



Unveiling Youth Substance Abuse in Yendi, Ghana: Prevalence and Influencing Factors

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Keywords: Youth; Substance; Abuse; Prevalence; Influencing factors; Impact.

Abbreviations: MICS: Multiple Indicator Cluster Survey; MoGCSP: Ministry of Gender, Children and Social Protection; GSS: Ghana Statistical Service; NACOB: Narcotics Control Board; UNODC: United Nations Office on Drugs and Crime; GBD: Global Burden of Disease; NDCMP: National Drug Control Master Plan; GHS: Ghana Health Service; WHO: World Health Organization; NPS: New Psychoactive Substances; SCRA: Synthetic Cannabinoid Receptor Agonists; SC: Synthetic Cathinone; NSO: New Synthetic Opioids; WWII: World War II; HIV: Human Immune Virus; CHPS: Community-based Health and Planning Services; SPSS: Statistical Package for Social Science; CI: Confidence Interval; OR: Odds Ratio; FDA: Food and Drugs Authority.

Abstract

Introduction: Substance abuse is a public health concern that affects well-being, social stability, and economic development. This study aims to examine the prevalence of substance abuse among youth in the Yendi Municipality, Ghana.

Methodology: A cross-sectional study was conducted in the Yendi Municipality, located in Northern Ghana. The study involved a household survey using a semi-structured questionnaire administered through face-to-face interviews. Data were analyzed using SPSS version 24, with chi-square tests and logistic regression employed to identify the determinants of substance abuse among youth.

Results: The mean age of the 403 respondents was 21.4±2.7 years. The study revealed that 151(38.5%) reported tramadol use. Youth whose fathers had no formal education were four times more likely to engage in substance abuse compared to those whose fathers had formal education (Odds Ratio [OR] = 4.45, Confidence Interval [CI] = 2.27–8.72, p<0.001). Youth living in households with six or more members were also four times more likely to abuse substances than those in smaller households (OR=4.00, CI=1.60–10.00, p=0.003). Respondents from households earning GH¢101–500 were 1.95 times more likely to engage in substance abuse (OR=1.95, CI=1.03–3.70, p=0.042), while those from households earning GH¢5001 or more were nearly three times more likely compared to those with household incomes of GH¢100 or less (OR=2.87, CI=1.62–5.09, p<0.001).

Conclusion: Substance use among youth is influenced by parental education, household size, and economic status. Youth with less-educated fathers, larger households, and both lower- and higher-income backgrounds are more likely to engage in substance use. These findings highlight the need for targeted interventions, such as parental education programs, community awareness campaigns, and economic support initiatives. Future research should examine family structure, income disparities, and cultural factors to enhance prevention efforts.



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Background

Substance abuse has emerged as a major public health concern because of its extensive occurrence in all socioeconomic groups [1]. It affects the health of the public and has wide-ranging adverse effects on social and economic development [2,3]. A global report on addiction published in 2017 found that 1 in 20 to 1 in 5 people over the age of 15 heavily abuse tobacco, alcohol, and illegal drugs daily [4]. Globally, an estimated 296 million people abused drugs in 2021 [5]. According to the 2016 Multiple Indicator Cluster Survey (MICS) [6], 1% of teenage girls and 6% of teenage boys between the ages of 15 and 19 reported having ever used tobacco in Ghana. Moreover, the Ministry of Gender, Children and Social Protection (MoGCSP) asserted that, drug abuse accounts for approximately 90% of cases at the Accra Psychiatric Hospital each year among youth, with some students smoking marijuana in senior high schools [7].

The term “youth” refers to older adolescents and young adults (15–24 years old) who experience major transitions in many areas of life during this stage, including tremendous physical growth, moral, psychological, and emotional growth [4]. In a 2012 population-level survey in South Africa, about 4.4% of people aged 12 and older reported using illicit drugs during the previous three months [8]. About 3.6% of school-age Ghanaians participating in a population-based national study from 2008 reported using drugs at least once in the previous month [9]. Opioids and opiates are the most widely used illicit drugs globally, after cannabis. According to conservative estimates, slightly more than 5% of people worldwide had used cannabis in the previous year as of 2021 [10,11].

Prior follow-up research on substance use among teenagers in Ghana revealed prevalence rates for past-month use of 2.6% and 7.2% [12]. Previous studies have shown that certain socio-demographic characteristics, such as male gender and older age, are associated with the use of cannabis and amphetamines [13,14]. Amphetamine and cannabis use have also been linked to several mental health-related behaviors, including anxiety [15,16], feeling alone [17], thoughts of suicide [18], and risky sexual behavior [17,19], current smoking [17]. Amphetamine and cannabis use have been linked to interpersonal factors in school settings, according to the literature [20]. These factors include being bullied [21], physical fights and attacks [21], school absenteeism [21], having more friends [22], and experiencing hunger [17].

