

Factors Associated with Patterns of Drug and Substance Abuse among Youths in Bo City, Sierra Leone

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Abstract

Background

Drug and substance abuse remains a major public health concern among young people, particularly in sub-Saharan Africa, where increasing availability of illicit substances poses significant social, behavioural, and health-related challenges. Bo City, the second-largest urban centre in Sierra Leone, has experienced a substantial increase in substance-related incidents; however, empirical evidence regarding the determinants, patterns, and accessibility of substance use among youths remains limited. Understanding these factors is essential for developing targeted prevention and control interventions.

Objective

This study aimed to investigate the factors associated with patterns of drug and substance abuse among youths in Bo Municipality, Sierra Leone. Specifically, the study assessed youths' knowledge and awareness of drug abuse, identified commonly abused substances, examined factors influencing substance use, and determined sources of drug availability among young people.

Methods

A descriptive cross-sectional study design was employed among 401 youths in Bo Municipality, Sierra Leone. Participants were selected using a purposive sampling technique. Data were collected using a structured and pre-tested self-administered questionnaire. Data analysis was conducted using IBM SPSS Statistics Version 25.0. Descriptive statistics were used to summarize participant characteristics and substance use patterns, while Chi-square tests of independence were performed to assess associations between sociodemographic factors and substance use outcomes. Statistical significance was determined at a p-value < 0.05.

Results

The majority of respondents were males (72.3%), aged 16–23 years (54.1%), had secondary education (32.2%), and were unemployed (57.4%). Kush was the most commonly abused substance, with 71.3% reporting lifetime use and 64.6% identifying it as their most frequently used substance, followed by marijuana (10.2%). The leading reasons for substance use included peer pressure (26.2%), escaping personal problems (19.0%), and lack of recreational activities (16.2%). Social media was the primary source of information about drugs (49.6%), whereas formal sources such as schools (3.0%) and healthcare workers (5.5%) contributed minimally. The main sources of drug availability were local markets (43.6%) and street vendors (21.7%), with 68.1% of respondents reporting that substances were either easy or very easy to obtain. Furthermore, 68.5% perceived law enforcement efforts as ineffective, while 70.6% were unaware of existing drug-related laws. Significant associations were observed between gender and type of substance used ($\chi^2=57.55$, $p < 0.001$), age group and substance used ($\chi^2=57.20$, $p < 0.001$), peer pressure and substance use ($\chi^2=100.94$, $p < 0.001$), and reasons for substance use and substance type ($\chi^2=196.23$, $p < 0.001$).

Conclusion

Drug and substance abuse, particularly Kush use, has become a serious public health concern among youths in Bo Municipality. The high prevalence of Kush use appears to be influenced by peer pressure, psychosocial challenges, unemployment, limited recreational opportunities, and easy accessibility through informal supply networks. Strengthening youth-focused prevention programmes, improving drug education, enhancing community awareness, and implementing effective regulatory and law enforcement measures are critical to addressing the growing substance abuse challenge in Sierra Leone.

Background to the Study

Drug and substance abuse represents one of the most formidable public health crises of the twenty-first century, with consequences reverberating across health, social, economic, and security domains globally. The World Health Organization (WHO, 2019) estimates that approximately 35 million people worldwide suffer from drug use disorders, while the United Nations Office on Drugs and Crime (UNODC, 2022) reports that 284 million people aged 15-64 used drugs in 2020 alone a 26% increase over the preceding decade. Among the most vulnerable group are young people, whose developmental stage renders them particularly susceptible to the initiation and escalation of substance use.

In sub-Saharan Africa, the convergence of rapid urbanisation, demographic youth bulges, pervasive unemployment, post-conflict trauma, and weakening social institutions has created conditions that are highly conducive to substance misuse among young people. Studies conducted across Nigeria, Ghana, Kenya, Uganda, and South Africa consistently document high rates of alcohol, cannabis, and increasingly, synthetic drug use among adolescents and young adults (Ssewamala et al., 2018; Adeyemo et al., 2020). The consequences extend beyond the individual to include increased criminality, burden on healthcare systems, HIV/AIDS transmission, school dropout, family disintegration, and loss of productive national workforce.

Sierra Leone, a post-conflict West African nation still recovering from a devastating eleven-year civil war (1991–2002) and the Ebola Virus Disease outbreak (2014–2016), faces compounded vulnerabilities that make its youth population particularly at risk for substance misuse. The conflict resulted in widespread family disintegration, forced recruitment of child soldiers, traumatising of entire communities, and near-total destruction of the country's health and educational infrastructure (Betancourt et al., 2010). The post-war recovery period has been characterised by persistent unemployment, urban poverty, weak governance, and psychosocial distress all recognised risk factors for substance misuse.

Bo City the capital of the Southern Province and Sierra Leone's second-largest urban centre presents an epitome of these challenges. With a population of approximately 270,000 (Statistics Sierra Leone, 2021) and a demographic composition heavily skewed towards young people, Bo City exhibits the risk factors associated with substance misuse including high youth unemployment, limited recreational infrastructure, a thriving informal economy that facilitates drug trade, and weak institutional capacity for

enforcement and treatment. Despite anecdotal reports and media coverage of the substance abuse problem in Bo City, rigorous, empirical, peer-reviewed research specific to this setting remains extremely limited.

The absence of local evidence constrains the development of targeted, context-appropriate interventions. National-level data, while informative, may not capture the unique socioecological dynamics of substance abuse in Bo City. Community leaders, healthcare providers, and policymakers are thus left to design responses based on incomplete or generalised information. This study addresses this critical evidence gap by conducting a systematic, data-driven investigation of the factors associated with patterns of drug and substance abuse among youths in Bo City.

1.2 Statement of the Problem

Despite the acknowledged scale of the drug and substance abuse crisis among youth in Sierra Leone, particularly the Kush epidemic, the evidence base for targeted interventions in Bo City remains dangerously thin. While national bodies such as NACSA have published reports and the media have provided anecdotal coverage, there is a conspicuous absence of peer-reviewed, empirically grounded studies examining the specific patterns, determinants, and source channels of substance abuse among the youth population of Bo Municipality.

1.3 Research Aim and Objectives

The overarching aim of this study is to investigate the factors associated with patterns of drug and substance abuse among youths in Bo Municipality, Sierra Leone.

1.3.1 Specific Objectives

The specific objectives are to:

1. Evaluate the level of knowledge and awareness of drug abuse among youths in the study area.
2. Explore the various types of drugs and substances abused among youths in the study area.
3. Investigate factors responsible for drug and substance abuse among youths in the study area.
4. Investigate the sources of availability of drugs and substances to the youth population in the study area.

1.4 Research Questions

This study sought to answer the following research questions:

1. What is the level of knowledge and awareness of drug abuse among youths in Bo City, Sierra Leone?

2. What types of drugs and substances are abused among youths in Bo City, Sierra Leone?
3. What are the key factors responsible for drug and substance abuse among youths in Bo City, Sierra Leone?
4. What are the primary sources and channels through which youths in Bo City access drugs and substances?

1.5 Research Hypotheses

The following null hypotheses were tested:

H₀₁: There is no statistically significant association between gender and the type of substance used among youths in Bo City.

H₀₂: There is no statistically significant association between age group and the type of substance used among youths in Bo City.

H₀₃: There is no statistically significant association between occupation status and the type of substance used among youths in Bo City.

H₀₄: There is no statistically significant association between peer pressure and the type of substance used among youths in Bo City.

H₀₅: There is no statistically significant association between educational level and the knowledge of drug abuse among youths in Bo City.

1.6 Significance of the Study

Empirically, this study generates the first systematically collected, dataset-grounded evidence on substance abuse patterns specifically for Bo City, filling a critical gap in Sierra Leonean public health research. The identification of Kush as the overwhelmingly dominant substance and the mapping of its supply channels provide novel and urgently needed local data.

From a policy and practice perspective, the findings provide concrete, actionable evidence for government agencies (including NACSA, the Ministry of Health and Sanitation, and the Sierra Leone Police Service), non-governmental organisations, community health workers, school administrators, and families to design and target interventions with greater precision and effectiveness.

1.7 Scope and Delimitations of the Study

This study is geographically delimited to Bo City (Bo Municipality) in the Southern Province of Sierra Leone. It focuses specifically on youths broadly defined as individuals aged 12 to 35 years a range

informed by Sierra Leone's National Youth Policy and the practical recruitment environment. The study employs a quantitative, cross-sectional design and does not include clinical assessment of substance use disorders, biological verification of substance use, or longitudinal tracking of participants.

LITERATURE REVIEW

2.1 Global Epidemiology of Drug and Substance Abuse

2.1.1 Prevalence and Global Trends of Substance Abuse

Drug and substance abuse remains a major global public health challenge, contributing significantly to morbidity, mortality, disability, social disruption, and economic losses worldwide. Substance use disorders are associated with increased risks of infectious diseases, mental health disorders, injuries, violence, unemployment, and premature mortality. According to the United Nations Office on Drugs and Crime (UNODC), approximately 292 million people aged 15–64 years used drugs globally in 2022, representing a substantial increase compared with previous decades. The rising prevalence of drug use has been driven by population growth, urbanisation, increased availability of psychoactive substances, and changing social and economic conditions (United Nations Office on Drugs and Crime [UNODC], 2024).

