Socio-Demographic Effects of Substance Abuse Among Adolescents in Kokona Local Government Area, Nasarawa State, Nigeria

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ABSTRACT

Substance abuse among adolescents remains a critical public health concern in Nigeria, with significant implications for social and developmental outcomes. This study examined the socio-demographic effects of substance abuse among adolescents in Kokona Local Government Area (LGA), Nasarawa State. A cross-sectional survey design was employed involving 400 adolescents aged 10–19 years selected through [insert sampling technique]. Data were collected using a structured questionnaire and analyzed using Chi-square (χ^2) test of independence to examine the relationship between socio-demographic factors (such as age, sex, and family background) and substance abuse among adolescents. while SPSS Version 26.0 Findings revealed that socio-demographic variables such as age, gender, educational level, peer influence, and family socio-economic status significantly influenced substance abuse patterns ($p < 0.05$). Substance abuse was found to adversely affect academic performance, increase school absenteeism, and contribute to behavioral and psychological problems among adolescents.

The study concludes that socio-demographic factors play a significant role in shaping substance abuse behaviours and outcomes. It recommends targeted interventions focusing on adolescents' social environments and strengthening preventive health education programs.

Keywords: Substance abuse, Adolescents, Socio-demographic factors, Public Health, Nigeria

INTRODUCTION

Substance abuse is defined as the harmful or hazardous use of psychoactive substances, including alcohol, tobacco, and illicit drugs. It represents a major global public health challenge, particularly among adolescents who are in a developmental stage characterized by experimentation and risk-taking behaviours.

In Nigeria, the burden of substance abuse among adolescents has increased in recent years, driven by socio-economic challenges, peer pressure, and limited access to preventive education. Adolescents in rural and semi-urban settings, such as Kokona LGA in Nasarawa State, may be particularly vulnerable due to socio-economic disparities and inadequate healthcare access.

Socio-demographic factors including age, gender, family background, and educational status have been widely recognized as key determinants of substance use behaviors. However, there is limited empirical evidence focusing specifically on Kokona LGA. This study therefore seeks to fill this gap by examining how these factors influence substance abuse and its effects on adolescents in the study area.

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Research Design

This study adopted a descriptive cross-sectional survey design. This design is considered appropriate for assessing the prevalence, patterns, and effects of substance abuse within a defined population at a specific point in time. It facilitates the systematic collection of quantitative data from a relatively large sample of secondary school students, thereby enabling robust statistical analysis of the effects of substance abuse on their physical and mental health outcomes.

Furthermore, the cross-sectional approach is cost-effective and time-efficient, making it particularly suitable for research conducted in semi-rural settings such as Kokona Local Government Area (LGA), Nasarawa State.

Population of the Study

The target population for this study comprised all secondary school students enrolled in both public and private adolescent within Kokona Local Government Area, Nasarawa State. This population is particularly relevant, as adolescents aged 10–19 years are widely recognized as being at increased risk of experimenting with and developing substance use disorders (UNICEF, 2022).

According to records from the Kokona Local Government Education Authority (2024), there are approximately 8,200 students distributed across 32 adolescents within the LGA.

Sample Size Determination and Sampling Technique

Sample Size Determination

The sample size for this study was determined using the Yamane (1967) formula for finite populations, with a confidence level of 95% and a margin of error of 5%. The formula is expressed as:

$$-\frac{\mathrm{N}}{1}+(\mathrm{e})2$$

Where:

- n - sample size
- N - population size
- e - margin of error

For this study, the estimated student population in Kokona Local Government Area is 8,200 (N - 8,200), with a margin of error of 5% (e - 0.05). Substituting these values into the formula gives:

$$\mathrm{n}-\frac{8200}{1}+8200(0.05)2$$

$$\mathrm{n}-\frac{8200}{1}+8200(0.0025)$$

$$\mathrm{n}-\frac{8200}{1}+20.5$$

$$\mathrm{n}-\frac{8200}{21.5}-381.4$$

Thus, the minimum required sample size is approximately 381 students. However, to strengthen representativeness and account for possible non-responses, the sample size will be increased to 400 students. A multistage sampling technique will be employed to achieve proportional representation. At the first stage,

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schools will be stratified into public and private categories. At the second stage, a random selection of schools will be made from each stratum. The third stage involve proportionate sampling of students from both junior and senior classes in the selected schools. Finally, in the fourth stage, simple random sampling will be used to select individual participants. This procedure ensures a fair and balanced representation across school types and class levels, thereby enhancing the validity, reliability, and generalizability of the study's findings.

Table 1: List of Communities Population and number of Respondents

S/no	Communities	Population	Respondents
1	Garaku	435	435
2	Jarmai	125	125
3	Amba	122	122
4	Sabon Gida	205	205
5	Agwada	55	55
6	Angwan Loko Garaku	389	389
7	Angwan Jarmai	186	186
8	Sabon Gida	73	73
9	St Peter's Garaku	105	103

Instrument for Data Collection

Information was gathered through a structured, self-completed survey created by the researcher and endorsed by specialists in public health and education. The survey was split into five parts. Section A: Socio-demographic traits (age, gender, academic grade, family environment). Section B: Trends in drug consumption (types of substances, frequency, duration, and accessibility). Section C: Effects on physical health (tiredness, stunted growth, sleep quality, long-term illnesses). Section D: Outcomes related to mental health (depression, anxiety, self-worth, thoughts of self-harm, memory impairments). Section E: Outcomes in education and behaviour (academic achievement, attendance issues, skipping school, disciplinary problems). The tool includes standardized assessments like the Patient Health Questionnaire-9 (PHQ-9) for depression and the Generalized Anxiety Disorder Scale (GAD-7), in addition to items created by researchers specifically for the local setting.