According to the 2020 United Nations Office on Drugs and Crime (UNODC) report, more than 25 million people worldwide use drugs, and over 35 million suffer from drug use disorders [23]. Among them, an estimated 26.8 million people have opioid use disorders. Additionally, approximately 50,000 individuals in Ghana misuse drugs, with young people being the most affected, per a report from the Narcotics Control Board (NACOB) [24].

Drug abuse accounted for 11.8 million deaths worldwide annually and 1.5% of the world’s disease burden, according to the Global Burden of Disease, Injuries, and Risk Factors (GBD) 2016 study. Furthermore, it was estimated that approximately 2% of people globally suffer from drug use conditions with some countries estimating an incidence of over 5% (GBD, Alcohol and Drug Use Collaborators, 2016, 2018). In 2022, Ghana developed the National Drug Control Master Plan in an effort to combat drug abuse in the country [25]. The Plan will provide the country with the evidence-based direction needed to combat drug

abuse, trafficking in illicit drugs, and associated crimes [25]. Also, The Public Health Act of 2012 (Act 851) and the Tobacco Control Regulations of 2016 (L. I. 2247) are two laws that aim to restrict and outlaw the sale of tobacco products to individuals under the age of eighteen [7].

Several interrelated factors contribute to substance abuse among young people. The Public Health Approach Lo et al. (2020) emphasizes that these factors range from individual characteristics to broader societal influences. Socio-economic conditions, family structure, peer influence, and mental health status. Malhotra et al. [26] found that poor parental supervision and lack of education on drug use contribute significantly to early exposure and eventual dependence. Additionally, studies by Bbosa [27] argue that substance abuse alters brain function, leading to impaired judgment, increased risk-taking behavior, and long-term cognitive deficits. Adolescents and young adults are particularly at risk of developing dependency due to the brain’s plasticity during these formative years. Ogundipe et al. [28] suggest that prolonged substance abuse is linked to mental health disorders such as anxiety, depression, and psychosis. According to Heikkilä et al. [29], substance abuse also increases susceptibility to risky behaviors, including unsafe sexual practices, which heighten the risk of contracting Sexually Transmitted Infections (STIs).

The use of psychoactive substances in Ghana has been on the rise, particularly among the youth in urban centers like Yendi Municipality. In 2019, the WHO reported that substance use among adolescents was driven by cultural acceptance of alcohol consumption, easy access to drugs, and weak regulatory enforcement [30]. It also observed that globalization and exposure to Western lifestyles have influenced young people’s perceptions of drug use [31]. Similarly, Degenhardt et al. [32] found that substance use often begins in adolescence and escalates into adulthood, increasing the risk of addiction and associated social problems.

Stevenson et al. [33] advocate for a multi-sectoral approach to addressing youth substance abuse, emphasizing education, community engagement, and policy enforcement. Zhou et al. [34] argue that harm reduction strategies, such as providing rehabilitation services and counseling, can significantly reduce drug dependency. Mounteney et al. [35] highlight the importance of early intervention programs, particularly those targeting at-risk youth in schools and communities. Idowu et al. [36] and Jatau et al. [37] further stress the role of public awareness campaigns in changing societal perceptions of drug use and encouraging young people to seek help.

Girma et al. [38] assert that strong family support and positive role models play a critical role in preventing substance abuse among youth. Parental involvement in a child’s upbringing, coupled with effective communication about the dangers of drug use, can reduce the likelihood of experimentation [39]. Shegute and Wasihun [40] emphasize that schools should implement substance abuse education programs to equip students with knowledge and coping mechanisms against peer pressure.

Kulis et al. [41] argue that cultural beliefs and traditions influence substance use behaviors. In Ghana, social gatherings often involve alcohol consumption, which may normalize drinking habits among youth. Lipari and Van Horn [42] and Palamar et al. [43] found that media portrayal of drug use also shapes young people’s attitudes, making them more likely to experiment with substances. Stricter media regulations to minimize the glorifica-

tion of drug use in entertainment and advertising [44,45].

The prevalence of substance abuse among the youth in the Yendi Municipality is influenced by a range of factors, including socio-economic conditions, peer pressure, cultural influences, and mental health challenges. Preventive strategies such as education, family involvement, and policy enforcement are essential in addressing this issue. Snaychuk et al. [46] emphasize the need for a collaborative approach involving schools, communities, and government agencies to develop sustainable interventions. Further stress that addressing the root causes of substance abuse, such as unemployment and lack of recreational opportunities, is crucial for long-term success [47-49,51]. Well-coordinated effort by policymakers, educators, and healthcare professionals can help reduce substance abuse rates among the youth and promote healthier lifestyles [51,52].