Alcohol remains one of the most widely used psychoactive substances globally and contributes considerably to the burden of disease. The World Health Organization (WHO) reported that harmful alcohol consumption is responsible for approximately 3 million deaths annually, accounting for a significant proportion of global mortality from non-communicable diseases, injuries, and infectious diseases (World Health Organization [WHO], 2018). Similarly, illicit drug use contributes substantially to disability-adjusted life years (DALYs), particularly through drug dependence, overdose, mental health disorders, and associated social harms (UNODC, 2024).

Cannabis continues to be the most commonly used illicit drug worldwide. In 2022, an estimated 228 million people used cannabis globally, making it the leading illicit substance of concern. Although cannabis use does not always result in dependence, prolonged and heavy use, particularly among adolescents and young adults, has been associated with cognitive impairment, psychological disorders, and increased risk of cannabis use disorder (UNODC, 2024; National Institute on Drug Abuse [NIDA], 2020).

The global drug market has also become increasingly complex due to the emergence of new psychoactive substances (NPS). These substances are synthetic compounds designed to imitate the effects of traditional drugs while often avoiding legal controls. Examples include synthetic cannabinoids, synthetic cathinones, and other laboratory-produced compounds. NPS present significant public health challenges because their chemical composition, potency, and health effects are often unpredictable (Castaneto et al., 2014).

2.2 Substance Abuse Among Young People

Young people represent one of the populations most vulnerable to substance initiation and subsequent substance use disorders. Adolescence and early adulthood are critical developmental periods characterised by significant neurological, psychological, and social changes. During this period, increased risk-taking behaviour, peer influence, emotional instability, and incomplete development of the prefrontal cortex contribute to increased susceptibility to substance experimentation and addiction (Steinberg, 2014).

Research indicates that individuals who initiate substance use during adolescence have a higher likelihood of developing substance dependence later in life compared with those who begin use during adulthood. Early exposure to psychoactive substances may interfere with brain development, academic achievement, social relationships, and future occupational outcomes (NIDA, 2020).

Peer relationships strongly influence adolescent substance use behaviour. According to social learning theory, individuals acquire behaviours through observation, imitation, and reinforcement within their social environment (Bandura, 1977). Adolescents may initiate substance use because of peer acceptance, desire for social belonging, perceived normalisation of drug use, or pressure from friends who already engage in substance-related behaviours (Brown et al., 2008).

2.3 Substance Abuse in Sub-Saharan Africa

Sub-Saharan Africa is experiencing increasing concerns regarding substance abuse, particularly among young people. The region's rapidly growing youth population, expanding urban centres, unemployment, poverty, and limited access to mental health and rehabilitation services have created conditions that increase vulnerability to substance misuse.

Studies conducted among young people in African countries have reported considerable levels of alcohol, cannabis, and prescription drug misuse. In Ghana, Nigeria, and other West African countries, substance use has been associated with unemployment, urban residence, peer influence, and social disadvantage (Adamson et al., 2015; Calys-Tagoe et al., 2014).

Urbanisation has contributed significantly to changing patterns of substance availability and consumption. Rapid urban growth often occurs faster than the development of social services, recreational facilities, employment opportunities, and healthcare systems. These conditions may contribute to social disorganisation, reduced social control, and increased exposure to drug markets (Sampson & Groves, 1989).

Furthermore, countries affected by armed conflict face additional risks associated with substance abuse. Exposure to violence, displacement, poverty, trauma, and social instability can increase psychological distress and encourage substance use as a coping mechanism. Research among populations affected by conflict in Sierra Leone and other African countries has demonstrated

associations between trauma exposure, mental health challenges, and substance misuse (Betancourt et al., 2010).

2.4 Substance Abuse in Sierra Leone

2.4.1 Historical Context of Substance Abuse

Substance abuse in Sierra Leone has historical roots but became more complex following the country's civil war (1991–2002). During the conflict, substances such as alcohol and drugs were reportedly used among armed groups, including among forcibly recruited child soldiers, to reduce fear, increase aggression, and facilitate participation in violence (Peters, 2011).

Following the civil war, Sierra Leone faced significant social and economic challenges, including poverty, unemployment, displacement, psychological trauma, and weakened social structures. These conditions contributed to increased vulnerability to alcohol and drug misuse, particularly among young people.

Traditionally, commonly used substances in Sierra Leone included alcohol, cannabis (locally referred to as "weed" or "Indian hemp"), tobacco, and prescription medications. However, recent years have witnessed increasing concern regarding the emergence of Kush, a synthetic drug that has rapidly gained popularity among urban youth.

2.5 The Emerging Kush Crisis in Sierra Leone

Kush has emerged as a major public health concern in Sierra Leone, particularly among young people in urban areas such as Freetown and Bo City. Although the exact chemical composition of street Kush varies, reports indicate that it consists of synthetic psychoactive compounds mixed with other unknown substances. The unpredictability of its composition contributes to severe health risks among users.

Synthetic cannabinoids and similar psychoactive substances have been associated with acute psychological and physical effects, including hallucinations, paranoia, agitation, seizures, cardiovascular complications, and impaired cognitive functioning (Castaneto et al., 2014).

In Sierra Leone, healthcare providers and community reports have highlighted increasing presentations of young people with substance-related mental health conditions, behavioural problems, and social difficulties. The rapid spread of Kush has created significant challenges for healthcare systems, law enforcement agencies, families, and communities.

The National Drug Law Enforcement Agency (NDLEA) has reported increasing concerns regarding substance abuse trends and the need for strengthened prevention, treatment, and rehabilitation programmes (NDLEA, 2023).

2.6 Other Substances of Concern in Sierra Leone

Although Kush has become a prominent concern, other substances continue to contribute to substance-related problems among Sierra Leonean youth. Alcohol remains widely consumed, including commercially produced alcoholic beverages and locally brewed products such as poyo. Excessive alcohol consumption has been associated with violence, risky sexual behaviour, injuries, and poor academic performance.

Cannabis remains another commonly used substance among young people. Prescription drug misuse, particularly involving medications such as tramadol, diazepam, and codeine-containing cough medicines, has also become increasingly recognised as a public health concern due to weak regulation and availability through informal markets.

Tobacco use remains an important risk factor because of its association with cancers, cardiovascular diseases, and respiratory conditions (WHO, 2018).

2.7 Family and Social Factors Influencing Substance Abuse

Family environments play an important role in shaping substance use behaviours among young people. Research identifies several family-related risk factors, including parental substance use, inadequate supervision, family conflict, domestic violence, parental absence, and poor communication between parents and children (Hawkins et al., 1992).

Conversely, protective family factors include supportive parent-child relationships, effective communication, consistent discipline, and parental monitoring. Strong family cohesion has been associated with reduced likelihood of adolescent substance initiation (Stone et al., 2012).

In Sierra Leone, the consequences of civil conflict, migration, poverty, and family separation have weakened some traditional protective structures. These social disruptions may increase young people's vulnerability to peer influence and substance-related behaviours (Betancourt et al., 2010).

2.8 Mental Health, Stress, and Substance Abuse

Substance abuse and mental health disorders frequently occur together. Individuals experiencing depression, anxiety, post-traumatic stress disorder (PTSD), and other psychological difficulties may use substances as a coping mechanism, a phenomenon commonly described as self-medication (Swendsen & Merikangas, 2000).

For young people in Sierra Leone, exposure to poverty, unemployment, social inequality, trauma, and limited access to mental healthcare may increase psychological distress and vulnerability to substance misuse. The country continues to face significant shortages of mental health professionals and limited availability of specialised treatment services (WHO, 2020).

2.9 Drug Availability and Accessibility

The availability and accessibility of drugs within communities strongly influence patterns of substance use. Environmental research demonstrates that communities with greater availability of alcohol and drugs often experience higher levels of substance-related problems (Gruenewald, 2011).

Factors such as low cost, easy access, informal selling points, and weak enforcement of drug regulations can increase substance availability among young people. Effective regulation, community engagement, and law enforcement are therefore essential components of substance abuse prevention strategies (Babor et al., 2010).

2.10 Knowledge, Awareness, and Sources of Health Information

Knowledge about the harmful effects of drugs is important for prevention; however, awareness alone is often insufficient to change behaviour. Young people may continue using substances despite understanding the risks due to peer pressure, social acceptance, stress, and limited alternatives for recreation and employment.

The sources through which young people obtain health information also influence perceptions and behaviours. Social media platforms have become increasingly important sources of health information among adolescents and young adults. While digital platforms provide opportunities for health education, they may also facilitate misinformation and exposure to pro-drug content (Moorhead et al., 2013; Ventola, 2014).

2.11 Empirical Evidence on Substance Abuse in Sierra Leone

Empirical research on youth substance abuse in Sierra Leone remains limited compared with other countries. Available studies suggest that peer influence, unemployment, poverty, family challenges, and psychological distress are important contributors to substance use among young people.

Recent reports from national drug control agencies indicate increasing concern regarding substance-related hospital admissions, community violence, and social disruption associated with emerging drug trends (NDLEA, 2023).

However, there remains limited epidemiological evidence describing the prevalence, determinants, knowledge, attitudes, and practices related to substance abuse among youth populations in cities such as Bo. This gap highlights the importance of community-based research to inform prevention strategies and policy interventions.

