly selected from the University of Ilorin, through stratified sampling, of which 65.5% are male and 34.5% are females. Participants were first stratified using medical and non-medical students' classes. First-year medical students were excluded. The selection was by balloting. Consent forms were signed by participants as participation was voluntary.	The data were analysed using the SPSS version 13.0 and expressed as mean and standard deviation. Variables that were categorical were reported as percentages. The t-test and Chi square test were employed to compare the differences and test for statistical significance respectively.	Tobacco (5.7%) Male Gender Pleasure Stress relief

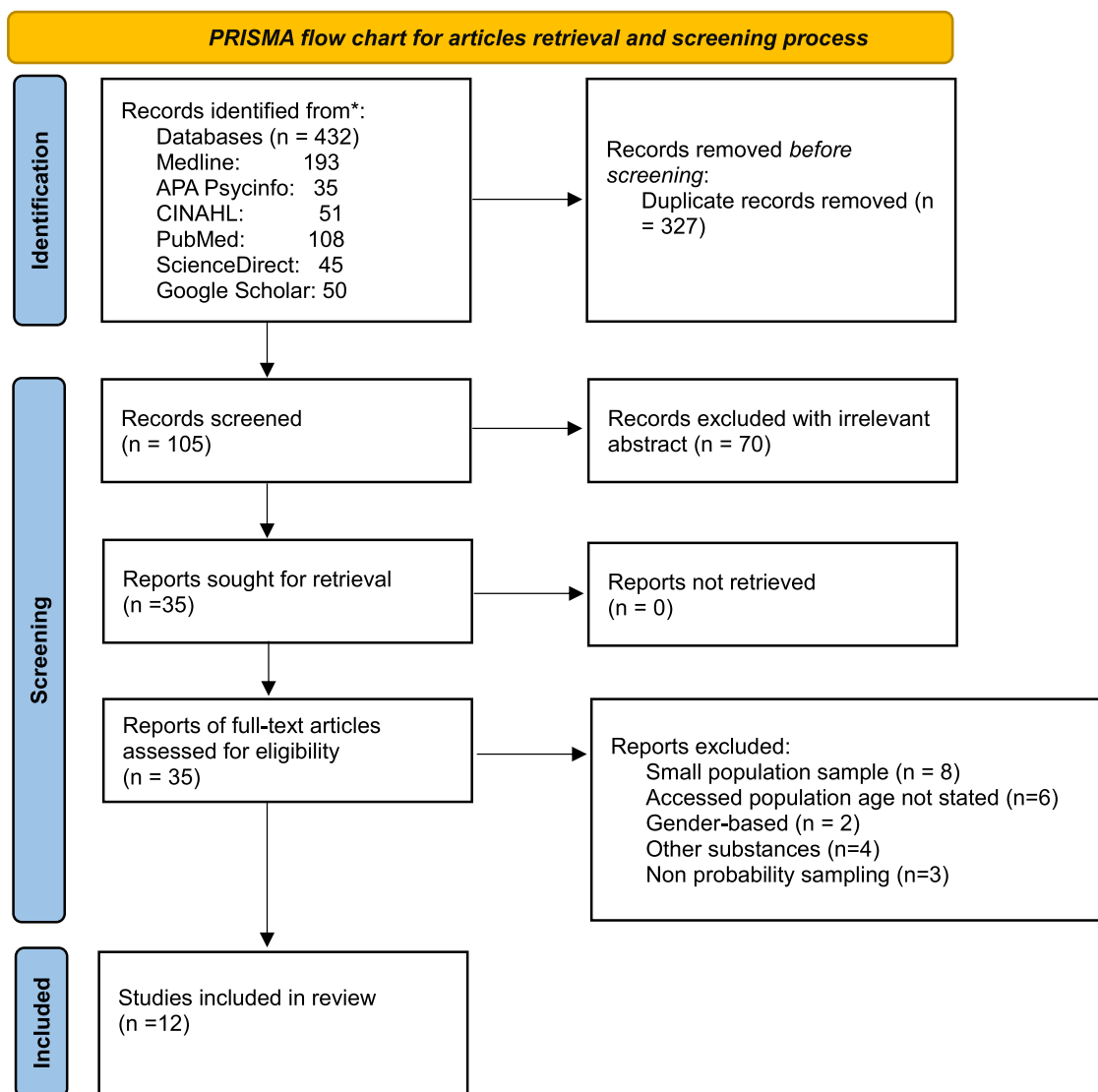


Fig. 1. PRISMA flow chart for the systematic review process.