Unfortunately, factors influencing substance abuse among Ghanaian youth especially in the Yendi Municipality is scanty. Furthermore, because culture has a significant impact on behavior, the educated youth in Ghana may not be affected by the factors associated with substance use that have been documented in developed Western nations. These factors include anxiety, loneliness, a lack of parental support and supervision, and sexual risk behaviors [53,54]. Information on the prevalence of drug use among the youth in the Yendi Municipality is required to modify interventions for substance use. Thus, this study aims to determine the prevalence and associated factors of substance abuse among the youth in the Yendi Municipality.

In spite of the legal measures, evidence in most of the country shows a high prevalence of substance abuse among the youth. Due to a lack of information on the prevalence of drug abuse in Ghana, little is known about the factors that influencing young people in the country to abuse drugs, despite efforts by researchers to shed more light on the factors behind substance abuse. Nonetheless, the researchers, who are citizens and inhabitants of Northern Ghana, have noted with concern the startling rate of substance abuse among the nation's youth, as supported by numerous media reports. Also, anecdotal evidence from the Yendi Municipality, where the study was conducted, indicates that the youth in the town abuse several drugs at an alarming rate for both psychological and physical benefits. To the best of our knowledge, this is the first quantitative study that would investigate the predictors of substance abuse among the youth in the municipality. In this regard, the aim of the study is to examine the prevalence of substance abuse among the youth in the Yendi Municipality, Ghana.

Materials and methods

Study design

The study employed a cross-sectional design using a quantitative research approach.

Study area

The study was conducted in Yendi Municipality, situated along the Eastern Corridor Road in Northern Ghana. As of the 2020 Population and Housing Census, Yendi Municipality had a population of 154,421, comprising 76,142 men and 78,279 women. The Yendi Municipality consists of both rural and urban communities, where the study was conducted [55]. It lies between latitude range of 9° to 35° North, 0° to 30° West, and 0° to 15° East. Thus, Yendi, Bago, Laatam, Lumpua, Gbetobu, Gbungbaliga, and Nakpachei are among the communities that

the Greenwich Meridian crosses (55). The Municipality shares boundaries with eight districts: Saboba/Chereponi and Zabzugu/Tatale to the east, Nanumba North and East Gonja to the south, Mion District to the west, and Gushegu and Karaga to the north. The Municipality has one municipal hospital, two clinics, four Community-based Health and Planning Services (CHPS) compounds, and four health centers. The municipal hospital serves as the referral center for the entire municipality [55].

Sampling size determination and sampling

Cochran's formula was used to calculate the sample size of the youth to participate in the study (56), using an assumed prevalence rate of 50% due to the limited data on the prevalence of substance abuse in the study location;

$$n = \frac{Z^2 pq}{d^2}$$

where n = Sample size; Z = critical value of the desired confidence level = 1.96 at 95% confidence level; p = prevalence of substance abuse = 0.50; q = 1-q; e = Degree of precision = 5% (0.05). The minimum sample size was calculated to be 384. The final sample size was increased to 403 after adding a 5% non-response rate.

Data collection technique

A face-to-face interview was conducted using a structured household survey questionnaire, incorporating both open-ended and closed-ended questions. A household survey was used to recruit participants.

The Probability Proportional to Size (PPS) sampling technique was used to determine the sample size for each district within the municipality. Subsequently, simple random sampling was applied to select participants from the sampling frame. If a selected participant declined to participate, the next individual on the list was contacted.

Data collection instrument

A semi-structured questionnaire was employed in the present study by the researchers after a comprehensive review of similar studies. The questionnaire was divided into three sections. The first section assessed the socio-demographic characteristics of the youth such as age (years), marital status, religion, educational status, and occupation. The second section examined the substance abuse practices of respondents, and the final section assessed respondents' socioeconomic factors and environmental factors that could influence substance abuse. The institutional review board of the University for Development Studies approved the study and written informed consent would be obtained from the study participants. The questionnaire was prepared and administered in English language. Before the administration of the questionnaire, the questionnaire would be pretested in another community with similar characteristics as the study area. Two informed consents were obtained, one from the parents of those who would be below 18 years old and the other from those who would be at least 18 years old. Before the administration of the questionnaire, the study's objectives were discussed with all participants. The confidentiality and anonymity of the study data was also guaranteed.