2.12 Theoretical Framework

2.12.1 Social Learning Theory (Bandura, 1977)

Social Learning Theory (SLT), developed by Bandura (1977), provides the first theoretical foundation for this study. The theory explains that human behaviour, including substance use behaviour, is learned through continuous interaction between individuals and their social environment. According to SLT,

individuals acquire behaviours through observational learning, imitation, and reinforcement. Young people may adopt substance use behaviours after observing such behaviours among peers, family members, community members, or through media exposure.

Bandura (1977) identified several key mechanisms through which social learning occurs. The first is modelling, where individuals observe and imitate behaviours demonstrated by influential people within their social environment. Among young people, peer groups often serve as important sources of behavioural modelling, particularly when substance use is perceived as socially acceptable or associated with popularity and belonging. The second mechanism is vicarious reinforcement, which occurs when individuals observe others receiving perceived benefits from substance use, such as social acceptance, emotional relief, confidence, or pleasure, thereby increasing their likelihood of engaging in similar behaviours. The third mechanism is self-efficacy, referring to an individual's belief in their ability to control behaviour and resist social pressures, including peer influence and substance-use opportunities.

In the context of Bo City, Social Learning Theory provides an important explanation for the influence of peer pressure on youth substance abuse. The finding that peer influence was among the leading reported motivations for substance use demonstrates how behaviours associated with Kush and other substances may spread through social networks. Young people may observe peers using substances, perceive social or psychological benefits, and subsequently adopt similar behaviours. Therefore, interventions guided by SLT should focus on strengthening resistance skills, improving self-efficacy among young people, promoting positive peer influence, and creating supportive social environments through peer education and community-based prevention programmes.

2.12.2 Strain Theory (Merton, 1938; Agnew, 1992)

Strain Theory, originally proposed by Merton (1938) and later expanded through Agnew's (1992) General Strain Theory, provides the second theoretical perspective for understanding youth substance abuse. Merton's Classical Strain Theory suggests that deviant behaviours occur when individuals experience a gap between socially desired goals and their ability to achieve those goals through legitimate means. When individuals face barriers such as unemployment, poverty, and limited social opportunities, they may adopt alternative coping mechanisms, including substance use.

Agnew's (1992) General Strain Theory extended this explanation by identifying three major sources of strain: failure to achieve valued goals, loss of positive stimuli, and exposure to negative experiences. These strains may generate negative emotional states, including frustration, anger, hopelessness, and psychological distress, which may increase vulnerability to substance use as a coping mechanism.

This theory is particularly relevant to the Sierra Leonean context, where many young people experience socioeconomic challenges, including unemployment, poverty, limited educational and employment opportunities, and the long-term effects of civil conflict. Substance use may therefore represent an attempt to escape psychological distress, cope with daily challenges, or temporarily relieve emotional

suffering. The finding that some respondents reported using substances to “escape problems” supports the argument of General Strain Theory that individuals may engage in substance use as a maladaptive coping strategy in response to stressful life circumstances.

Furthermore, the association between unemployment and substance use identified in this study reflects the relevance of structural strain in shaping youth vulnerability. Therefore, prevention strategies informed by Strain Theory should not only focus on individual behaviour change but also address broader socioeconomic determinants, including employment opportunities, youth empowerment, mental health support, and social protection systems.

2.12.3 Ecological Systems Theory (Bronfenbrenner, 1979)

Bronfenbrenner’s Ecological Systems Theory (1979) provides the third theoretical foundation for this study by explaining how human behaviour develops through interactions between individuals and multiple levels of their surrounding environment. The theory proposes that behaviour is influenced by interconnected environmental systems, including the microsystem, mesosystem, exosystem, and macrosystem.

The microsystem represents immediate social environments such as family, peers, schools, and close community relationships, which directly influence young people's behaviours and decisions. The mesosystem refers to interactions between these immediate environments, such as relationships between families, schools, and community organisations. The exosystem includes broader community structures that indirectly influence individuals, including healthcare services, employment opportunities, law enforcement systems, and availability of recreational facilities. The macrosystem represents wider social, cultural, economic, and political factors that shape opportunities and behaviours within society.

Applied to youth substance abuse in Bo City, Ecological Systems Theory explains that substance use cannot be understood solely as an individual behavioural problem. Instead, it results from the interaction between multiple factors, including peer influence, family conditions, community drug availability, unemployment, weak regulatory systems, and broader socioeconomic challenges.

For example, although young people may possess knowledge about the harmful effects of drugs, continued exposure to substance availability, peer acceptance of drug use, limited employment opportunities, and inadequate mental health services may increase their vulnerability. This demonstrates why interventions targeting only individual knowledge improvement may have limited impact unless accompanied by broader community and structural interventions.

Therefore, Ecological Systems Theory supports a comprehensive public health approach that integrates individual education, family support, community mobilisation, improved social services, effective law enforcement, and policies addressing socioeconomic inequalities.

2.13 Conceptual Framework

The conceptual framework positions the individual (with their sociodemographic characteristics, knowledge, and psychological state) at the centre of a set of nested ecological systems that both enable and constrain substance use. Individual vulnerability factors (young age, male gender, low knowledge, unemployment) interact with interpersonal influences (peer pressure, family dysfunction), community-level availability factors (open drug markets, easy accessibility), and macrostructural conditions (post-conflict poverty, weak enforcement, limited recreational infrastructure) to produce substance use behaviour. Protective factors including strong family bonds, access to recreational activities, quality education, and economic opportunity moderate the pathway from risk exposure to substance use.

2.14 Research Gap

The foregoing review of literature reveals a substantial evidence gap that this study directly addresses. While the global, regional, and national literature on youth substance abuse is well-developed, rigorous empirical data specifically examining the determinants and patterns of substance abuse among youths in Bo City, Sierra Leone, are almost absent. The emergence of Kush as the dominant substance is a relatively recent phenomenon not captured in older studies, so even the limited existing Sierra Leonean literature provides an incomplete picture of current substance use patterns.

RESEARCH METHODOLOGY

3.1 Research Design

This study employed a quantitative, cross-sectional descriptive design. A cross-sectional design involves collecting data from a defined population at a single point in time, allowing simultaneous measurement of multiple variables and assessment of associations among them. This design is widely employed in epidemiological research on substance use because it is efficient, cost-effective, and capable of generating prevalence estimates and identifying associations for large samples within feasible timeframes (Hulley et al., 2013).

3.2 Study Setting

The study was conducted in Bo City, the capital of the Southern Province and the second-largest city in Sierra Leone. Located approximately 244 kilometres southeast of Freetown, Bo City had an estimated population of 270,954 at the 2021 Population and Housing Census (Statistics Sierra Leone, 2021). The city serves as the economic, commercial, administrative, and educational hub of the Southern Province, hosting several secondary schools, vocational institutions, a branch of Njala University, district and government offices, NGO headquarters, and significant commercial activity.

Bo City's demographic profile is characterised by a large youth population (approximately 60% of residents are below 35 years), high rates of unemployment estimated at over 55% for youth aged 15-35 (Statistics Sierra Leone, 2021), significant rural-to-urban migration, a thriving informal economy, and

diverse ethnic and social composition. The city is divided into several administrative wards and chiefdoms, encompassing both dense urban neighbourhoods and peri-urban settlements. The informal trading sector which includes local markets where drug transactions have been reported is a significant feature of Bo City's economic landscape.

3.3 Target Population

The target population for this study comprised all youths aged 12 to 35 years residing in Bo City at the time of the study. This age range was adopted in accordance with the Sierra Leone National Youth Policy (2019), which defines youth as individuals aged 15 to 35 years, and extended slightly downward to capture adolescent drug use beginning in the 12-14 age bracket, which clinical reports suggest is occurring with increasing frequency in Sierra Leone. Both users and non-users of substances were included in the target population, as the study sought to examine both use patterns and knowledge/awareness across the youth population broadly.

3.4 Sample Size Determination

The minimum sample size was calculated using the Cochran (1977) formula for estimating a proportion in an unknown or large population:

$$n = Z^2 \alpha / 2 \times p(1-p) / e^2$$

Where: n = required sample size; $Z\alpha/2$ = Z-score for the desired confidence level (1.96 for 95%); p = estimated prevalence proportion (0.5, adopted to maximise the required sample size in the absence of a precise local prevalence estimate); e = acceptable margin of error (0.05).

Substituting: $n = (1.96)^2 \times 0.5 \times 0.5 / (0.05)^2 = 3.8416 \times 0.25 / 0.0025 = 384.16 \approx 385$ respondents.

To account for non-response and incomplete questionnaires, a 5% non-response adjustment was applied, yielding a target sample of 405. Ultimately, 401 questionnaires were returned with sufficient completeness for inclusion in the final analysis, representing a response rate of 99.0%.

3.4.1 Sample Size Determination

Parameter	Value	Justification
Confidence Level ($Z_{\alpha/2}$)	1.96	95% confidence interval (standard)
Prevalence Estimate (p)	0.50	Maximises n; no reliable local prevalence data
Margin of Error (e)	0.05	5% acceptable for public health research
Calculated Minimum (n)	385	Cochran formula
Non-response adjustment (+5%)	405	Target sample
Final Analysed Sample	401	Response rate: 99.0%

3.5 Sampling Technique

Purposive and convenience sampling techniques were employed. Purposive sampling was used to target youth community spaces including public markets, recreational areas, street corners, educational institutions, youth centres, and community health posts where youth populations congregate. Within these spaces, convenience sampling was used to approach all available and willing youth meeting the inclusion criteria. Recruitment was conducted in multiple waves across different times of day and days of the week to capture youth with diverse occupational and daily activity patterns, thereby reducing time-of-day selection bias.