3.2. Synthesis

The findings from this review are presented in subsections based on the four major themes of prevalence, individual level of influence, psychological influence, and environmental.

3.2.1. Prevalence of alcohol and tobacco use

The prevalence of tobacco use among adolescents was reported in five (Arute et al., 2015; Odukoya et al., 2018; Adekeye et al., 2015; Ogundeko et al., 2020; Adesina et al., 2020) studies. Tobacco use prevalence ranges from the highest recorded rate of 50% from a study in the south-south region (Arute et al., 2015), to the lowest recorded rate of 4.3% in the south-western region (Odukoya et al., 2018), and this is totally different from the high prevalence rate of 81% recorded in a study of young adults in the region (Adekeye et al., 2015). Although the highest prevalence rate for tobacco use among adolescents was recorded to be 95.2% in another study in the north-eastern region (Ogundeko et al., 2020), this is inclusive of canaabis. However, the prevalence of alcohol use in adolescents was recorded to be a very high rate of 71.6% in a study in the north-eastern region (Ogundeko et al., 2020), to the lowest rate of 12.8% recorded in a study in the north-western region (Adesina et al., 2020). Similarly, a high prevalence rate of 72% was also recorded for young adults in a study in the southwestern region

(Adekeye et al., 2015).

3.2.2. Individual-level influence

This theme represents the individual factors that support and drive tobacco and alcohol use among adolescents in Nigeria. Several studies drew on the strong effect of age on alcohol and tobacco use as it was consistently reported by nine (Adekeye et al., 2015; Elegbede et al., 2012; Adesina et al., 2020; Anyanwu et al., 2016; Ogundeko et al., 2020; Yahya et al., 2010; Arute et al., 2015; Odukoya et al., 2018; Itanyi et al., 2020) studies. The findings of these studies confirm that most of the adolescents in the included studies had their first alcohol and tobacco use before the age of 15 years with a higher percentage starting between the age ranges of 10–14 years with no gender difference.

Evidence from this systematic literature review revealed that more males than females were recorded to participate in the survey by all the authors, and the majority of the articles identified this as a significant factor in alcohol and tobacco use in adolescents (Alhassan et al., 2019; Odukoya et al., 2018; Fawibe and Shittu, 2011; Adekeye et al., 2015; Elegbede et al., 2012; Itanyi et al., 2020; Anyanwu et al., 2016; Yahya et al., 2010). The male gender is recognized to be more prone than the female gender to alcohol and tobacco use and experience issues of prolonged use later in life, as it has been observed that boys, compared to girls are more likely to initiate alcohol and tobacco use by 1.4% in

their adolescent stage (Adekeye et al., 2015).

Curiosity was recognized by three (Alex-Hart et al., 2015; Adekeye et al., 2015; Adesina et al., 2020) of the articles as one of the strongest predictors for initiation into alcohol and tobacco use. In addition, perceived individual control level for alcohol and tobacco use is recognized to influence continuous use. Alhassan et al. (2019) identified the locus of control as a factor that significantly influences adolescents' alcohol and tobacco use.

3.2.3. Psychological influence

More than half (Adekeye et al., 2015; Fawibe and Shittu, 2011; Elegbede et al., 2012; Adesina et al., 2020; Ogundeko et al., 2020; Yahya et al., 2010; Fawibe and Shittu, 2011) of the articles included identified pleasure as a factor for alcohol and tobacco use. Perceived feelings experienced after tobacco and alcohol consumption may be related to why adolescents continue alcohol and tobacco use. Some narrations from the included studies are the feeling of getting high or continuous craving or being happy, bold, and strong after consumption.

Two (Yahya et al., 2010; Alex-Hart et al., 2015) studies highlighted socializing as a factor in tobacco and alcohol use by adolescents. As adolescence is a period categorised with increased association with friends, adolescents tend to pick up drinking habits as a way to socialize and fit into the desired group (Alex-Hart et al., 2015). Adolescents in six (Adekeye et al., 2015; Elegbede et al., 2012; Yahya et al., 2010; Arute et al., 2015; Fawibe and Shittu, 2011; Adesina et al., 2020) of the included studies stated that they consumed tobacco and alcohol to relieve stress.