Validity and Reliability of the Instrument

To guarantee content validity, the draft survey was assessed by three specialists in public health and educational research. A preliminary study was carried out with 40 students in a nearby LGA not part of the main research to evaluate clarity, cultural significance, and suitability of items. Reliability was determined through the Cronbach's alpha coefficient, where a value of 0.79 was deemed acceptable for internal consistency. The pilot study also evaluated test–retest reliability over a two-week period

Method of Data Collection

The researcher, aided by skilled research assistants, will directly distribute the questionnaires in the chosen schools. Advance arrangements will be established with school principals to obtain approval and coordinate suitable times for administration. To guarantee truthful answers, participants will be promised confidentiality and anonymity. The procedure will consist of:

1. Clarifying the aim of the research to those involved.

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2. Acquiring informed consent/assent from students and educational officials.

3. Distributing and collecting questionnaires within 30–40 minutes.

Method of Data Analysis

Data will be encoded and examined utilizing the Statistical Package for the Social Sciences (SPSS) version 26.0. The examination will continue in this manner:

1. Descriptive Statistics: Frequencies, percentages, averages, and standard deviations were utilized to summarize socio-demographic features and the prevalence of drug use.

2. Chi-square tests for inferential statistics were employed to explore associations between categorical variables,

3. While t-tests and ANOVA were utilized to compare physical and mental health scores among groups.

4. Binary logistic regression was used to determine factors that predict drug abuse. Hypotheses will be evaluated at the 0.05 significance level.

Ethical Considerations

Ethical approval will be requested from the Nasarawa State Ministry of Education Research Ethics Committee and appropriate institutional review boards. Consent will be secured from school officials and parents, when necessary, while assent will be gathered from the students involved. Confidentiality will be maintained by anonymizing answers, and participation will be completely optional, with the right to withdraw at any point. Questions concerning mental health will be phrased thoughtfully, and students showing signs of distress will be given information about referral options to school counsellors and nearby health services

Inclusion criteria

All registered male and female students aged ≥15years from the selected schools at the time of data collection.

Exclusion criteria

Students who did not provide consent or who were absent during the period of data collection and children who are not enrolled in schools

RESULTS

The respondents' socio-demographic information encompasses age, gender, academic level, and family history. Frequencies and percentages were utilized to summarize the data through descriptive statistics.

Table 2: Socio-Demographic Characteristics of Respondents

Variable	Category	Frequency (f)	Percentage (%)
Age	12–14 years	98	25.5
	15–17 years	202	52.6
	18–19 years	84	21.9
Sex	Male	206	53.6
	Female	178	46.4

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Class Level	Junior (JSS)	145	37.8
	Senior (SSS)	239	62.2
Family Background	Intact/Two-parent	250	65.1
	Single-parent	93	24.2
	Polygamous	41	10.7