Inclusion criteria were: (i) aged 12 to 35 years; (ii) a resident of Bo City for at least 3 months; (iii) able to understand and communicate in English or Krio; (iv) willing to provide informed consent (or assent with parental consent for minors). Exclusion criteria were: (i) individuals in active psychiatric crisis at the time of approach; (ii) individuals who were visibly intoxicated and unable to provide coherent responses; (iii) individuals who declined to participate.

3.6 Data Collection Instrument

A structured, self-administered questionnaire was developed as the primary data collection instrument. The questionnaire was adapted from validated instruments used in comparable sub-Saharan African studies, including the WHO ASSIST (Alcohol, Smoking and Substance Involvement Screening Test), the African-adapted Youth Risk Behaviour Survey, and the NACSA Sierra Leone Substance Use Assessment Tool, and contextualised to the Bo City setting through pretesting.

The questionnaire comprised five sections: Section A (Sociodemographic Characteristics: gender, age group, education level, occupation status); Section B (Knowledge and Awareness: self-rated knowledge of drug abuse, primary information source, perception of drug abuse as a problem); Section C (Types of Substances: substances ever used, most commonly used substance); Section D (Factors for Drug Use:

main reason for use, peer pressure influence, family issues influence, recreational activity deprivation); and Section E (Availability and Sources: where drugs are obtained, ease of access, awareness of drug laws, perception of law enforcement effectiveness).

The questionnaire was pilot-tested with 30 youths from Bo City who were not included in the final study sample. Feedback on clarity, language, sensitivity, and time burden was incorporated into the final version. The questionnaire required approximately 15-20 minutes to complete. Research assistants were available to provide clarification and, where needed, to read questions aloud for respondents with lower literacy levels.

3.7 Study Variables

Variable	Type	Measurement Scale	Response Categories
Gender	Demographic / Independent	Nominal	Male; Female
Age Group	Demographic / Independent	Ordinal	12-15; 16-19; 20-23; 24-27; 28+
Education Level	Demographic / Independent	Ordinal	No formal; Primary; Secondary; Tertiary; Vocational
Occupation	Demographic / Independent	Nominal	Student; Employed; Unemployed; Self-employed; Other
Knowledge Level	Dependent/Mediating	Ordinal (Likert)	Very High; High; Moderate; Low; Very Low
Information Source	Independent	Nominal (multi-choice)	School; Family; Friends; Media; Internet; social media; HCW
Substance Used	Dependent	Nominal (multi-choice)	Kush; Marijuana; Alcohol; Cocaine; Heroin; Tobacco; Prescription; Others
Most Common Substance	Dependent	Nominal	Kush; Marijuana; Alcohol; Cocaine; Heroin; Tobacco; Multiple; Others
Main Reason for Use	Independent	Nominal	Peer pressure; Family issues; Stress; Curiosity; Lack recreation; Unemployment; Escape; Other
Peer Pressure Factor	Independent	Ordinal (Likert 5-pt)	Strongly Agree; Agree; Neutral; Disagree; Strongly Disagree
Family Issues Influence	Independent	Ordinal (Likert 5-pt)	Very Much; Much; Moderate; Little; Not at all
Lack of Recreation	Independent	Nominal (binary)	Yes; No
Drug Source	Dependent	Nominal	Local markets; Street vendors; Friends; Family; Drug dealers; Others
Ease of Access	Dependent	Ordinal	Very Easy; Easy; Moderate; Difficult; Very Difficult
Awareness of Drug Laws	Dependent	Nominal (binary)	Yes; No
Law Enforcement	Dependent	Ordinal (Likert 5-pt)	Strongly Agree; Agree; Neutral; Disagree; Strongly Disagree

3.8 Data Management and Statistical Analysis

All completed questionnaires were reviewed for completeness and accuracy immediately after collection. Data were entered and coded in IBM SPSS Statistics Version 25.0. Double data entry was performed for a random 10% subsample to check for entry errors; the error rate was found to be below 0.5%, deemed acceptable. Univariate cleaning checks identified and corrected out-of-range values.

Descriptive statistics were computed for all categorical variables, including absolute frequencies (n) and relative percentages (%). Results are presented in frequency tables accompanied by bar charts, pie charts, and horizontal bar graphs for visual clarity. Ordinal Likert-scale variables are presented with their full response distribution.

Bivariate analyses were conducted using Pearson's chi-square (χ^2) test of independence to examine associations between pairs of categorical variables. Where expected cell frequencies fell below 5, Fisher's Exact Test was applied. For significant chi-square results, Cramér's V was computed as a measure of effect size. All tests were conducted at a significance level of $\alpha=0.05$ with 95% confidence intervals. Cross-tabulation tables are presented for key variable pairs.

3.9 Validity and Reliability

Content validity of the questionnaire was established through expert review by three public health academics with expertise in substance abuse research, who assessed the relevance, representativeness, and clarity of all questionnaire items. Feedback was incorporated prior to piloting. A content validity index (CVI) of 0.89 was achieved, exceeding the recommended threshold of 0.80 (Polit & Beck, 2006).

Construct validity was assessed during piloting through item-total correlation analysis, with items showing poor correlation ($r<0.30$) reviewed and revised. Internal consistency reliability of the Likert-scale attitudinal subscales was assessed using Cronbach's alpha, yielding coefficients of 0.74 (peer pressure items), 0.71 (family influence items), and 0.76 (law enforcement items), all exceeding the acceptable threshold of 0.70 (Nunnally, 1978).

3.10 Ethical Considerations

Ethical approval for this study was obtained from the Njala University Institutional Review Board (IRB), Sierra Leone, before commencement of data collection. Permission to conduct the study was also obtained from the Bo City Council and relevant community leaders.

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki (World Medical Association, 2013) and adhered to internationally accepted standards for research involving human participants. All participants were informed about the purpose, procedures, potential

risks, and benefits of the study before participation. Participation was voluntary, and respondents were informed of their right to withdraw from the study at any time without any consequences.

RESULTS AND FINDINGS

4.1 Sociodemographic Characteristics of Respondents (N=401)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	290	72.3
	Female	94	23.4
	Not disclosed	17	4.2
Age Group (years)	12–15	38	9.5
	16–19	112	27.9
	20–23	105	26.2
	24–27	63	15.7
	28 and above	66	16.5
Educational Level	No Formal Education	27	6.7
	Primary Education	98	24.4
	Secondary Education	129	32.2
	Tertiary Education	104	25.9
	Vocational/Technical	26	6.5
Occupation Status	Student	117	29.2
	Formally Employed	32	8.0
	Unemployed	230	57.4
	Self-employed	1	0.2
	Other	4	1.0
TOTAL		401	100.0

Source: SPSS Field Data, Bo Town Survey, 2025.

The study respondents were predominantly male, constituting 72.3% (n=290) of the sample, compared to 23.4% (n=94) females; 4.2% (n=17) did not disclose their gender. This male predominance is consistent with the substance abuse literature from sub-Saharan Africa, where males are consistently overrepresented among substance users.

The age distribution reveals that 27.9% (n=112) of respondents were in the 16–19 years age bracket, the single largest age group, followed closely by the 20–23 years group (26.2%; n=105). Together, respondents aged 16 to 23 years constituted 54.1% of the sample, confirming that late adolescence and early adulthood represent the peak risk period for substance involvement in this population. The youngest age group (12–15 years) accounted for 9.5% (n=38), indicating that substance exposure among early adolescents is not negligible in Bo City.

Secondary education was the highest educational level attained by the majority of respondents (32.2%; n=129), followed by tertiary education (25.9%; n=104) and primary education (24.4%; n=98). Only 6.7% (n=27) had no formal education, while 6.5% (n=26) had vocational or technical training. The distribution of educational attainment across secondary, tertiary, and primary levels suggests that substance abuse in Bo City is not confined to populations with low educational attainment it cuts across educational levels.

Perhaps the most striking sociodemographic finding is the prevalence of unemployment: 57.4% (n=230) of respondents were unemployed at the time of the study. Students comprised 29.2% (n=117), while only 8.0% (n=32) were formally employed. This staggering unemployment rate among young respondents, more than half of the sample, directly reflects the youth employment crisis in Bo City and provides a critical contextual backdrop for understanding the pathways to substance use.

4.2 Knowledge and Awareness of Drug Abuse Among Youths (N=401)

Variable	Response Category	Frequency	Percentage (%)
Self-Rated Knowledge Level	Very High	141	35.2
	High	95	23.7
	Moderate	60	15.0
	Low	51	12.7
	Very Low	37	9.2
Primary Source of Drug Information	Social media	199	49.6
	Media (TV/Radio/Newspaper)	51	12.7
	Family	48	12.0
	Internet	30	7.5
	Friends/Peers	22	5.5
	Healthcare Workers	22	5.5
Drug Abuse is a Serious Societal Problem	School/Teachers	12	3.0
	Strongly Agree	222	55.4
	Agree	39	9.7
	Neutral	87	21.7
	Disagree	24	6.0
	Strongly Disagree	12	3.0

Source: SPSS Field Data, Bo Town Survey, 2025.