Similarly, five (Elegbede et al., 2012; Adesina et al., 2020; Itanyi et al., 2020; Yahya et al., 2010; Arute et al., 2015) studies identified peer alcohol and tobacco use as a strong predictor and initiation to adolescent alcohol and tobacco use. As the adolescence period is categorized with adventurous behaviours, friends are believed to be more influential at this time. Evidence from the studies of (Adesina et al., 2020; Itanyi et al., 2020; Yahya et al., 2010) show that most adolescents were introduced to smoking or drinking by friends.

3.2.4. Environmental influence

As posited by Catalano et al. (1996), the overwhelming effect and the supporting role of four contextual domains on adolescents' alcohol and tobacco initiation and continuous use cannot be understated. Family, friends, schools, community, and religious interactions are believed to be instrumental in how adolescents socialize, anticipate, and react to prosocial as well as antisocial activities. A high level of unsupervised adolescent time was identified by three (Alex-Hart et al., 2015; Odukoya et al., 2018; Ogundeko et al., 2020) studies to be a factor for alcohol and tobacco use. Spending time out even at night unsupervised was reported as a key factor influencing adolescents' tobacco and alcohol use in the included studies. However, a higher percentage of unsupervised adolescents was recorded for adolescent males (Odukoya et al., 2018).

Parents' socio-economic status and level of education were identified in two articles (Adesina et al., 2020; Itanyi et al., 2020) to be contributory factors to adolescent alcohol and tobacco use. Adolescents whose parents have no, or lower level of education are more engaged in alcohol and tobacco use than their counterparts (Adesina et al., 2020). Likewise, adolescents from low socio-economic families were more prone to alcohol and tobacco use than those from high socio-economic families (Itanyi et al., 2020).

Anyanwu et al. (2016), Ogundeko et al. (2020), and Arute et al. (2015) identified from their respective studies that the different stressful life events adolescents experience because of family interactions and presentations are factors that predict and influence alcohol and tobacco use. The role of media was highlighted in two (Itanyi et al., 2020; Yahya et al., 2010) studies as exposure to tobacco and alcohol adverts to be a factor for alcohol and tobacco initiation among adolescents. The availability and easy access to tobacco and alcohol products were identified as another factor for increased initiation and progressive consumption of

these products among adolescents (Adesina et al., 2020; Ogundeko et al., 2020). In the Ogundeko et al. (2020) study, it was observed that the closeness of the sale of tobacco products to school increases adolescents' prevalence rate as current users.

4. Discussion

It is essential to explore the factors that continue to influence the younger generation's tobacco and alcohol use in a holistic approach as there are numerous influencing factors. This holistic approach offers a better understanding of adolescents' health behaviour and environmental interactions. Therefore, by applying McLeroy et al. (1988) ecological model, this review provides a narrative synthesis of significant findings of all the 12 included studies to better understand these factors. This model's fundamental assertion is that a variety of factors interplay at different stages of analysis, from intrapersonal to interpersonal to organizational, community, and policy, to influence an individual's behaviour. Conversely, tobacco and alcohol consumed in various forms were identified by all the included articles in this review as the most used by adolescents and young adults. However, the prevalence rate varies in accordance with location, type, and method of consumption.

In this review, the prevalence of tobacco use among adolescents' ranges from the highest recorded rate of 50% from a study in the south-south region to the lowest recorded rate of 4.3% in the south-western region, and this is totally different from the high prevalence rate of 81% recorded in a study of young adults in the region. In the Northeast, the highest prevalence rate for tobacco use among adolescents was recorded to be 95.2%. However, the prevalence of alcohol use in adolescents was recorded to be a very high rate of 71.6% in a study in the north-eastern region, to the lowest rate of 12.8% recorded in a study in the north-western region. Overall, there is an immense increase in the prevalence of alcohol and tobacco use particularly alcohol as it is the most widely consumed products among adolescents in Nigeria (Vigna-Taglianti et al., 2019).