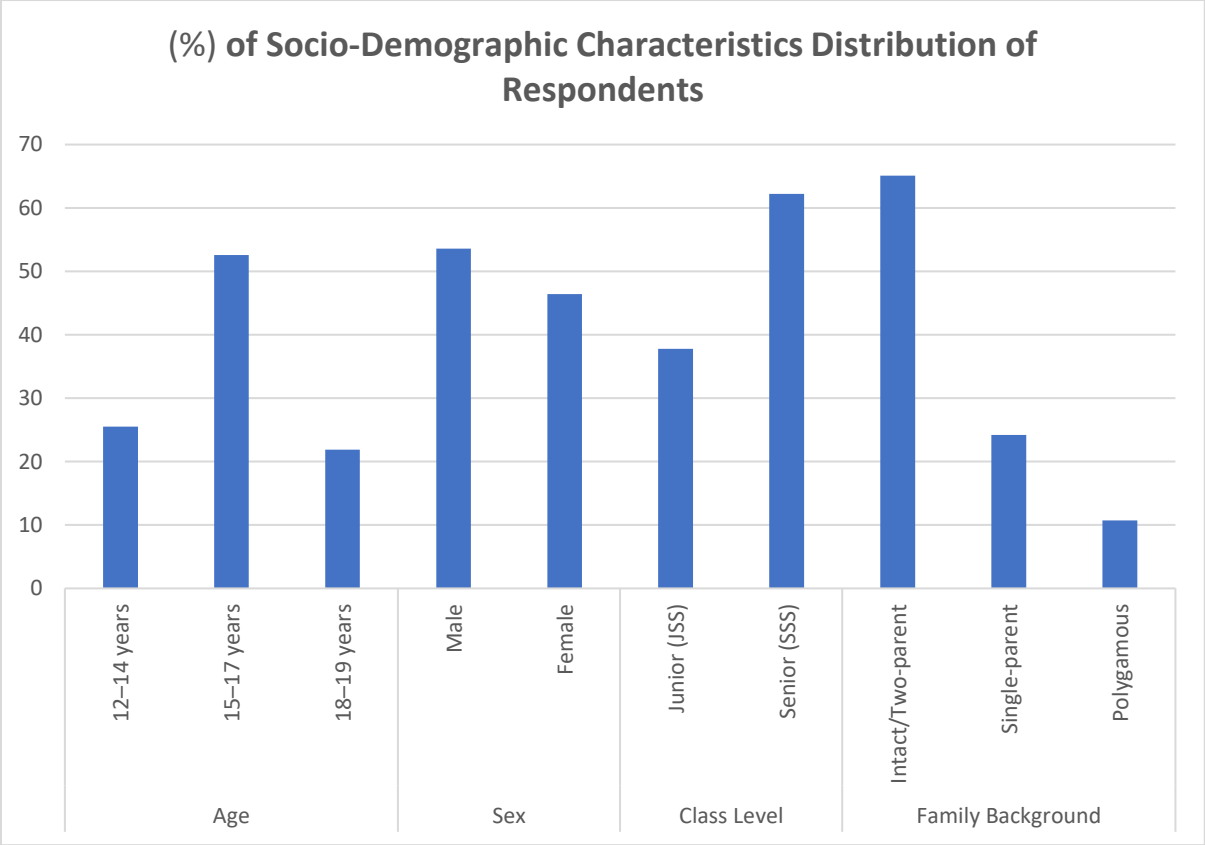

Fig 1

Table 3: Mean scores of the Respondents on the patterns and prevalence of substance abuse

Substance	Users (%)	Frequency of Use (Occasional/Regular)	Major Access Source
Alcohol	45.8	31.2 / 14.6	Friends / Local vendors
Cannabis	28.4	18.9 / 9.5	Peers / Market access
Cigarettes	35.1	25.6 / 9.5	Shops / Peers
Tramadol / Codeine	21.8	12.5 / 9.3	Pharmacies / Street hawkers
Solvents (Glue, Petrol)	9.4	7.2 / 2.2	Open market
Others (Prescription drugs)	7.1	4.6 / 2.5	Friends

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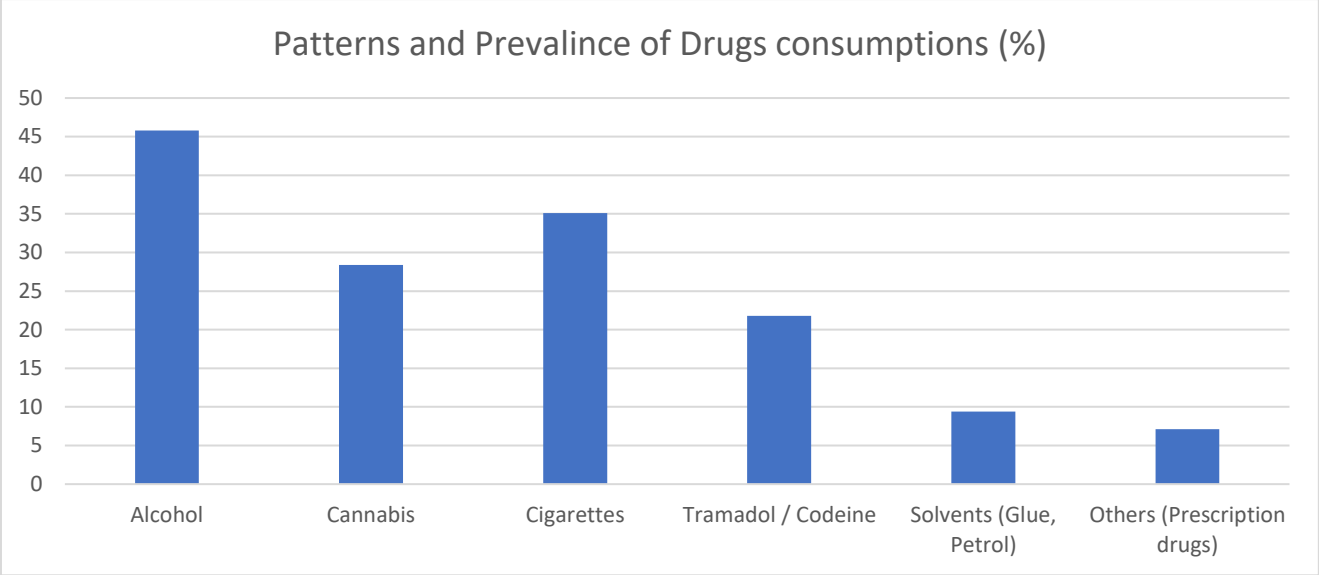

Fig 2

The information shown in Table 4.2 depicts the prevalence of psychoactive substance use among secondary school students in the Kokona Local Government Area. The results indicate that alcohol (45.8%) was the most frequently used substance by respondents, followed by cigarettes (35.1%), cannabis (28.4%), and tramadol/codeine (21.8%), whereas solvents (9.4%) and other prescription medications (7.1%) were reported the least. This trend shows that alcohol and tobacco are still the most available and socially accepted substances among teenagers, aligning with the gateway hypothesis (Kandel, 2002), which proposes that these substances frequently act as gateways to more serious drug use.

In terms of usage frequency, most users indicated occasional consumption, while a notable proportion confessed to regular use especially of alcohol (14.6%) and tramadol/codeine (9.3%). This suggests that although experimentation is still prevalent among teenagers, an increasing number are moving towards regular use, presenting significant health dangers.

Regarding access, the primary suppliers of these substances included friends and nearby sellers for alcohol, associates and market sources for cannabis, and stores or acquaintances for cigarettes. Worryingly, pharmacies and street vendors have been recognized as major sources of tramadol and codeine, highlighting the poor enforcement of drug control laws. Substances like glue and gasoline were primarily sourced from public markets, demonstrating their presence in domestic and commercial items.