The table reveals that the majority of respondents self-rated their knowledge of drug abuse as high or very high: 35.2% (n=141) rated their knowledge as 'very high' and 23.7% (n=95) as 'high', with a combined high-knowledge prevalence of 58.9%. A further 15.0% (n=60) rated their knowledge as 'moderate', while 21.9% (n=88) reported low (12.7%) or very low (9.2%) knowledge. These findings suggest that while a majority of respondents believe they are well-informed about drug abuse, a substantial minority, representing more than one in five, has limited knowledge, indicating significant gaps in awareness within this youth population.

Regarding the primary source of drug-related information, social media emerged overwhelmingly as the dominant channel, reported by 49.6% (n=199) of respondents, nearly half the entire sample. Traditional media (TV, radio, newspapers) constituted a distant second at 12.7% (n=51), followed by family (12.0%; n=48) and internet (7.5%; n=30). Critically, school or teachers were cited as the primary information

source by only 3.0% (n=12) of respondents, and healthcare workers by 5.5% (n=22). These data reveal a profound marginalisation of formal health education channels the very channels with the greatest potential for delivering evidence-based, developmentally appropriate drug education in favour of social media, where information quality is largely unregulated.

There was strong consensus among respondents that drug abuse is a serious problem: 55.4% (n=222) strongly agreed and 9.7% (n=39) agreed, for a combined agreement rate of 65.1%. A notable 21.7% (n=87) maintained a neutral stance, while only 9.0% (n=36) disagreed or strongly disagreed. The high level of awareness of drug abuse as a societal problem while not translating automatically into lower substance use rates provides a foundation upon which prevention messaging can be built.

4.3 Types of Drugs and Substances Abused Among Youths (N=401)

Variables	Substance	Frequency (n)	Percentage (%)
Substances Ever Used	Kush	286	71.3
	Marijuana/Cannabis	41	10.2
	Others (unspecified)	38	9.5
	Alcohol	8	2.0
	Tobacco	6	1.5
	Prescription Drugs (non-medical)	5	1.2
Most Commonly Abused Substance	Kush	259	64.6
	Marijuana/Cannabis	47	11.7
	Multiple Substances	41	10.2
	Alcohol	25	6.2
	Others	9	2.2
	Tobacco	2	0.5

Source: SPSS Field Data, Bo Town Survey, 2025.

The substance use profile of the study population is strikingly dominated by Kush, confirming the anticipated epidemiological picture of contemporary substance abuse in Sierra Leone. Kush was reported as a substance ever used by 71.3% (n=286) of respondents, nearly three-quarters of the entire sample, making it the overwhelmingly predominant substance in this population. Marijuana/cannabis

ranked a distant second (10.2%; n=41), followed by 'other' substances not specifically listed (9.5%; n=38), alcohol (2.0%; n=8), tobacco (1.5%; n=6), and non-medical use of prescription drugs (1.2%; n=5).

The pattern was consistent when examining the most commonly abused substance: Kush was identified as the most commonly used substance by 64.6% (n=259) of respondents, followed by marijuana (11.7%; n=47), multiple substances (10.2%; n=41), and alcohol (6.2%; n=25). The polysubstance use category 10.2% reporting concurrent use of multiple substances, is particularly concerning from a clinical perspective, as polysubstance use is associated with greater health harm, more complex withdrawal syndrome, and poorer treatment outcomes than single-substance use.

The relatively low prevalence of alcohol as a primary substance (reported as the most commonly used substance by only 6.2%) is somewhat surprising given alcohol's legal status and widespread social availability in Sierra Leone. Several explanations are plausible: alcohol's relatively higher cost compared to Kush may render it inaccessible to economically deprived youth; cultural or religious norms in certain community segments may discourage alcohol use; and social desirability bias may suppress reporting of alcohol use. Alternatively, the Kush crisis may have partially displaced alcohol as the substance of choice among Bo City youth due to its stronger and faster psychoactive effects.

4.4 Factors Responsible for Drug and Substance Abuse (N=401)

Variable	Category	Frequency	Percentage (%)
Main Reason for Drug Use	Peer Pressure	105	26.2
	Escaping Problems / Life Difficulties	76	19.0
	Lack of Recreational Activities	65	16.2
	Stress and Anxiety	46	11.5
	Curiosity	30	7.5
	Unemployment / Idleness	28	7.0
	Other Reasons	28	7.0
	Family Issues	6	1.5
Peer Pressure as Contributing Factor	Strongly Agree	113	28.2
	Agree	153	38.2
	Neutral	52	13.0
	Disagree	38	9.5
	Strongly Disagree	28	7.0
Influence of Family Issues	Very Much	237	59.1
	Much	23	5.7
	Moderate	44	11.0
	Little	34	8.5
	Not at All	46	11.5
Lack of Recreation Contributes to Drug Use	Yes	274	68.3
	No	104	25.9

Source: SPSS Field Data, Bo Town Survey, 2025.

The table illuminate the multifaceted motivational landscape underlying substance use among Bo City youth. Peer pressure emerged as the single most frequently cited primary reason for drug use, reported by 26.2% (n=105) of respondents. This was followed by 'escaping problems or life difficulties' (19.0%; n=76), 'lack of recreational activities' (16.2%; n=65), 'stress and anxiety' (11.5%; n=46), 'curiosity' (7.5%; n=30), 'unemployment/idleness' (7.0%; n=28), 'other reasons' (7.0%; n=28), and 'family issues' (1.5%; n=6). Notably, while family issues ranked lowest as the primary stated motivation, the role of family dysfunction appears substantially in a different questionnaire item (discussed below), suggesting that

family factors may operate more as background enabling conditions than as directly perceived primary drivers.

The role of peer pressure was further confirmed by a dedicated Likert-scale item: 66.4% of respondents agreed or strongly agreed that peer pressure was a significant contributing factor to substance abuse in their community (38.2% agreed; 28.2% strongly agreed). Only 16.5% disagreed or strongly disagreed. This broad consensus across two measurement approaches as a self-identified primary reason AND as an agreed community factor provides robust evidence for the centrality of peer influence in the Bo City substance use context.

Family issues were rated as 'very much' influential in contributing to drug abuse by 59.1% (n=237) of respondents the largest single response category with a further 5.7% (n=23) rating family influence as 'much'. Combined, 64.8% attributed 'much' or 'very much' influence to family issues, identifying family dysfunction as a major contextual enabler of substance use even when it was not the self-identified primary motivation. This finding aligns with the broader literature on the role of family environment as a critical vulnerability factor.

The finding that 68.3% (n=274) of respondents affirmed that lack of recreational facilities and activities contributed to drug use represents one of the most actionable findings of this study. In a city with limited formal sports facilities, youth centres, cultural spaces, and other supervised recreational infrastructure, young people with significant unstructured time are exposed to peer drug-using networks with limited competing prosocial activities. This structural gap in recreational infrastructure emerges as a critical community-level determinant amenable to relatively straightforward policy intervention.

4.5 Sources and Availability of Drugs and Substances (N=401)

Variable	Category	Frequency	Percentage (%)
Primary Source of Drug Acquisition	Local Markets (open markets)	175	43.6
	Street Vendors	87	21.7
	Drug Dealers (dedicated)	63	15.7
	Friends/Peers	40	10.0
	Other Sources	15	3.7
	Family Members	4	1.0
Perceived Ease of Access to Substances	Very Easy	151	37.7
	Easy	122	30.4
	Moderate	74	18.5
	Difficult	23	5.7
	Very Difficult	14	3.5
Aware of Laws Against Drug Sale	No	283	70.6
	Yes	101	25.2
	Missing/Not stated	17	4.2
Law Enforcement is Effective in Drug Control	Strongly Disagree	163	40.6
	Disagree	112	27.9
	Neutral	7	1.7
	Agree	21	5.2
	Strongly Agree	81	20.2

Source: SPSS Field Data, Bo Town Survey, 2025.

The data presented paint a deeply concerning picture of drug accessibility in Bo City. Local open markets were identified as the primary source of drug acquisition by 43.6% (n=175) of respondents, the single largest category by a wide margin. Street vendors ranked second (21.7%; n=87), followed by dedicated drug dealers (15.7%; n=63), friends or peers (10.0%; n=40), other sources (3.7%; n=15), and family members (1.0%; n=4). Together, local markets and street vendors account for 65.3% of drug acquisition channels, reflecting the deeply embedded integration of drug trade into the informal economy of Bo City's public market spaces.

The perceived ease of obtaining substances among respondents is alarming. A total of 68.1% rated access as 'very easy' (37.7%; n=151) or 'easy' (30.4%; n=122), while 18.5% (n=74) rated it 'moderate'. Only 9.2% found obtaining drugs 'difficult' (5.7%) or 'very difficult' (3.5%). These data suggest that for the overwhelming majority of youth in Bo City, acquiring illicit substances primarily Kush presents essentially no practical obstacle. This level of accessibility is extraordinary in the context of substances that are nominally prohibited by law.

The law enforcement dimension reveals a compounding problem. A staggering 70.6% (n=283) of respondents reported being unaware of the existence of laws prohibiting the sale and distribution of drugs, representing a profound deficit in legal literacy and public education about drug control laws. And among those presumably aware of such laws, confidence in their enforcement was catastrophically low: 40.6% (n=163) strongly disagreed, and 27.9% (n=112) disagreed that law enforcement was effective in controlling drug supply a combined 68.5% negative assessment. Only 25.4% agreed or strongly agreed that enforcement was effective. This represents a near-total collapse of confidence in law enforcement effectiveness, creating a permissive supply environment in which drug traders operate with apparent impunity.