The age of adolescence was described to be the age bracket of initiation and a risk factor for tobacco and alcohol use. While the consumption of one gateway factor may induce the other, adolescents are most likely to initiate cigarette smoking at the onset of alcohol and tobacco use. This agrees with findings from a particular study that reported the mean age of smoking initiation to be 12.00 ± 3.32 years (Abiola et al., 2016). Although increased consumption and the initiation into other alcohol and tobacco uses are observed to be pronounced in the higher age bracket, adolescents are most vulnerable to alcohol and tobacco use initiation at this stage of life development due to their adventurous nature (Whitesell et al., 2013). Equally, being male was identified to significantly influence the use of tobacco and alcohol in adolescents. This is because Increase risk-taking is understood to be associated with the male gender and this has been identified to tremendously increase the prevalence of tobacco and alcohol use among adolescents (Cui et al., 2018). However, for alcohol, a recent trend suggests an increase in consumption among female adolescents (Das et al., 2016).

Furthermore, individual curiosity was recognized in this review to be a major factor associated with the consumption of alcohol and tobacco. It was established that the perceived feelings of getting high and being bold, making one happy and relaxed are all psychological experiences associated with craving and this may suggest why adolescents continue to use alcohol and tobacco (Whitesell et al., 2013). Similarly, reasons like the relief of stress or a form of coping strategy are also factors identified to increase the indulgence of tobacco and alcohol use among these adolescents. A study by Dumbili (2015) found that adolescents and young adults who feel academic pressure or the need to relieve tension and anxiety tend to indulge in alcohol to cope with the stress.

Adolescents socializing is a factor identified to be linked with tobacco and alcohol use, as it is known to reflect adolescents' responses

and decisions to either modify or adapt to peer influences. This however underpinned the fact that peers significantly influence adolescent alcohol and tobacco use (Trucco, 2020). Correspondingly, peer pressure is a notable factor highlighted by a good number of the included articles to be significantly associated with adolescent tobacco and alcohol use. Whilst this suggests that peer interactions influence adolescents' alcohol and tobacco use, it is crucial to understand that society and culture play a dynamic role in adolescent tobacco and alcohol use behaviour. The social acceptance of tobacco and alcohol use especially at parties contributes extensively to adolescents' alcohol and tobacco use (Stone et al., 2012). Notwithstanding, adolescents with a high level of unmonitored time are believed to indulge freely in alcohol and tobacco use, as a lack of parental monitoring is identified in this review to predict adolescents' tobacco and alcohol use. This was reflected in a study by Rusby et al. (2018) where less parental monitoring was observed to be associated with a high rate of adolescent alcohol and tobacco initiation. However, other findings suggest that familial interactions that include family values and parents' attitudes, supervision, expectations, and support reduce the possibility of adolescents adopting alcohol and tobacco use behaviour.

Furthermore, parents' socio-economic status (SES) and level of education were found to be factors that predict tobacco and alcohol use in adolescence. The use of alcohol and tobacco differs for both rural and urban communities because the environment was identified to be a determinant of how the SES of parents affects adolescents' tobacco and alcohol use (Aura et al., 2016). Additionally, adolescents of parents with low educational levels, particularly mothers, have the tendency to consume alcohol and tobacco uses compared to adolescents of parents with high or tertiary levels of education. These findings were supported by Cambron et al. (2018) and Aura et al. (2016) as neighbourhood and family incomes including general family functioning were found to directly affect how adolescents adopt alcohol and tobacco use. Also, there is considerable focus on alcohol and tobacco use by adolescents due to the psychological traumas some adolescents experience because of the stressful life events they go through. This factor resonated with the previous findings of Arpawong et al. (2015), where the study reveals how adolescents resort to alcohol and tobacco use as a coping strategy for certain psychological experiences arising from family dysfunction, neglect, or use.

Nonetheless, exposure to tobacco and alcohol adverts was identified as another factor alcohol and tobacco initiation among adolescents. These findings were mirrored by a previous study carried out in Nigeria. Evidence from Chido-Amajuoyi et al. (2017), shows that a high percentage of participants in the study-initiated tobacco smoking because of exposure to adverts, and this increased as exposure to adverts increased, which further increased adolescent susceptibility. Besides, De Bruijn (2011), described how the glamour in alcohol advertisements and promotions is portrayed to stimulate adolescents' curiosity.

