

**UNIVERSITY OF GHANA, LEGON COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH**



**FACTORS ASSOCIATED WITH SUBSTANCE USE AMONG SENIOR
HIGH SCHOOL STUDENTS ON BUSHROD ISLAND, MONTSERRADO COUNTY,
LIBERIA**

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**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON
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MASTER OF PHILOSOPHY DEGREE IN APPLIED EPIDEMIOLOGY AND DISEASE
CONTROL**

OCTOBER, 2020

DECLARATION

I, Hawa M Sherman, hereby declare that this Master's Thesis "Factors Associated with Substance Use Among Senior High School Students on Bushrod Island, Montserrado County, Liberia" is the result of my original research and that no part of it has been presented for another degree in this University or elsewhere.

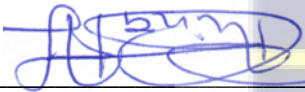


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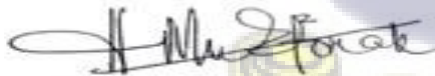


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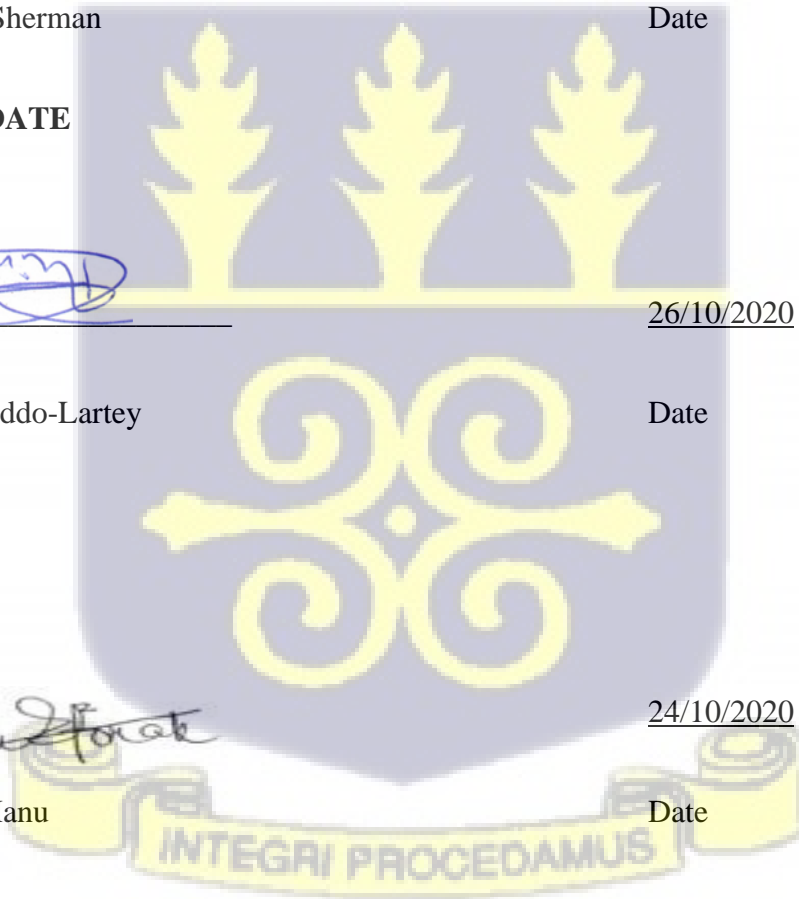


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DEDICATION

To the memories of all scholars. To My late father Mr. Oliver T. Sherman, my son Mosoka M. Fallah and that special person whose footsteps I followed to reach this far; to the selflessness of all illiterate parents who sacrifice each day to send their children to school.