Statistical analysis

Data were coded and analyzed using SPSS version 24. Frequencies and percentages were calculated for categorical vari-

ables, while means and standard deviations were calculated for continuous data.

The chi-square test and Fisher's exact test were used to determine the association between categorical variables. A p-value of <0.05 at a 95% Confidence Interval (CI) was considered statistically significant.

Multicollinearity among independent variables was checked using tolerance values (TOL<0.10) and variance inflation factor (VIF>10). Binary logistic regression was employed to determine the factors associated with substance abuse prevalence among the youth in Yendi Municipality.

Quality control of the study

The questionnaire underwent adjustment in response to the feedback and recommendations provided by the researcher's supervisor. Prior to the primary interview, all requisite modifications were made. The study included an assessment of the validity and reliability. Regarding the assessment of dependability, the Cronbach's alpha coefficient yielded a value of 0.811. The questionnaire was allocated randomly to participants residing in northern Ghana who possessed comparable characteristics to the present study group, with the aim of assessing the questionnaire's reliability. Following a two-week gap, the identical questionnaire was administered to the same individuals, who subsequently supplied consistent responses. Additionally, the researcher implemented rigorous monitoring procedures during the data-collecting phase in order to ensure the acquisition of high-quality data from study participants. Upon completion of data collection for a given day, the data collectors diligently conducted a thorough review of each questionnaire to ensure that all questions were duly answered and any instances of missing data were appropriately addressed.

Ethical considerations

The University for Development Studies Board of Ethics (UDS/RB/116/24) was consulted by the researcher in order to obtain ethical clearance (Appendix II). Additionally, verbal from the opinion leaders in the communities will be sought in the research. Finally, after explaining the objectives, benefits, and potential risks of the study to each respondent, consent was requested before the interview begins. Without any kind of coercion, each respondent was granted liberty to choose what they want to do. Respondents' identities and responses remained anonymous and confidential because codes, rather than names or titles, were used to identify them.

Results

Socio-demographic and economic characteristics of youth

Table 4.1 is a presentation of socio-demographic and economic characteristics of youth who participated in the study. A total of three-hundred and ninety-three (393) youth were surveyed. Mean age of participants is 21.4±2.7 years, with minimum and maximum ages of 14 years and 28 years respectively. Majority of youth 210(53.4%) were in the age category 21-25 years, whereas few respondents 13(3.3%) were 18 years old or younger. In terms of religion, the majority of youth 227(57.8%) were Muslims, 108(27.5%) were Christians, and 58(14.8%) belonged to African Traditional Religion (ATR). Almost three-quarters of youth respondents 278(70.7%) were unmarried, 94(23.9%) were married, and 21(5.3%) were separated. The majority of youth 213(54.2%) belonged to Dagomba ethnic group, whereas few of respondents 37(9.4%) belonged to Bimo-

Table 1: Socio-demographic and economic characteristics of youth.

Characteristics	Frequency	Percentage
Age [years]		
Mean=21.4±2.7		
<18	13	3.3
18–20	153	38.9
21–25	210	53.4
26–30	17	4.3
Religion		
Islam	227	57.8
Christianity	108	27.5
ATR	58	14.8
Ethnicity		
Bimoba	37	9.4
Dagomba	213	54.2
Konkomba	56	14.3
Others	87	22.1
Marital Status		
Married	94	23.9
Unmarried	278	70.7
Separated	21	5.3
Education level		
No formal education	18	4.6
Formal education	375	95.4
Occupation		
Formal employment	29	7.4
Non-formal employment	169	43
Unemployed	195	49.6
Father's education level		
No formal education	173	44
Formal education	220	56
Father's occupation		
Formal employment	54	13.7
Non-formal employment	254	64.3
Unemployed	85	21.6
Mother's education level		
No formal education	218	55.5
Formal education	175	44.5
Mother's occupation		
Formal employment	28	7.3
Non-formal employment	269	69.9
Unemployed	88	22.9
Household size		
≤ 5	95	24.2
6 – 9	27	6.9
≥ 10	271	69
Type of residence		
Urban	138	35.1
Peri-urban	38	9.7
Rural	217	55.2
Household income (Ghana cedis)		
≤100	173	44
101–500	119	30.3
501–1000	63	16
1001–1500	6	1.5
≥1501	32	8.1
Number of children		
No child	221	56.2
1 – 3	120	30.5
≥ 4	52	13.2
Total	393	100

ba ethnic group. Furthermore, majority of youth and their fathers (>50%) attained formal education whereas approximately 55.5% of mothers of respondents did not attain formal education. In terms of occupation, most respondents 195(49.6%) were unemployed, and majority of their fathers and mothers (64.3% and 69.9% respectively) worked in the nonformal sector. The majority of youth 271(69.0%) lived in households with size of ten or more, and about 217(55.2%) of respondents lived in rural communities. Furthermore, most of the youth 173(44.0%) reported to have a monthly household income of GHc 100.0 or less whereas comparatively few respondents 6(1.5%) received a monthly household income within the range of GHc 1001 – GHc 1500. The majority of youth 221(56.2) had no child, whereas few respondents 52(13.2%) reported to have four or more children.