Conversely, the availability and ease of access to tobacco and alcohol products were identified as other factors associated with increased initiation and progressive consumption of these alcohol and tobacco uses. The current review found that proximity to the sale of products was a reason for both tobacco and alcohol use. This was underpinned by Ikoh et al. (2019) study, which demonstrated how the ease of getting tobacco and alcohol by the participants increased their frequency of use. However, the availability and sale of these products on street vendors and around school locations are believed to increase intake. Notwithstanding, an analysis by Dumbili (2014), provided an extensive description of how poor policies and regulations on the sale of alcohol in Nigeria have encouraged promotions among producers and increased availability which has invariably encouraged consumption, particularly among adolescents. However, changes in cultural trends have led to the wide acceptance of alcohol consumption in social and traditional gatherings in Nigeria and this has increased open-minded attitudes to more consumption which unvaryingly stimulated policy changes in an already porous system with unwritten control policies to regulate and restrict

availability, marketing, and sales of alcohol products to the under-aged (Dumbili, 2015).

4.1. Strengths and limitations

Several strengths contributed to the quality of this systematic review including the rigorous use of the Coughlan et al. (2007) appraisal tool for the screening of the quality of the included studies. In addition, all article screening and data abstraction was conducted by three of the researchers and was independently checked for accuracy and completeness by three reviewers. One of the major limitations of this review is that the articles included in the review were cross-sectional studies that only measured the exposure and health outcomes at the same time. The result interpretations from findings might be limited because the survey cannot establish cause-effect relationships among variables. The second limitation of this review was that the review was limited to studies published in English, therefore it is possible some relevant studies may have been missed because of this.

5. Implications for research, practice, and policy

- All the included articles were quantitatively focused; nevertheless, qualitative studies are exploratory and can offer rich evidence of individual experiences and the reasons for alcohol and tobacco use as expressed by teenagers themselves. Therefore, qualitative research should be encouraged in future studies.
- It is also observed in this review that parental monitoring has a big impact on limiting adolescent alcohol and tobacco use. Therefore, it is important to educate parents and guardians on adolescents' alcohol and tobacco use influences and persuade them to play their part effectively in strengthening their bonds with their children through providing consistent support such as encouraging constant communication, giving good advice, active listening, monitoring activities, particularly at the adolescence stage, making and enforcing rules consistently, emphasizing the advantages of good habits and the bad effect of alcohol and tobacco use. Furthermore, educating the younger generations against alcohol and tobacco use while ensuring health and preventing social issues should also be a concern of the communities and other organizational groups.

5.1. Conclusion

This review sought to investigate the prevalence and factors contributing to tobacco and alcohol use among Nigerian adolescents and young adults. To this effect, different factors were highlighted in this review as contributors to alcohol and tobacco use and this provided enormous insight into when, how, and why adolescents are exposed to tobacco and alcohol initiation and use. Correspondingly, findings showed that adolescents' alcohol and tobacco use behaviour is triggered by various factors on the personal, interpersonal, organisational, community, and policy levels, and these factors are understood to predict or protect against alcohol and tobacco use. However, further research is required to provide an understanding of adolescents' attitudes and knowledge of the health implications of tobacco and alcohol use using a longitudinal study.

Ethical consideration

As this was a systematic review of already available studies online that have had ethical approval, ethical consideration was towards ensuring the proper use and report of pieces of evidence that include data, results, methods, and approaches. However, a thorough and careful examination of all selected papers was ensured. Furthermore, ethical approvals were sought and obtained by the authors of the primary studies.

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Author Contributions

Authors declare that MSE HJ, and HAS conceptualized the study and study design, with refinements contributed by MN, and AB., MSE, HJ, HAS, AB, and SFB performed the data extraction, analysis, and interpretation. HJ, HAS, EM, MN, OO, and MSE conducted data interpretation and wrote the manuscript. MSE and HAS edited sections on the manuscript. All authors have read, critiqued, and approved the final manuscript.

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CRedit authorship contribution statement

Stella F. Bosun-Arije: Writing – review & editing. **Halimat Jagun:** Writing – original draft, Formal analysis, Conceptualization. **Mandu S. Ekpenyong:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Data curation, Conceptualization. **Hope A. Stephen:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Opeyemi Odejimi:** Writing – review & editing, Formal analysis. **Aishat T. Bakre:** Writing – review & editing, Data curation. **Mathew Nyashanu:** Writing – review & editing, Formal analysis. **Eula Miller:** Writing – review & editing, Formal analysis.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A

Quality Appraisal using [Coughlan et al. \(2007\)](#) appraisal tool.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.drugalcdep.2024.111091](https://doi.org/10.1016/j.drugalcdep.2024.111091).

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