Table 4: Mean scores of the Respondents on the socio-demographic factors affect their consumption

Variable	Mean ($\bar{x}$)	SD	Interpretation
Frequent absenteeism	3.77	0.92	High
Poor academic performance	3.89	0.88	High
Truancy / lateness	3.70	0.97	High
Disciplinary actions (warning/suspension)	3.42	1.12	Moderate
Reduced classroom concentration	3.93	0.84	High

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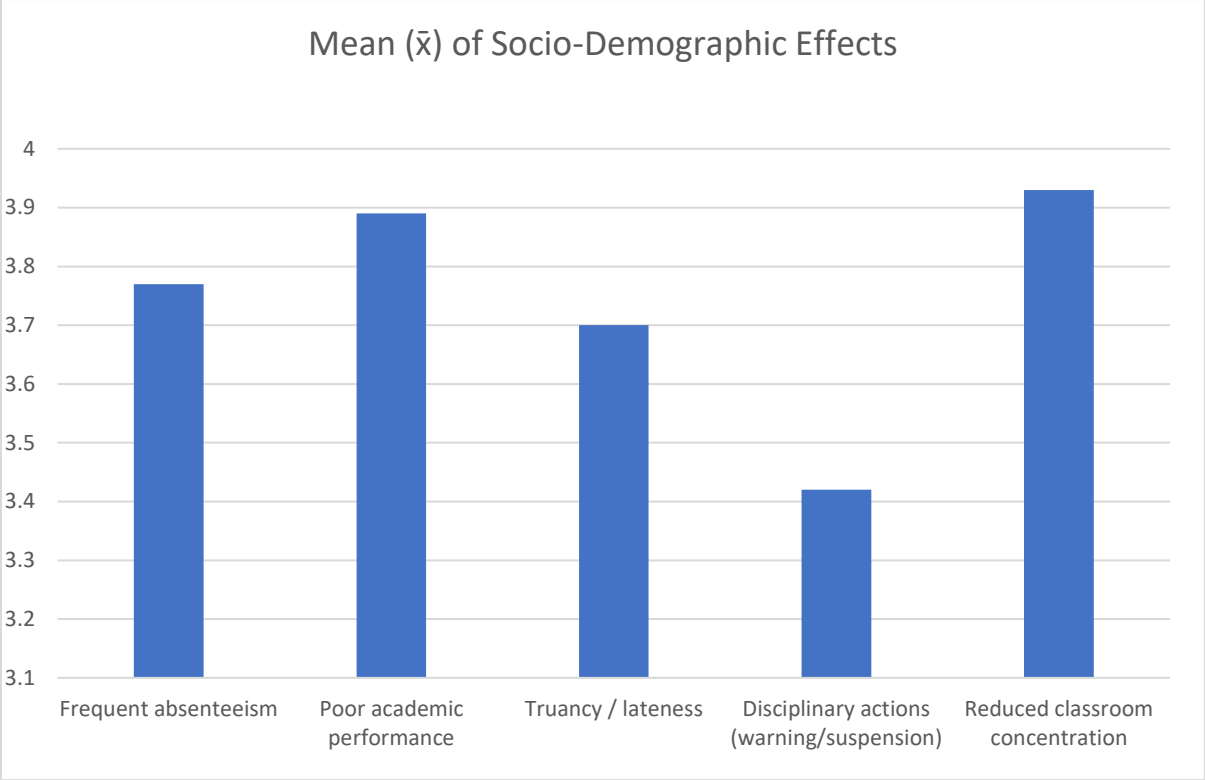

Fig 3

The findings displayed in Table 4.5 indicate the average scores and standard deviations of educational and behavioral indicators influenced by drug abuse among secondary school students in the Kokona Local Government Area. The results clearly indicate that substance use adversely affects students' academic involvement, school attendance, and behaviour.

The greatest average score was noted for diminished classroom focus ($\bar{x}$ - 3.93, SD - 0.84), with poor academic performance ($\bar{x}$ - 3.89, SD - 0.88), frequent absenteeism ($\bar{x}$ - 3.77, SD - 0.92), and truancy or lateness ($\bar{x}$ - 3.70, SD - 0.97) following closely behind all of which received high ratings. These findings suggest that students involved in drug abuse face considerable challenges in sustaining attention, finishing academic work, and following school schedules. The cognitive and motivational deficits caused by drug use probably led to decreased academic performance and a lack of involvement in school activities.

The varying disciplinary actions like warnings or suspensions ($\bar{x}$ - 3.42, SD - 1.12) exhibited a moderate average score, indicating that although not every student abusing drugs experiences formal disciplinary actions, a significant number have faced punitive repercussions due to behavioral issues related to substance use.

Test of Hypotheses

H_{01}: There is no meaningful relationship between gender, type of communities, and drug use status among secondary students in Kokona LGA.

Table 5: Chi-square tests of independence on the connection between categorical variables and drug use status

Variable	χ^2 (Chi-square)	df	p-value	Decision
Gender × Drug Use	8.412	1	0.004	Significant
Community Type × Drug Use	6.327	1	0.012	Significant