Prevalence of substance use among the youth

Figure 1 is a presentation of prevalence of substance use among youth study participants. Findings indicates that out of 393 youth surveyed, 151(38.5%) of them are involved in substance use, 57(49.6%) smoke wee/cigarette, and 21(37.5%) consume alcohol/ energy drink. In terms of tramadol use, 44(29.1%) use tramadol monthly, 37(24.5%) use tramadol weekly, and 70(46.4%) use tramadol daily. In terms of cigarette smoking, 15(13.0%) smoke monthly, 57 (49.6%) smoke weekly, and 43(37.4%) smoke daily. Out of fifty-six youth who consume alcohol, 21(37.5%) took alcohol/energy drink monthly, 21(37.5%) took alcohol/ energy drink weekly, and 14(25.0%) took alcohol/ energy drink daily.

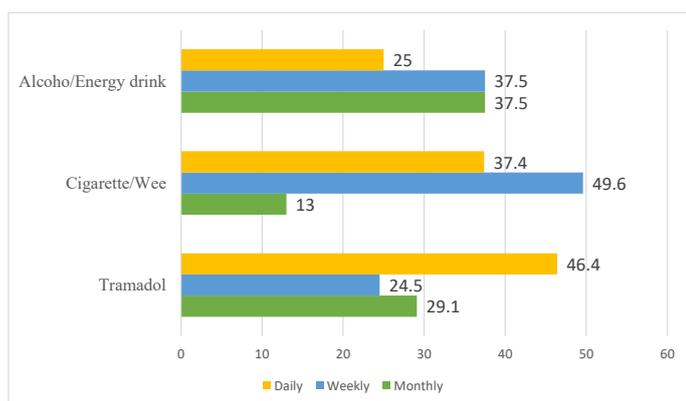


Figure 1: Prevalence of substance use among youth.

Other factors related to substance use among youth

Table 2 is a presentation of factors relating to substance abuse among youth. Findings indicate that, parents (24.3%), relatives (20.1%), and friends (9.7%) were the acquaintances of youth who were engaged in substance use. Out of 316 youth engaged in substance use, majority of them 193(61.1%) were engaged in substance use due to peer pressure. The pharmacy (21.3%), licensed chemical shops (31.7%), drug peddlers (30.8%), friends and family (48.1%), online shops (3.2%), herbal shops (13.5%), among others were the sources of obtaining drugs among youth who abused drugs. Furthermore, majority of youth 115(59.0%) who were involved in substance abuse experienced headache as side effect, 47(24.1%) experienced skin rashes, 79(40.5%) experienced vomiting, 21(10.8%) experienced nausea, 41(21.0%) experienced diarrhea, 14(7.2%) experienced bleeding, 12(6.2%) experienced constipation, and 7(3.6%) experienced other adverse effects. Majority of youth 261(66.4%) were of the view that, the abuse of substance should be banned in the country.

Table 2: Other factors related to substance use among youth.

Variable	Frequency	Percentage
The use substances among acquaintances		
Parents	76	24.3
Relatives	63	20.1
Friends	187	59.7
Reasons for drug abuse		
Stress	114	36.1
Curiosity	35	11.1
Peer pressure	193	61.1
Family problems	126	39.9
Sex enhancement	157	49.7
Others	17	5.4
Sources of obtaining drugs		
Pharmacy	74	21.3
Licensed chemical shops	110	31.7
Friends and family	167	48.1
Drug peddlers	107	30.8
Online shops	11	3.2
Herbal shops	47	13.5
Others	27	7.8
Adverse effects of substance abuse		
Headache	115	59.0
Skin rashes	47	24.1
Vomiting	79	40.5
Nausea	21	10.8
Diarrhea	41	21.0
Bleeding	14	7.2
Constipation	12	6.2
Others	7	3.6
Substance abuse should be banned		
No	132	33.6
Yes	261	66.4

Socio-demographic and economic determinants of substance abuse among youth

Bivariate analysis (Fisher’s exact test) was conducted to ascertain socio-demographic and economic factors associated with substance use among youth study participants (Table 3). Findings indicate that, age (p=0.001), religion (p<0.001), ethnicity (p<0.001), marital status (p=0.013), occupation (p<0.001), father’s education level (p<0.001), father’s occupation (p<0.001), mother’s education level (p=0.001), mother’s occupation (p=0.001), household size (p<0.001), type of residence (p<0.001), household income (p<0.001), and number of children (p<0.001) were variables identified to be associated with substance abuse among youth (Table 3).