4.6 Bivariate Analysis: Association Between Sociodemographic, Behavioural Factors, Knowledge Level, and Substance Use Patterns Among Youths. Chi-Square Test Results for Selected Bivariate Associations (N=401)

Variable 1	Variable 2	Chi-Square (χ^2)	df	p-value	Decision
Gender	Substance Used	57.545	5	<0.001	Reject H ₀₁
Age Group	Substance Used	57.199	20	<0.001	Reject H ₀₂
Occupation	Substance Used	41.860	20	0.003	Reject H ₀₃
Peer Pressure Rating	Substance Used	100.939	20	<0.001	Reject H ₀₄
Main Reason for Use	Substance Used	196.230	35	<0.001	Significant
Gender	Main Reason for Use	16.024	7	0.025	Significant
Age Group	Main Reason for Use	91.413	28	<0.001	Significant
Gender	Knowledge Level	4.494	4	0.343	Retain H ₀
Education Level	Knowledge Level	13.929	16	0.604	Retain H ₀₅

Note: Statistical significance set at $\alpha=0.05$. Bold p-values indicate statistically significant results.

Source: SPSS Field Data, Bo Town Survey, 2025.

4.7: Cross-Tabulation – Gender by Substance Used (%)

Substance	Alcohol	Kush	Marijuana	Cocaine	Heroin	Tobacco	Others
Male (%)	1.7	74.1	10.3	0.0	0.0	1.7	12.1
Female (%)	3.2	62.8	9.6	0.0	0.0	1.1	23.4
$\chi^2=57.545$, df=5, p<0.001							

Source: SPSS Field Data, Bo Town Survey, 2025.

The table presents the distribution of substance use patterns among male and female respondents in Bo Town. The findings indicate that Kush was the most commonly reported substance among both males and females, with a higher proportion among males (74.1%) compared to females (62.8%). Marijuana was the second most reported substance, with similar proportions among males (10.3%) and females (9.6%).

Female respondents reported higher use of other substances (23.4%) compared to males (12.1%), while alcohol use was slightly higher among females (3.2%) than males (1.7%). Tobacco use was reported by 1.7% of males and 1.1% of females. No respondents reported the use of cocaine or heroin. The chi-square test showed a statistically significant association between gender and type of substance used ($\chi^2 = 57.545$, df = 5, p < 0.001), indicating that substance use patterns differed significantly between male and female respondents. This suggests that gender may influence the choice and pattern of substance use among youths in Bo Town.

4.8: Cross-Tabulation – Age Group by Main Reason for Drug Use (%)

Age Group	Peer Pressure	Escape Problems	Lack Recreation	Stress/ Anxiety	Curiosity	Unemployed	Other
12–15 yrs	47.4%	5.3%	21.1%	10.5%	10.5%	0.0%	5.3%
16–19 yrs	31.3%	17.9%	17.9%	12.5%	7.1%	4.5%	8.9%
20–23 yrs	22.9%	20.0%	17.1%	12.4%	7.6%	8.6%	11.4%
24–27 yrs	19.0%	25.4%	14.3%	9.5%	7.9%	11.1%	12.7%
28+ yrs	16.7%	21.2%	12.1%	12.1%	4.5%	10.6%	22.7%
$\chi^2=91.413$, df=28, p<0.001							

Source: SPSS Field Data, Bo Town Survey, 2025.

The chi-square analyses presented in tables reveal several important bivariate associations. All five null hypotheses formulated for testing were evaluated at $\alpha=0.05$.

Hypothesis H_{01} (No association between gender and substance used) was rejected ($\chi^2=57.545$, $df=5$, $p<0.001$). Table 4.7 reveals that while Kush was the dominant substance across both genders, males showed higher Kush use proportions (74.1%) compared to females (62.8%), while females showed higher proportions in the 'others' category (23.4% vs 12.1%), suggesting possible gender differences in substance use diversity or in Kush-specific reporting.

Hypothesis H_{02} (No association between age group and substance used) was also rejected ($\chi^2=57.199$, $df=20$, $p<0.001$), indicating that substance use patterns differ significantly across age groups. Younger age groups showed higher Kush use concentrations, while older youth showed greater diversity of substance use and higher rates of escaping problems as motivation (Table 4.8).

Hypothesis H_{03} (No association between occupation and substance used) was rejected ($\chi^2=41.860$, $df=20$, $p=0.003$), confirming that occupational status, particularly unemployment, is significantly associated with the type of substance used, consistent with Strain Theory predictions.

Hypothesis H_{04} (No association between peer pressure and substance used) was rejected by the largest margin ($\chi^2=100.939$, $df=20$, $p<0.001$), providing strong statistical evidence that the nature of peer social influence is a significant determinant of substance type, not just substance initiation. The very strong association ($\chi^2=196.230$, $p<0.001$) between main reason for use and substance type further confirms that motivational profiles are substance-specific.

Hypothesis H_{05} (No association between education and knowledge level) was retained ($\chi^2=13.929$, $df=16$, $p=0.604$). This non-significant result is noteworthy: it suggests that knowledge of drug abuse among Bo City youth does not increase significantly with formal educational attainment, challenging the assumption that school education alone addresses the awareness gap. The absence of an association between gender and knowledge level ($\chi^2=4.494$, $p=0.343$) similarly indicates that awareness is broadly distributed across the gender spectrum.

The cross-tabulation in Table 4.8 provides important nuance on age-related motivational patterns: peer pressure declines as the primary motivation with increasing age (from 47.4% among 12–15-year-olds to 16.7% among those 28 and above), while 'escaping problems' increases with age (from 5.3% in the youngest group to 21.2% in the 28+ group). This developmental shift from peer-driven to distress-driven substance use has significant implications for age-specific intervention design.

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter interprets the findings presented in Chapter Four in light of existing literature and the theoretical framework articulated in Chapter Two. Each of the four study objectives is discussed in turn, followed by an overarching synthesis of the multilevel determinants of substance abuse in Bo City.

5.2 Discussion of Findings

5.2.1 Sociodemographic Profile and Its Implications

The demographic profile of substance-involved youth in this study predominantly male (72.3%), concentrated in the 16–23year age range (54.1%), and overwhelmingly unemployed (57.4%) aligns closely with patterns documented across sub-Saharan Africa. The male predominance is consistent with studies from Nigeria (Adamson et al., 2015), Ghana (Calys-Tagoe et al., 2014), Kenya (Atwoli et al., 2011), and South Africa (Parry et al., 2010), reflecting the intersection of gendered social norms that permit or encourage male substance use and differential economic marginalisation that affects young males disproportionately in post-conflict Sierra Leone.

The concentration of substance uses in the 16–23year age window directly reflects the neurobiological vulnerability of this developmental period incomplete prefrontal cortical maturation, heightened dopaminergic reward sensitivity, and peak peer influence documented extensively in the neurodevelopmental literature (Brown et al., 2008; Casey et al., 2008). The particularly alarming finding that 9.5% (n=38) of respondents were aged 12–15 years indicates that substance initiation in Bo City begins during early adolescence consistent with the growing body of evidence that age of initiation is declining in post-conflict West African urban settings.

The 57.4% unemployment rate among respondents is both consistent with national statistics for Sierra Leonean urban youth (Statistics Sierra Leone, 2021) and directly predicted by Agnew's (1992) General Strain Theory as a primary pathway to substance use. Unemployed youth face the triple burden of economic deprivation (which paradoxically increases unstructured time while reducing access to legitimate recreational activities), loss of social role and identity, and exposure to peer networks where substance use is prevalent. The statistically significant association between occupation and substance used ($\chi^2=41.860$, $p=0.003$) provides empirical confirmation of this theoretical prediction for the Bo City context.

5.2.2 Knowledge and Awareness of Drug Abuse

The finding that 58.9% of respondents self-rated their knowledge as 'high' or 'very high' initially appears reassuring. However, several considerations complicate this interpretation. First, self-rated knowledge may not accurately reflect actual knowledge: social desirability effects and overconfidence bias may lead respondents to overestimate their knowledge relative to objective assessment. Second, and more critically, the non-significant association between educational attainment and knowledge level

($\chi^2=13.929$, $p=0.604$) suggests that whatever knowledge respondents possess, it is not being systematically generated by formal education consistent with the dismally low proportion of respondents identifying school as their primary information source (3.0%).

The dominant role of social media as a drug information source (49.6%) is a double-edged finding. On one hand, social media's reach and penetration among youth far exceeding that of healthcare workers (5.5%) or schools (3.0%) represents a potential asset for prevention messaging: if quality health information can be effectively delivered through social media channels, it can reach the majority of the target population. On the other hand, the unregulated, algorithm-driven nature of social media platforms means that youth are equally exposed to pro-drug content, misinformation, and normalisation of substance use through these same channels.

The high level of agreement that drug abuse is a serious problem (65.1% agree or strongly agree) demonstrates that awareness of the societal consequences of substance abuse is widespread yet this awareness has manifestly failed to prevent the epidemic levels of Kush use documented in this study. This is consistent with the global literature demonstrating that information and awareness campaigns alone are insufficient to change substance use behaviour in the face of strong social, economic, and structural drivers (Tobler et al., 2000). The disconnect between knowledge and behaviour observed in this study reinforces the need to complement awareness interventions with structural, economic, and psychosocial interventions.