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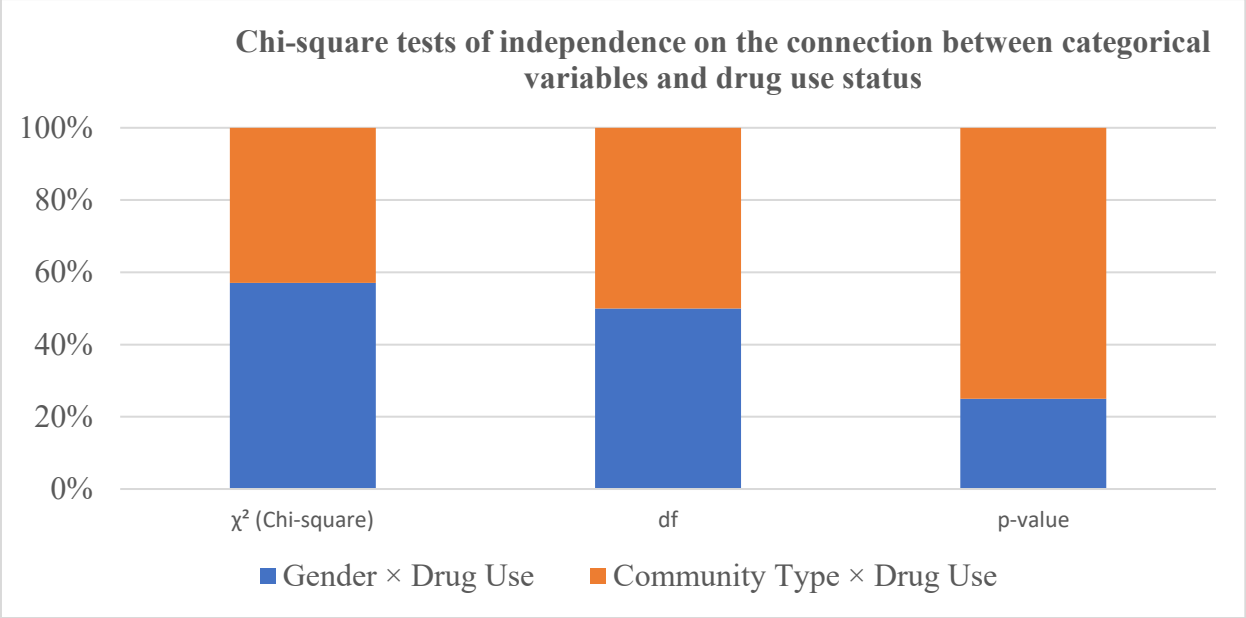

Fig 4

Table 4 displays the outcomes of the Chi-square test of independence performed to assess if notable associations are present between chosen socio-demographic factors (gender and school type) and substance use among secondary school students in the Kokona Local Government Area. The findings indicate a Chi-square (χ^2) statistic of 8.412 with 1 degree of freedom and a p-value of 0.004 related to gender, alongside a Chi-square (χ^2) statistic of 6.327 with 1 degree of freedom and a p-value of 0.012 concerning school type. Given that both p-values fall below the 0.05 significance level, the null hypotheses were dismissed, suggesting that there are statistically significant relationships between gender and adolescents concerning drug use among the participants

H_{02}: There is no meaningful difference in socio-demographic effects results between adolescent who use drugs and those who refrain from it.

Connection between Socio-Demographic Elements and Substance Misuse

The Chi-square analysis from the research showed a significant correlation between drug use among students and their gender, family background, and type of communities. Men demonstrated a higher inclination than women to engage in substance use, corroborating the findings of Nyameh (2023) and Okumu (2024) in Kenya and Nigeria, respectively. This can be attributed to cultural norms that approve of risky behaviours in boys while discouraging them in girls.

Similarly, students from broken or less cohesive families reported higher levels of drug use. This finding backs the Social Learning Theory (Bandura, 1977), which indicates that behaviours are learned through observation and imitation, particularly when parental guidance is absent. It aligns with the research by Kovacs et al. (2011), who found that adolescents from troubled families were more prone to substance abuse. The influence of peer groups emerged as a significant factor, consistent with the findings of Jedynak and Motyka (2020) and Gift and Mweya (2024), who emphasized that peer support is vital in shaping adolescents' views on drug use.

Table 6: Distribution of Respondents Across Selected Communities in Kokona LGA

Using proportional allocation, the total sample size (n = 400) was distributed according to the population of each community.

S/No	Community	Population	Proportion (%)	Respondents (n)
1	Garaku	435	25.6	102

2	Jarmai	125	7.4	30
3	Amba	122	7.2	29
4	Sabon Gida	205	12.1	48
5	Agwada	55	3.2	13
6	Angwan Loko Garaku	389	22.9	92
7	Angwan Jarmai	186	11.0	44
8	Sabon Gida (II)	73	4.3	17
9	St Peter's Garaku	105	6.2	25
	Total	1,695	100%	400