Household income (Ghana cedis)				53.2305	Fisher’s test= <0.001
≤ 100	173	126 (72.8)	47 (27.2)		
101 – 500	119	53 (44.5)	66 (55.5)		
501 – 1000	63	27 (42.9)	36 (57.1)		
1001 – 1500	6	4 (66.7)	2 (33.3)		
≥ 1501	32	32 (100.0)	0 (0.0)		
Number of children				16.8258	<0.001
No child	221	153 (69.2)	68 (30.8)		
1 – 3	120	56 (46.7)	64 (53.3)		
≥ 4	52	33 (63.5)	19 (36.5)		

Table 3: Bivariate analysis on association between socio-demographic and economic factors of substance abuse among youth.

Characteristics	Frequency (N=393)	Substance abuse		Chi-square χ^2	P-value
		No	Yes		
Age [years]					
<18	13	8 (61.5)	5 (38.5)	12.5675	Fisher's test= 0.001
18 – 20	153	97 (63.4)	56 (36.6)		
21 – 25	210	120 (57.1)	90 (42.9)		
26 – 30	17	17 (100.0)	0 (0.0)		
Religion					
Islam	227	143 (63.0)	84 (37.0)	18.2119	<0.001
Christianity	108	77 (71.3)	31 (28.7)		
ATR	58	22 (37.9)	36 (62.1)		
Ethnicity					
Bimoba	37	16 (43.2)	21 (56.8)	57.1478	<0.001
Dagomba	213	147 (69.0)	66 (31.0)		
Konkomba	56	12 (21.4)	44 (78.6)		
Others	87	67 (77.0)	20 (23.0)		
Marital Status					
Married	94	57 (60.6)	37 (39.4)	36.5920	Fisher's test= <0.001
Unmarried	278	185 (66.6)	93 (33.5)		
Separated	21	0 (0.0)	21 (100.0)		
Education level					
No formal education	18	8 (44.4)	10 (55.6)	2.3405	0.126
Formal education	375	234 (62.4)	141 (37.6)		
Occupation					
Formal employment	29	23 (79.3)	6 (20.7)	39.9265	<0.001
Non-formal employment	169	74 (43.8)	95 (56.2)		
Unemployed	195	145 (74.4)	50 (25.6)		
Father's education level					
No formal education	173	79 (45.7)	94 (54.3)	33.0754	<0.001
Formal education	220	163 (74.1)	57 (25.9)		
Father's occupation					
Formal employment	54	54 (100.0)	0 (0.0)	42.1858	Fisher's test= <0.001
Non-formal employment	254	134 (52.8)	120 (47.2)		
Unemployed	85	54 (63.5)	31 (36.5)		
Mother's education level					
No formal education	218	119 (54.6)	99 (45.4)	10.1115	0.001
Formal education	175	123 (70.3)	52 (29.7)		
Mother's occupation					
Formal employment	28	26 (92.9)	2 (7.1)	14.8030	0.001
Non-formal employment	269	165 (61.3)	104 (38.7)		
Unemployed	88	46 (52.3)	42 (47.7)		
Household size					
≤ 5	95	84 (88.4)	11 (11.6)	38.1737	<0.001
6 – 9	27	14 (51.9)	13 (48.2)		
≥ 10	271	144 (53.1)	127 (46.9)		
Type of residence					
Urban	138	106 (76.8)	32 (23.2)	32.0855	<0.001
Peri-urban	38	11 (29.0)	27 (71.1)		
Rural	217	125 (57.6)	92 (42.4)		

Multivariate analysis of socio-demographic and economic determinants of youth substance abuse

Table 4 is a presentation of multivariate (logistic regression) analysis on socio-demographic and economic determinants of substance abuse among youth study participants. Results indicate that, respondents whose fathers did not attain formal education were four-times more likely to indulge in substance abuse as compared to youth whose father attained formal education (Odds Ratio [OR]= 4.45, Confidence Interval [CI] =2.27-8.72, $p<0.001$). Furthermore, respondents who lived in households with a size of six or more were four-times more likely to abuse substance as compared to respondents who lived in households with a size of five or less (OR=4.00, CI=1.60-10.00, $p=0.003$). In terms of household income, youth respondents whose household income was GHc101-500 were 0.95 times more likely to indulge in substance abuse (OR=1.95, CI=1.03-3.70, $p=0.042$), and respondents whose household income was GHc5001 or more were approximately three-times more likely to indulge in substance abuse (OR=2.87, CI=1.62-5.09, $p<0.001$) as compared to respondents whose household income was GHc100 or less.