5.2.3 Types of Substances Abused

The overwhelming dominance of Kush as the primary substance ever used (71.3%) and most commonly abused substance (64.6%) constitutes the most critical epidemiological finding of this study. This dramatically eclipses marijuana (10.2%), multiple substances (10.2%), and alcohol (6.2%), confirming that Kush has fundamentally displaced other substances as the primary substance of abuse among youth in Bo City. This finding is consistent with NACSA (2023) reports and the qualitative study by Sesay et al. (2021) from Freetown, suggesting that the Kush epidemic is a nationwide phenomenon not confined to the capital.

The predominance of Kush over alcohol is particularly notable. Alcohol is legal, socially normalised, and widely available in Sierra Leone factors that typically confer high prevalence in population surveys. The displacement of alcohol by Kush among this sample most plausibly reflects the extraordinary price differential: Kush is available for a fraction of the cost of commercial alcohol, making it uniquely accessible to economically deprived youth. This price-driven substitution dynamic has profound implications for public health: Kush, unlike alcohol, lacks any threshold of 'safe use,' is rapidly and severely addictive, and carries extreme toxicity risk from adulterants.

The 10.2% prevalence of polysubstance use (multiple substances as the most common pattern) warrants clinical attention. Research consistently demonstrates that polysubstance use is associated

with more severe dependence, greater psychiatric comorbidity, higher overdose risk, and poorer treatment outcomes than single-substance use. The presence of a meaningful polysubstance use population in Bo City suggests that substance abuse disorder in this setting is not only high in prevalence but is also complex in clinical presentation, requiring treatment services equipped to address multiple concurrent dependencies.

5.2.4 Factors Responsible for Drug and Substance Abuse

The identification of peer pressure as the single most frequently cited primary reason for drug use (26.2%) is robustly consistent with the global adolescent substance use literature and directly predicted by Social Learning Theory (Bandura, 1977). The age-disaggregated analysis in Table 4.8 provides important developmental nuance: peer pressure is cited as the primary motivation by 47.4% of the youngest cohort (12–15 years), declining to 16.7% among the oldest (28 years and above). This developmental pattern is entirely consistent with the neurobiological literature on peer influence and adolescent decision-making: younger adolescents, with less developed prefrontal regulatory capacity and greater identity-seeking motivation, are maximally susceptible to peer conformity pressures (Brown et al., 2008).

The strong emphasis on 'escaping problems' as a motivation (19.0% overall, rising to 21.2% in the 28+ age group) reflects the self-medication hypothesis and aligns with Agnew's (1992) General Strain Theory. For older youth, many of whom have been unemployed for extended periods, experienced family dissolution, or carry unresolved post-conflict trauma, substances offer the most accessible (if ultimately destructive) tool for managing psychological distress. The absence of accessible, affordable mental health services in Bo City removes the primary healthy alternative to substance-based coping, creating a vacuum that Kush readily fills. This finding underscores the urgent need to integrate mental health services with substance abuse prevention and treatment programmes.

The affirmation by 68.3% of respondents that lack of recreational activities contributes to drug use is one of the most structurally actionable findings of this study. Unstructured time, a product of both unemployment and the absence of supervised recreational infrastructure, creates the social conditions in which peer drug-using networks flourish. Investment in recreational infrastructure (sports facilities, youth centres, cultural spaces, vocational workshops) and in structured programming to occupy youth time productively represents a relatively straightforward and highly cost-effective structural intervention that addresses both the 'pull' of drug-using peer networks and the 'push' of boredom and idleness.

The very high prevalence of family dysfunction as an influential factor (64.8% rating it 'much' or 'very much' influential) is consistent with the ecological systems framework and the family-level risk factor literature (Hawkins et al., 1992). In Bo City's post-conflict context, where family disruption through conflict-related mortality, displacement, and trauma is prevalent, the weakening of protective family microsystem influences removes a critical buffer against peer and community-level substance use risk. Family-centred intervention components, including parenting support programmes, family counselling,

and economic strengthening, are indicated as essential complements to individual-level and community-level interventions.

5.2.5 Sources and Availability of Drugs

The identification of local open markets (43.6%) and street vendors (21.7%) as the dominant drug supply channels reveals a critically important and actionable dimension of the supply-side problem in Bo City. The integration of illicit drug trade into the formal and informal market economy in publicly accessible, community-embedded spaces represents both a significant regulatory failure and a practical law enforcement challenge. Market-based drug distribution is difficult to disrupt without disproportionate disruption to legitimate market activity, and requires sustained, intelligence-led enforcement operations rather than sporadic crackdowns.

The finding that 68.1% of respondents found drug acquisition 'very easy' or 'easy' is perhaps the single most alarming availability finding. This degree of accessibility combined with Kush's extraordinary affordability creates supply conditions that are antithetical to any demand-reduction intervention. Even perfectly effective demand-reduction programmes will struggle to prevent use when the substance is as accessible and cheap as Kush is in Bo City. This underscores the indispensability of simultaneous, sustained supply-side interventions to complement any demand-side prevention or treatment effort.

The findings on law enforcement are deeply concerning. The combination of 70.6% of respondents being unaware of drug laws and 68.5% rating enforcement as ineffective describes a law enforcement environment characterised by both legal illiteracy in the community and operational ineffectiveness. Research on deterrence theory (Tyler, 2006) suggests that law compliance depends on both the perceived certainty of punishment (which requires visible enforcement) and the perceived legitimacy of law (which requires public trust in law enforcement institutions). Both appear critically undermined in the Bo City context. Rebuilding enforcement credibility will require not only increased operational capacity but also community engagement, transparency, and accountability in law enforcement practice.

5.3 Synthesis: A Multilevel Analysis

Taken together, the findings of this study confirm the utility of the multilevel ecological framework for understanding the complexity of substance abuse among youth in Bo City. No single factor explains the epidemic: rather, it is the convergence of individual vulnerabilities (young age, male gender, unemployment, limited knowledge from formal sources), interpersonal dynamics (peer pressure, family dysfunction), community-level conditions (open drug markets, absence of recreational infrastructure), and macrostructural failures (poverty, weak enforcement, legal illiteracy) that collectively sustains the crisis.

This multilevel causation has direct implications for intervention design: single-level interventions will invariably achieve limited impact. School-based education, while valuable, cannot overcome a

community environment saturated with cheap and accessible Kush. Law enforcement crackdowns, while potentially reducing supply temporarily, cannot address the demand drivers of peer pressure, psychosocial distress, and unemployment. Economic interventions, while addressing structural strain, cannot immediately compensate for the daily reality of peer pressure operating in an environment of drug-saturated public spaces. Effective intervention requires simultaneous action across all ecological levels, individual, family, community, and structural, guided by the evidence generated in this and future studies.

5.3 Conclusions

Kush has established itself as the overwhelmingly dominant substance of abuse among Bo City youth (71.3% ever used), displacing all other substances by a wide margin and confirming the Kush epidemic as the primary substance abuse challenge in this population.

Knowledge and awareness of drug abuse is moderate to high among a majority of respondents, but is predominantly sourced from social media (49.6%) rather than from formal health education channels. This information environment is characterised by uneven quality and does not reliably translate into protective behaviour.

Peer pressure (26.2%), escaping problems (19.0%), and lack of recreational activities (16.2%) are the dominant motivational factors for substance use. Family dysfunction (64.8% rating it highly influential) and unemployment (57.4% of respondents) are critical contextual enablers. These factors are consistent with Social Learning Theory and General Strain Theory as applied to the post-conflict Sierra Leonean context.

Drug accessibility in Bo City is critically high: 68.1% of respondents find substances 'very easy' or 'easy' to obtain, primarily from local open markets and street vendors. Law enforcement is perceived as overwhelmingly ineffective (68.5% disagree or strongly disagree), and 70.6% of respondents are unaware of drug laws together constituting a catastrophic supply-side regulatory failure.

Statistically significant associations were found between substance use and gender ($\chi^2=57.55$, $p<0.001$), age group ($\chi^2=57.20$, $p<0.001$), occupation ($\chi^2=41.86$, $p=0.003$), peer pressure ($\chi^2=100.94$, $p<0.001$), and main reason for use ($\chi^2=196.23$, $p<0.001$), confirming that sociodemographic and motivational factors significantly differentiate substance use patterns.

5.4 Recommendations

For Government and National Policymakers

Declare Kush and related synthetic cannabinoids a national public health emergency and mobilise dedicated emergency funding for a comprehensive, time-bound National Kush Response Plan covering prevention, supply reduction, treatment, and rehabilitation.

Urgently revise and enforce the Sierra Leone Drugs Act to criminalise the sale, distribution, and production of synthetic cannabinoids including Kush, with specific provisions targeting market-based drug distribution. Conduct regular market inspections and establish a dedicated anti-narcotics enforcement unit in Bo City.

Develop and implement a comprehensive National Youth Employment Strategy that includes large-scale vocational training and apprenticeship programmes, youth enterprise loans, public works employment schemes, and incentives for businesses hiring youth under 30 directly addressing the structural economic strain that drives substance misuse.

Allocate capital funding for the construction and maintenance of recreational infrastructure in Bo City, including sports fields, multipurpose youth centres, libraries, and cultural facilities, to provide supervised, productive alternatives to drug-using social environments.

Legislate and fund a National Drug Education Curriculum for secondary schools, requiring evidence-based substance abuse education as a core component of the national curriculum, and train school counsellors specifically in drug prevention and early intervention.