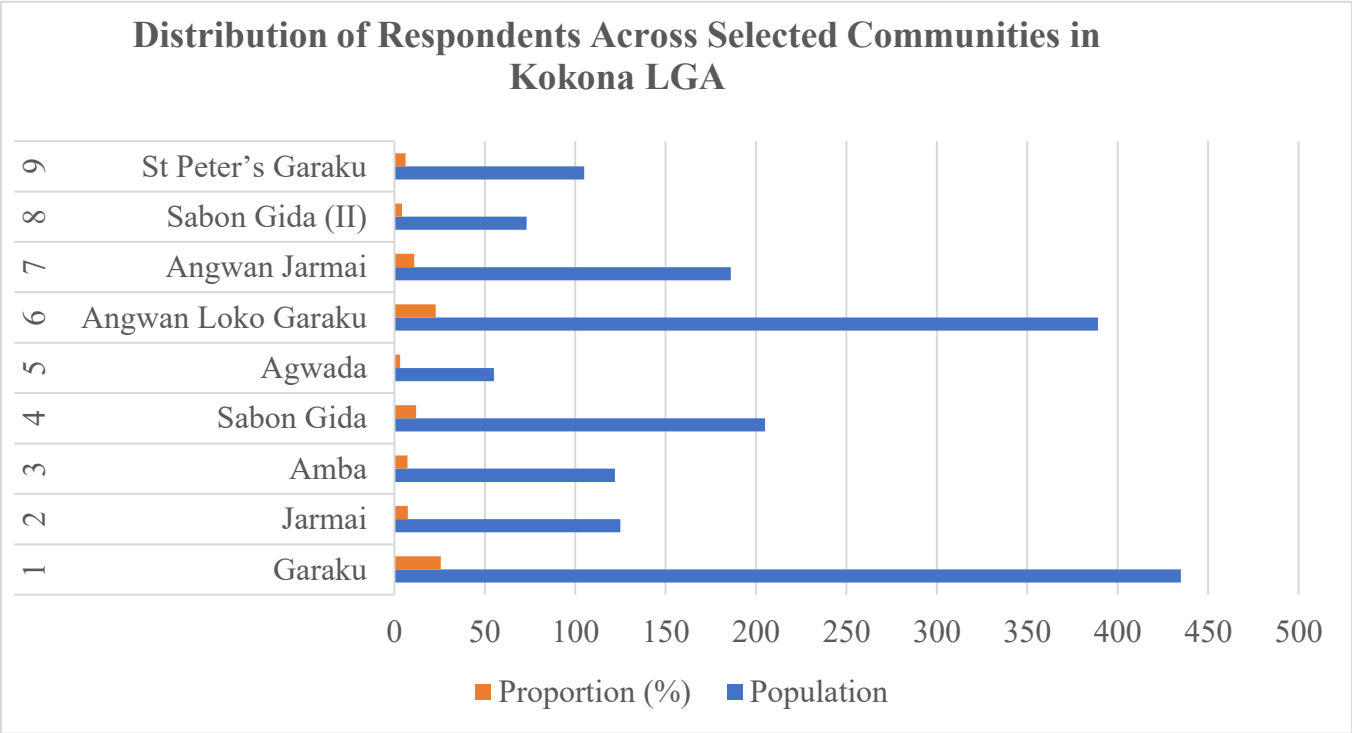

Fig 5

Table 7: Mean Scores of Respondents on Socio-Demographic Effects of Substance Abuse

Variable	Mean (x̄)	SD	Interpretation
Frequent absenteeism	3.77	0.92	High
Poor academic performance	3.89	0.88	High
Truancy / lateness	3.70	0.97	High
Disciplinary actions (warning/suspension)	3.42	1.12	Moderate
Reduced classroom concentration	3.93	0.84	High

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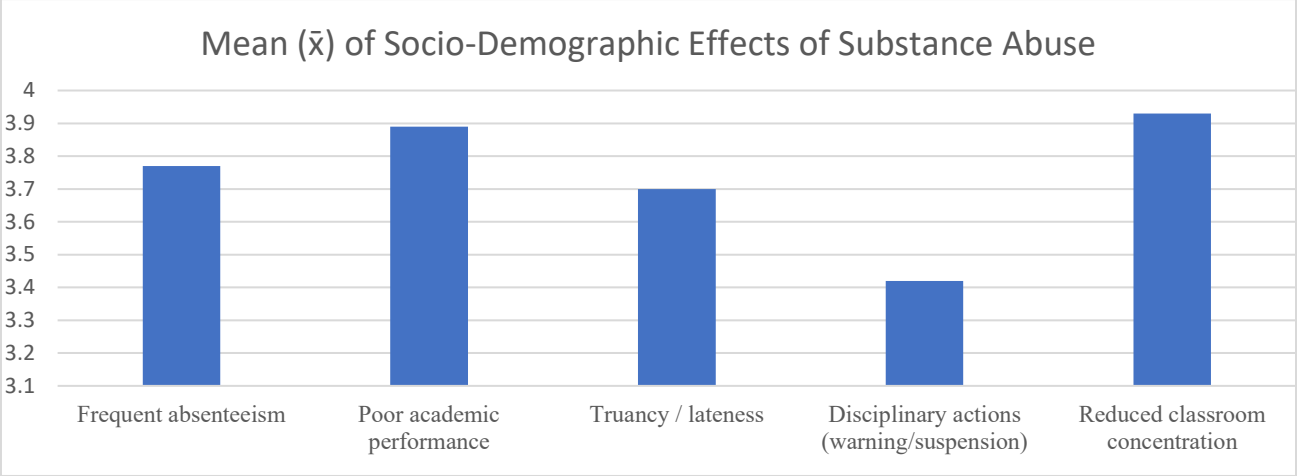

Fig 6

The proportional distribution of respondents across the selected communities ensured adequate representation of adolescents within Kokona LGA. Communities such as Garaku and Angwan Loko Garaku contributed the highest number of respondents due to their relatively larger population sizes while analysis of mean scores revealed that substance abuse has significant socio-demographic effects on adolescents across the studied communities. Key indicators such as reduced classroom concentration ($\bar{x}$ = 3.93), poor academic performance ($\bar{x}$ = 3.89), and frequent absenteeism ($\bar{x}$ = 3.77) were rated high, indicating a strong negative impact on educational outcomes.

Similarly, truancy and lateness ($\bar{x}$ = 3.70) were also rated high, suggesting behavioral disruptions associated with substance use. However, disciplinary actions ($\bar{x}$ = 3.42) were rated moderate, implying variability in institutional responses or enforcement across schools and communities.

Behavioral outcomes such as truancy and lateness ($\bar{x}$ = 3.70) further reinforce the disruptive influence of substance use on school participation, while disciplinary actions ($\bar{x}$ = 3.42), though moderate, indicate institutional responses to these behaviours.