Table 4: Multivariate analysis of socio-demographic and economic determinants of youth substance abuse.

Variables	Substance abuse		
	OR	95% CI	P-value
Age [years]			
<18 (Ref)			
18 – 20	0.57	0.13-2.50	0.458
≥ 21	0.38	0.09-1.72	0.211
Occupation status			
Formal employment (Ref)			
Non-formal employment	3.42	0.97-12.13	0.056
Unemployed	0.51	0.15-1.75	0.287
Father's education Level			
Formal education (ref)			
No formal education	4.45	2.27-8.72	<0.001
Mother's education Level			
Formal education (ref)			
No formal education	1.35	0.71-2.57	0.357
Household size			
≤ 5 (Ref)			
≥ 6	4.00	1.60-10.00	0.003
Household income (Ghana cedis)			
≤ 100 (Ref)			
101 – 500	1.95	1.03-3.70	0.042
≥ 501	4.38	2.00-9.56	<0.001
Number of children			
No child (Ref)			
≥ 1	2.87	1.62-5.09	<0.001

OR: Odds Ratio; CI; Confidence Interval; P-value: Probability value.

Discussion

The study found that 38.5% of the youth engaged in substance use, with 49.6% smoking cannabis or cigarettes and 37.5% consuming alcohol or energy drinks. Tramadol use was also significant, with 46.4% using it daily, 24.5% weekly, and

29.1% monthly. These findings align with previous research on youth substance use in Africa, such as Adere et al. [39] in Ethiopia and Idowu et al. [36] in Nigeria, which identified peer pressure, socioeconomic factors, and accessibility as key influences. However, the prevalence in this study is slightly higher than that reported by Peltzer & Pengpid [17,22], possibly due to differences in demographics, economic conditions, and drug availability in various regions. The study's finding that 49.6% of smokers use cigarettes weekly and 37.4% smoke daily aligns with Bandason & Rusakaniko [58], who reported a high smoking prevalence among secondary school students in Zimbabwe, largely influenced by peer groups and societal norms. However, the current study's findings contrast with Hormenu, Schack, & Dietmar [53,12], who found lower smoking rates among junior high school students in Ghana, possibly due to stricter anti-smoking policies and school-based interventions in certain areas. The reported 37.5% weekly and 25.0% daily alcohol/energy drink consumption is similar to findings by Oppong Asante [18,20], who observed significant alcohol and amphetamine use among school-going adolescents in Ghana. Other studies, such as Hormenu, Hagan, & Schack [53], also found alcohol use among in-school adolescents in Ghana to be influenced by peer pressure, family history, and media exposure. However, the present study shows slightly higher alcohol consumption rates compared to Hormenu et al. [53], which may be due to differences in age groups studied or increased accessibility of alcohol and energy drinks over time.

The high tramadol use in the current study is consistent with Jatau et al. [37], who found increasing tramadol misuse in Nigeria, largely due to its availability in informal markets and its use for recreational or energy-boosting purposes. Similarly, Girma, Mulatu, & Ketema [38] noted that tramadol use among Ethiopian males was rising due to its perceived performance-enhancing effects. However, the prevalence in the present study is notably higher than figures reported by Shegute & Wasihun [40] among Ethiopian university students, which could be attributed to differences in regulatory enforcement and awareness levels across study locations. Differences in substance use prevalence could stem from variations in socioeconomic status and cultural acceptance of drug use. For instance, regions with high unemployment rates may see higher drug use as youth turn to substances for coping or social bonding [37]. Studies conducted among university students Adere et al. [39] and Deressa & Azazh, [59] reported different prevalence rates compared to studies involving high school students due to age-related exposure and independence in decision-making. Countries with stricter enforcement of drug laws, such as Ghana's Narcotics Control Board [24] policies, may report lower prevalence rates than regions where access to substances is less restricted. The role of law enforcement and availability of rehabilitation centers also influences substance use trends [29]. The increasing normalization of substances like cannabis in global media Chiu et al., [10] and Hasin, Shmulewitz, and Sarvet, [14] may have influenced the rising use among youth in certain areas, compared to earlier studies where drug use was more stigmatized.