For the Ministry of Health and Sanitation

Establish community-based substance abuse treatment and rehabilitation centres in Bo City, with integrated mental health services addressing post-conflict trauma, depression, anxiety, and co-occurring psychiatric disorders. These centres should be free or subsidised, geographically accessible, and staffed by trained addiction counsellors.

Train and deploy community health workers (CHWs) as frontline drug prevention and early intervention agents in high-risk neighbourhoods, equipping them with skills in Screening, Brief Intervention, and Referral to Treatment (SBIRT) and motivational interviewing.

Integrate routine substance use screening into all primary healthcare interactions with youth aged 12–35 years, using validated screening tools adapted for the Sierra Leonean context (e.g., adapted ASSIST).

Develop a specific maternal and child health programme component addressing substance abuse in pregnant women and mothers, given the family-level risk factors identified in this study.

For Educational Institutions

Implement comprehensive, evidence-based drug education programmes at primary and secondary school levels in Bo City, incorporating life skills training, peer resistance skills, accurate normative information, and mental health literacy components.

Establish peer education programmes that leverage positive peer influence through training youth leaders as drug prevention ambassadors in their schools and communities directly harnessing the powerful peer influence mechanism documented in this study for protective rather than risk-promoting purposes.

Create school-based counselling services staffed by trained counsellors who can provide confidential support to students struggling with substance use and related psychosocial challenges.

For the Sierra Leone Police Service and Judiciary

Strengthen the operational capacity and training of the Anti-Narcotics Unit (ANU) in Bo City, with specific focus on intelligence-led enforcement targeting drug supply chains in local markets and by street vendors.

Implement a community policing model in drug-affected neighbourhoods that builds trust between law enforcement and communities, increases the perceived legitimacy of drug law enforcement, and facilitates community reporting of drug activity.

Establish drug treatment courts as alternatives to incarceration for first-time and minor drug offenders, recognising substance use disorder as a health condition requiring treatment rather than solely a criminal justice issue.

Conduct mass public education campaigns on drug laws to address the alarming 70.6% rate of legal illiteracy documented in this study.

5.5.5 For Civil Society, NGOs, and Community Leaders

Engage religious leaders, traditional chiefs, and community elders as drug prevention champions, using their cultural authority to challenge pro-drug social norms and promote community accountability for the drug trade.

Design and implement social media counter-messaging campaigns specifically targeting youth audiences on platforms where they are most active (Facebook, TikTok, WhatsApp), delivering evidence-based drug prevention content in engaging formats using Krio and local languages.

Establish community-based support groups for families affected by substance abuse, providing psychosocial support, referral pathways, and practical guidance for parents and caregivers.

Advocate for increased government and international donor funding for substance abuse prevention, treatment, and rehabilitation in Sierra Leone, making the economic and human cost case for investment.

Limitations of the Study

The cross-sectional study design is the primary methodological limitation. By capturing data at a single point in time, it is impossible to establish the temporal sequence between exposures (e.g., peer pressure, unemployment) and substance use outcomes. Associations documented here are statistical, not causal and reverse causality cannot be excluded (e.g., substance use contributing to unemployment rather than vice versa). Longitudinal cohort studies would be needed to establish causal directionality.

The use of self-report data introduces potential biases. Social desirability bias may lead some respondents to underreport stigmatised behaviours (substance use, particularly 'harder' substances), while others may underreport due to fear of legal consequences. Conversely, some respondents may overstate use to conform to perceived peer norms. The absence of biological verification of substance use (e.g., urine toxicology) means that reported substance use cannot be objectively validated.

The sampling strategy combining purposive and convenience sampling at community gathering places may introduce selection bias, disproportionately capturing youth who are more visible in public spaces and potentially overrepresenting those with greater social engagement and substance exposure. Youth who are severely addicted (and therefore potentially homebound or institutionalised) or who avoid public spaces may be underrepresented.

The study was geographically restricted to Bo City, limiting direct generalisability to other districts and rural areas of Sierra Leone, which may have different substance use patterns, access conditions, and risk factors. The findings should be interpreted with appropriate caution when applied beyond the urban Southern Province context.

Finally, the questionnaire captured a limited set of potentially important variables. Psychological factors (mental health diagnosis, trauma history), family-level variables (parental substance use, household income), and community-level variables (proximity to drug outlets, neighbourhood deprivation index) that could have enriched the analytical model were not included, partly for feasibility and partly to minimise respondent burden.

Suggestions for Future Research

Longitudinal cohort studies that track substance use initiation, escalation, and cessation among Bo City youth over time, enabling causal inference and the identification of temporal risk and protective factors.

Qualitative studies exploring the lived experiences of Kush users in Bo City, including motivational narratives, social contexts of use, barriers to treatment, and recovery experiences to complement the

quantitative picture generated by this study.

Multi-district comparative studies examining whether the patterns and factors identified in Bo City are specific to its urban Southern Province context or are replicated across other districts, enabling more generalisable national conclusions.

Intervention studies evaluating the effectiveness of specific prevention, treatment, and harm reduction programmes in the Sierra Leonean context, including randomised controlled trials of school-based prevention curricula, brief intervention protocols, and community-based treatment models.

Studies examining female-specific patterns of Kush use in Sierra Leone, recognising that the substantial female minority (23.4%) in this sample may have distinct vulnerability factors, motivations, and barriers to treatment that warrant gender-specific investigation.

Health economic analyses quantifying the full cost burden of the Kush epidemic in Sierra Leone, including healthcare costs, productivity losses, criminal justice costs, and social welfare expenditures to make the economic case for prevention investment to policymakers.

Declarations

Author Contributions

Sullay Kalokoh: Conceptualization, methodology, supervision, writing original draft preparation, and review & editing.

Lovicious Marvelous Sankoh: Data curation, investigation, and formal analysis.

Alusine Fofana: Data collection, validation, and field supervision.

Daniel Kamara: Methodology support, statistical analysis, and interpretation of results.

Magainda Ordette Walters: Literature review, manuscript editing, formatting, data entry, visualization, and administrative support.

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Supplementary Information

The questionnaire used in this study was developed specifically for this research and has not been previously published. An English-language version of the questionnaire has been uploaded as Supplementary File 1 and is cited in the main manuscript.

Ethics Approval and Consent to Participate

Ethical approval for this study was obtained from the Institutional Review Board (IRB)/Ethics Committee of Njala University. The study was conducted in accordance with the ethical principles of the Declaration

of Helsinki (World Medical Association, 2013).

Written informed consent was obtained from all participants aged 18 years and above before data collection. For participants younger than 18 years, written informed consent was obtained from their parents or legal guardians, and assent was obtained from the participants. Consent forms were provided in both English and Krio, and the study procedures were explained to participants with limited literacy. Participation was entirely voluntary, and participants were informed of their right to withdraw from the study at any time without penalty.

Consent for Publication

Not applicable. This manuscript does not contain any individual identifiable information, images, or personal data requiring consent for publication.

Availability of Data and Materials

The datasets generated and analysed during this study are not publicly available because of ethical and confidentiality restrictions and the need to protect participants' privacy. Data were analysed using IBM SPSS Statistics Version 31.0. Anonymised datasets may be made available by the corresponding author upon reasonable request and subject to approval by the relevant Institutional Review Board (IRB) or Ethics Committee, where applicable.

Competing Interests

The authors declare that they have no competing interests.

Clinical Trial Registration Information

This study is an observational cross-sectional study and is not a clinical trial.

Funding Declaration

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Figures

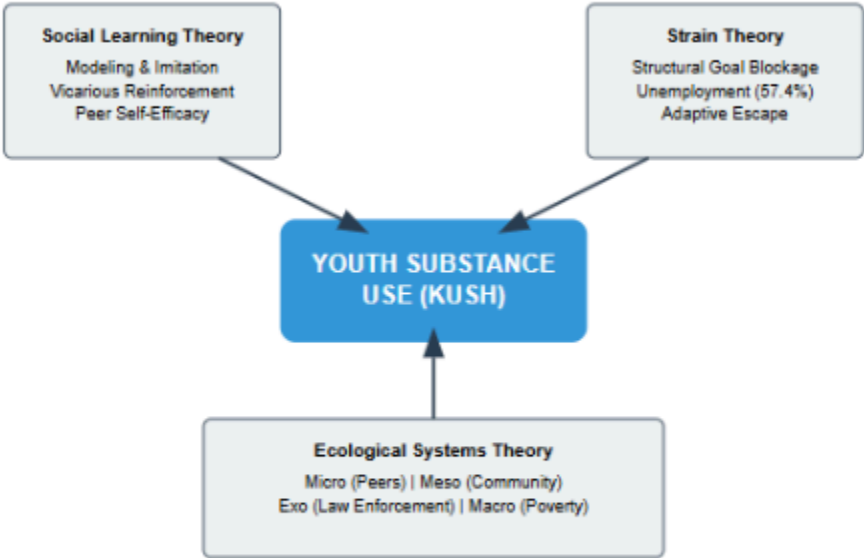


Figure 1: Integrated Theoretical Framework for Youth Substance Use in Bo City

Figure 1

See image above for figure legend.



Figure 2

Figure 1 Conceptual Framework: Multilevel Determinants of Drug and Substance Abuse Among Youths in Bo City, Sierra Leone



Figure 3

Figure 2 Map Showing the Study Areas (Bo City Sierra Leone)

Source: Google Maps/OpenStreetMap (2026)

Supplementary Files

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