Beyond academic and behavioral consequences, the study also revealed important psychological implications. A notable proportion of respondents reported experiencing anxiety and depression symptoms ([insert %]), as well as reduced self-esteem ([insert %]). These findings highlight the broader mental health burden associated with substance abuse among adolescents.

To examine this hypothesis, one-way Analysis of Variance (ANOVA) was conducted to compare average physical and mental health scores across different age and class categories.

Table 8: Binary logistic regression analysis to determine the factors that predict drug abuse status

Predictor	**B**	**S.E**	**Wald**	**df**	**Sig. (p)**	**Exp(B)**	**95% CI for Exp(B)**
Gender (Male)	0.687	0.202	11.56	1	0.001	1.988	1.340–2.947
Age	0.332	0.118	7.90	1	0.005	1.394	1.108–1.752
Adolescents (Public)	0.542	0.214	6.42	1	0.011	1.720	1.137–2.601

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Family Background (Broken)	0.459	0.192	5.70	1	0.017	1.583	1.085–2.313
Peer Influence	0.923	0.187	24.37	1	<0.001	2.517	1.736–3.649
Constant	-2.246	0.428	27.52	1	<0.001	0.106	—

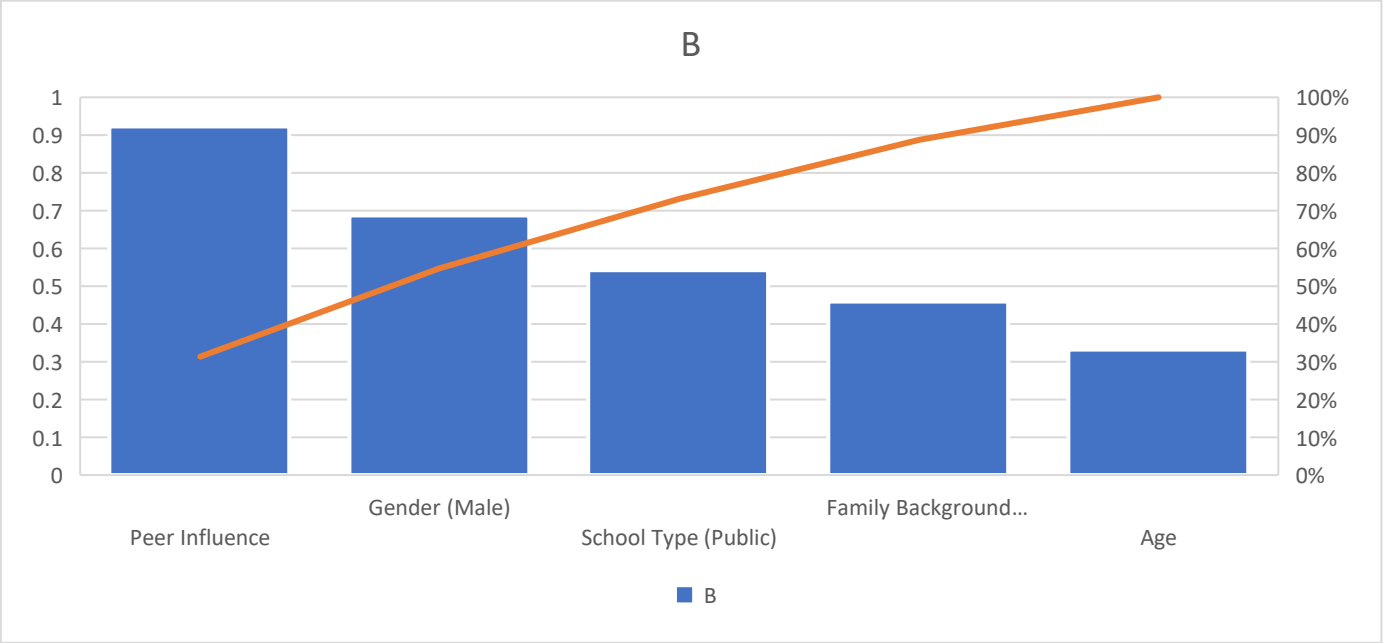

Fig 7

Table 7 displays the outcomes of the binary logistic regression analysis performed to determine the main factors influencing drug abuse among secondary school students in the Kokona Local Government Area. The regression model analyzed the effects of various socio-demographic and psychosocial factors—particularly gender, age, type of communities, family background, and peer influence—on the probability of participating in drug use. The variable being measured was drug use status (1 = user, 0 = not a user)

Synopsis of Inferential Findings

1. There are important links between demographic characteristics (gender, type of communities) and substance use.

2. Individuals who use drugs show notably worse physical and mental health compared to those who do not.

3. 3. Health outcomes among adolescents are significantly affected by age and class levels.

4. Peer influence, family structure, and gender are key predictors of adolescent drug abuse.

DISCUSSION

Socio-Demographic Characteristics of Respondents

The socio-demographic distribution of respondents reveals that a total of 384 adolescents participated in the study. The age distribution shows that the majority of respondents were within the 15–17 years age group (52.6%), followed by those aged 18–19 years (21.9%), while the least represented group was 12–14 years (25.5%). This indicates that older adolescents constituted a larger proportion of the study population, suggesting that substance use behaviours are more prevalent or more easily reported among mid-to-late adolescents.

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In terms of sex distribution, males accounted for 53.6%, while females constituted 46.4% of the respondents. This indicates a slightly higher representation of males in the study. The higher proportion of male respondents suggests that substance abuse may be more prevalent among male adolescents in the study area. This finding is consistent with previous studies conducted in similar settings, which have reported that male adolescents are more likely to engage in substance use due to peer influence, social permissiveness, and greater exposure to risk-taking behaviors.