The significant association between age and substance use suggests that older youth are more likely to engage in substance use. This finding is consistent with Adere et al. [39], who reported a higher prevalence of drug use among university students in Ethiopia. The increased autonomy and exposure to social influences among older youth may contribute to this trend. Additionally, as individuals transition into adulthood, they may face stressors such as academic pressures, job seeking, and social

expectations, which could lead to increased substance use as a coping mechanism [53].

The strong association between religion and ethnicity with substance use indicates that cultural and religious backgrounds play a crucial role in drug use behaviors. Similar findings by Idowu et al. [36] in Nigeria and Kpozehouen et al. (15) in Benin highlight that religious affiliation often serves as a protective factor against substance use, as many religious doctrines discourage drug consumption. Ethnic variations may be attributed to differences in traditional beliefs, social norms, and acceptance of certain substances within communities. Household size showed a significant association, indicating that youth from larger families may have a higher likelihood of substance use. This finding aligns with studies by Hormenu, Hagan, & Schack [53], which suggest that larger family sizes may lead to reduced parental supervision, creating opportunities for risky behaviors. Type of residence was also significant, with urban dwellers more likely to engage in substance use than those in rural areas. Urban settings provide greater access to drugs and are often associated with higher peer pressure and exposure to substance use cultures [37].

Household income was another crucial factor, with both low-income and high-income youth being at risk of substance use. While financial struggles in low-income households may push youth toward substance use as a coping strategy, high-income youth may have greater financial access to substances, leading to experimentation and habitual use [15,39]. Additionally, the number of children in the household was significantly associated with substance use, which may be linked to economic pressures and reduced parental attention in larger families.

The association between a father's lack of formal education and youth substance use is well-documented in previous studies. Research by Deressa & Azazh [59] and Shegute & Wasihun (2021) found that higher parental education often leads to better awareness of the risks associated with substance use, stronger parental supervision, and effective communication regarding drug prevention. Parents with formal education are more likely to educate their children about the dangers of substance abuse and establish strict household rules against drug use.

However, this study suggests that when fathers lack formal education, youth are more likely to experiment with substances. This could be due to limited parental guidance, economic hardships, or even parental substance use behaviors influencing children. Similar findings were reported by Adere et al. [39], who noted that students from households with less-educated parents had a higher likelihood of using psychoactive substances. This could be attributed to less awareness of the dangers of substance use, limited role modeling, or financial stress within the household, leading youth to seek alternative coping mechanisms.

Conclusion

The study on youth substance misuse in Yendi Municipality highlights a complex issue influenced by socio-demographic and economic factors. Key determinants include age, religion, ethnicity, marital status, parental education and occupation, family size, home type, and household income. Peer pressure emerges as a major driver, with youth obtaining substances from various sources, including pharmacies, drug peddlers, and online platforms. Substance use has severe health consequences, such as headaches, vomiting, and skin rashes. Most youth support ban-

ning substance misuse, indicating broad community awareness. Logistic regression analysis identifies the father's education level and household size as significant predictors, with children from larger and less-educated families at higher risk. Household income also impacts substance use, albeit through different mechanisms. The findings underscore the need for targeted interventions addressing socio-economic disparities, enhancing family education, and strengthening community support to mitigate youth substance misuse.

Recommendation

The Ministry of Education, in collaboration with local schools and NGOs, should integrate substance abuse education into school curricula to equip students with knowledge and resistance strategies.

Community health organizations and local media outlets should launch awareness campaigns targeting youth, parents, and community leaders to educate them on the dangers of substance misuse.

The Department of Social Welfare and NGOs should implement parental education programs to improve awareness of substance abuse risks and effective parenting strategies.

Religious and community leaders should encourage open family communication and stronger parental supervision to reduce youth exposure to peer pressure.

The Government of Ghana, through the Ministry of Employment and Labour Relations, should develop economic empowerment initiatives for low-income families to reduce financial stress that may contribute to substance misuse.

The Ghana Education Service (GES) and NGOs should provide scholarships and vocational training opportunities for youth from disadvantaged backgrounds to offer alternative pathways.

The Food and Drugs Authority (FDA) and law enforcement agencies should enforce stricter regulations on the sale and distribution of substances, especially from pharmacies, drug peddlers, and online platforms.

The Ghana Police Service and Narcotics Control Commission should strengthen law enforcement measures to monitor and curb illegal substance trade within the municipality.

The Ghana Health Service and NGOs should establish peer mentorship and counseling programs to help youth resist substance use pressures.

The Ministry of Education and Ghana Education Service (GES) should train school counselors and community leaders to provide guidance and psychological support to at-risk youth.

The Government and NGOs should implement sustainable intervention programs and facilitate community-driven initiatives that involve youth in substance abuse prevention and rehabilitation.

Author declarations

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