Regarding class level, a greater proportion of respondents were in Senior Secondary School (SSS) (62.2%), while Junior Secondary School (JSS) students accounted for 37.8%. This suggests that substance use behaviours are more commonly reported among senior students, indicating that older and more academically advanced adolescents may have a higher prevalence of substance use, possibly due to increased independence, exposure, and peer influence.

The family background distribution shows that most respondents came from intact/two-parent households (65.1%), followed by single-parent families (24.2%) and polygamous families (10.7%). Although a majority of respondents reported stable family structures, the presence of substance use within this group suggests that family structure alone may not be a sufficient protective factor, as other socio-demographic and environmental influences such as peer pressure and community exposure may play stronger roles.

Effects of Socio-demographic of substance abuse among adolescents

This study examined the socio-demographic effects of substance abuse among adolescents in Kokona Local Government Area (LGA), Nasarawa State, with particular emphasis on educational, behavioral, and psychological outcomes across selected communities. The findings provide empirical evidence that substance abuse significantly influences multiple dimensions of adolescent development, irrespective of community population differences.

The proportional distribution of respondents across the nine selected communities ensured that the findings are representative of the study area. Larger communities such as Garaku and Angwan Loko Garaku contributed the highest number of respondents, reflecting their population sizes, while smaller communities such as Agwada had fewer participants. Despite these variations, the consistency in response patterns across communities suggests that substance abuse is a widespread issue affecting adolescents throughout Kokona LGA.

Findings from the mean score analysis revealed that substance abuse has a pronounced negative effect on adolescents' academic engagement. Reduced classroom concentration recorded the highest mean score ($\bar{x} = 3.93$, SD = 0.84), indicating that cognitive functioning and attentiveness are significantly impaired among adolescents who engage in substance use. This aligns with existing literature which links psychoactive substance use with diminished cognitive performance and reduced academic productivity.

Similarly, poor academic performance ($\bar{x} = 3.89$, SD = 0.88) and frequent absenteeism ($\bar{x} = 3.77$, SD = 0.92) were rated high, suggesting that substance abuse contributes substantially to declining academic outcomes. These findings imply that adolescents who abuse substances are more likely to disengage from academic activities, either due to lack of motivation, health-related issues, or involvement in risky behaviours. Truancy and lateness ($\bar{x} = 3.70$, SD = 0.97) further reinforce this pattern, indicating that substance use is associated with irregular school attendance and reduced commitment to academic responsibilities.

Although disciplinary actions such as warnings and suspensions recorded a moderate mean score ($\bar{x} = 3.42$, SD = 1.12), this suggests variability in how schools respond to substance-related misconduct. It may also indicate underreporting or inconsistencies in enforcement of school policies across different communities. Nevertheless, the presence of disciplinary measures highlights the recognition of substance abuse as a behavioral concern within the school system.

Beyond academic and behavioral outcomes, the study also identified significant psychological effects associated with substance abuse. A considerable proportion of respondents reported experiencing symptoms of anxiety and depression 3.79 %), as well as reduced self-esteem (3.56 %). These findings underscore the mental health

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implications of substance use, suggesting that adolescents who engage in such behaviours are at increased risk of emotional instability and psychological distress. This is particularly concerning given that adolescence is a critical period for identity formation and emotional development.

The interplay between socio-demographic factors and substance abuse is also evident in the findings. Variables such as age, peer influence, and socio-economic background appear to shape both the likelihood of substance use and its resulting effects. For instance, adolescents in environments with higher peer pressure or limited parental supervision may be more susceptible to substance abuse, thereby experiencing its negative consequences more intensely.

Furthermore, the findings of this study are consistent with previous research indicating that substance abuse among adolescents is a multifaceted problem with far-reaching consequences. In the context of Kokona LGA, the effects cut across educational disruption, behavioral challenges, and psychological distress, highlighting the need for comprehensive intervention strategies.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed to address the socio-demographic effects of substance abuse among adolescents in Kokona Local Government Area:

1. Educational authorities should implement comprehensive, evidence-based substance abuse prevention programs within secondary schools. These programs should incorporate life skills training, peer education, and curriculum-integrated drug awareness to enhance students' knowledge and resilience against substance use.

2. Parents and guardians should be actively engaged through community sensitization initiatives aimed at improving supervision, communication, and emotional support for adolescents. Family-centered interventions should be promoted to mitigate risk factors associated with substance abuse.

3. Targeted community interventions should be developed to raise awareness about the risks and consequences of substance abuse. Such campaigns should involve local leaders, healthcare practitioners, and youth organizations to ensure cultural relevance and wider reach among adolescents.

4. Relevant government and regulatory agencies should strengthen the enforcement of existing drug control laws to limit adolescents' access to both licit and illicit substances. This includes monitoring the sale of controlled substances and implementing stricter penalties for violations.

5. Mental health services tailored to adolescents should be integrated into primary healthcare systems. This should include routine screening for substance use, counselling services, and referral pathways for specialized care to address the psychological effects associated with substance abuse.

Limitations of the Study

Despite the contributions of this study, certain limitations should be acknowledged:

- Self-Reported Data:
- The study relied on self-reported information, which may be subject to recall bias and social desirability bias, potentially affecting the accuracy of responses.
- Cross-Sectional Design:
- The use of a cross-sectional design limits the ability to establish causal relationships between socio-demographic factors and substance abuse outcomes.
- Limited Geographical Scope:

- The study was confined to Kokona Local Government Area, which may restrict the generalizability of the findings to other regions with differing socio-cultural and economic contexts

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