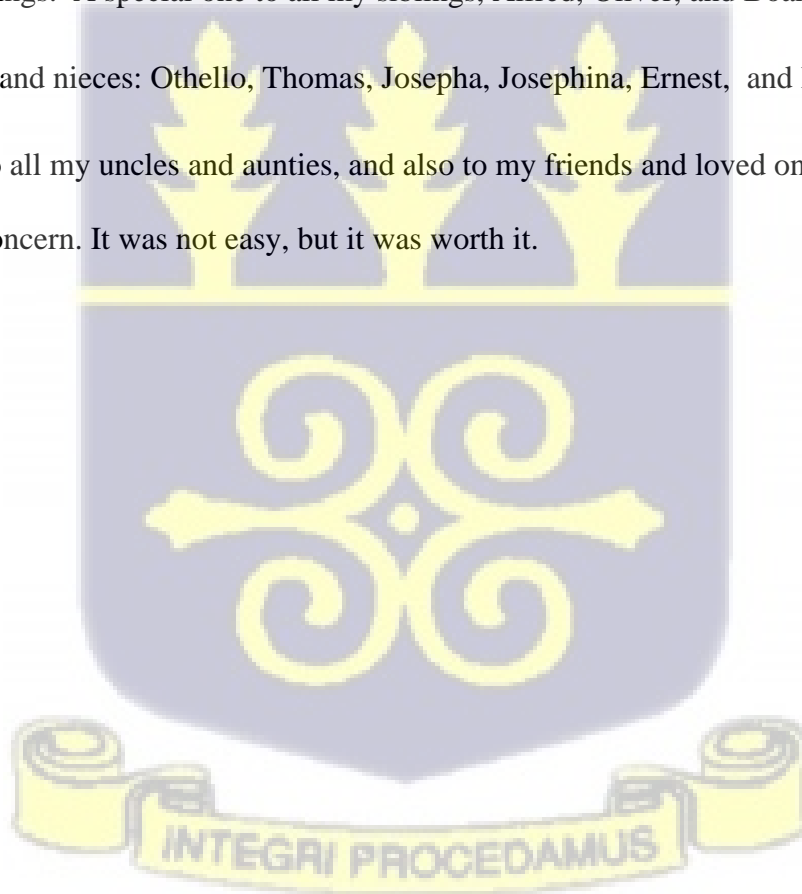
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To my mother Mary Walker-Sherman and Sister Miatta Sherman who had always been there taking care of things. A special one to all my siblings, Alfred, Oliver, and Boakai Sherman.

To my nephews and nieces: Othello, Thomas, Josepha, Josephina, Ernest, and little Maliyah.

A special one to all my uncles and aunties, and also to my friends and loved ones. Thanks for the love, care and concern. It was not easy, but it was worth it.



Abstract

Introduction

World Health Organization defines substance as “a material that alters a person’s mood, perception, or cognitive behavior when it is smoked, injected, swallowed, drunk, inhaled in powder, or vapor”. The use of such psychoactive substances can lead to dependence syndrome which is a thicket of a behavioral, and physiological effect that evolves after sequential use.

Methods

This study employs a cross-sectional design, using a quantitative approach to gather data on substance use among senior high school students in Bushrod Island, Montserrado county. We adapted the 2012 Global School-based Student Health Survey questionnaire and used it to collect the data through Kobo collect [®](odk) platform. Data was downloaded in Excel 2016, format and analyzed by using Stata version 15 statistical software. The result of the analysis was presented as frequency tables with percentages, and charts. To investigate factors associated with adolescent substance use, cross-tabulations with Pearson's chi-square tests, bivariate and multivariate analyses (logistic regression) were used.

Results

Of the 402 students surveyed, 291 (72.4%) had ever used a substance before, were males and, those between the ages of 19 to 21 years were 298 (74.1%). Alcohol was the most commonly used substance 255 (87.6%). The majority of students, 332 (83.4%) indicated that they currently used a substance. The age at first time use of a substance was reported as 18 to 20years in 147 (36.9%)

of the students. Risk factors associated with alcohol and drug use include alcohol availability and the only mother as guardian appear to justify the risk of student alcohol and drug use.

Conclusion

The most used substance was alcohol and the prevalence of substance use among SHS students was high in Liberia. Most of the substances used among SHS students were identified to be alcohol, Marijuana, cocaine, and tobacco (cigarettes), so the results of our data advise that an engagement should be made to cut down the availability of alcohol use.



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LIST OF ACRONYMS

CVD	Cardiovascular Disease
HIV	Human Immune- Deficiency Virus
LSD	Lysergic Acid Diethylamide
DEA	Drug Enforcement Agency
PCP	Phencyclidine
SHS	Senior High School
STD	Sexually Transmitted Disease
UN	United Nation
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization



Definition of Terms

Operational Definition of substance

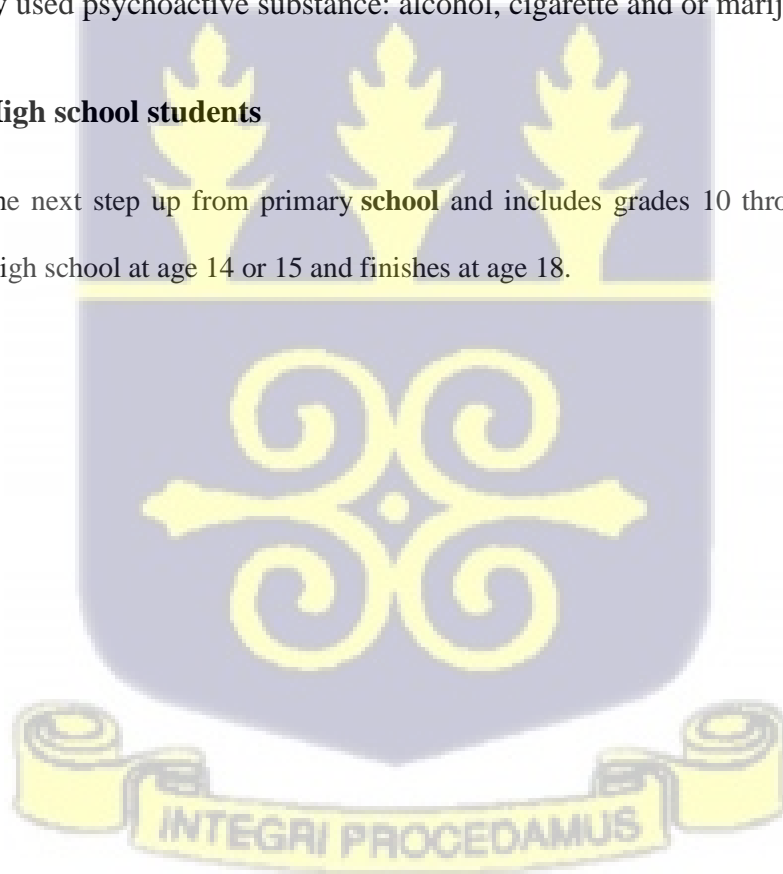
A substance is defined as a chemical that modifies a person's mood, perception, or cognitive behavior when it is smoked, injected, swallowed, drunk, inhaled in powder, or vapor. Generally, substance refers to the use of any drug that affects the mood, mind, and mental processes of a person (World Health Organization, 2014b).

Definition of substance use

Substance Use: when a person in our study population have ever or currently taken any of the three commonly used psychoactive substance: alcohol, cigarette and or marijuana.

Definition of High school students

High school is the next step up from primary school and includes grades 10 through 12. A person generally starts high school at age 14 or 15 and finishes at age 18.



CHAPTER ONE

1.0 INTRODUCTION

A substance is defined as “a chemical that modifies a person’s mood, perception, or cognitive behavior when it is injected, smoked, swallowed, drunk, inhaled in powder or vapor” (World Health Organization 2014) Generally, substance refers to the use of any drug that affects the mood, mind, and mental processes of a person (World Health Organization, 2014b). The use of a mind-expanding substances can lead to addiction syndrome which is a thicket of a behavioral and physiological effect that acquire after sequence utilization (World Health Organization, 2017).

The use of a substance such as illicit drugs, cigarettes, and alcohol has become a worldwide health issue because of an increase in their use especially in developing countries (Birhanu, Bisetegn, & Woldeyohannes, 2014).

A research was conducted among Senior high school students in Nigeria which reported that the Current substance user was 69.2% with multiple substance use being 57.4% and lifetime prevalence of substance use as 87.3% (Oshodi et al 2010). Substance use was found to be 69.8% rate of lifetime prevalence among college students in Kenya (Atwoli et al 2011). In Ethiopia, the commonly used substances were cigarettes, alcohol, and cannabis which often lead to addiction (Kebede 2005).

Senior High School Students' frequency of use of substances has become a serious public health problem that needs global attention. The major substances used worldwide by students are cannabis, marijuana, opioids, amphetamines, alcohol, and now tramadol. This behavior calls for a collaborative action since the world psychoactive substance use is approximately, 1.3 billion smokers, 185 million illicit drug users, and 2 billion alcohol abusers, (World Health Organization, 2018).

In 2011, a cross-sectional study was conducted in the Liberian capital, Monrovia to assess the ratio of substance use among secondary school students (Cheng, 2009).

The study findings showed that 51% of students reported using alcohol and 9% of students reported using marijuana (Harris et al., 2011). Substance use is also believed to contribute to interpersonal violence and sexual risk-taking in Liberia. It has been cited as one of the key factors contributing to physical and sexual violence and crime in Liberia today (Fuerth, 2011). With the higher percentage of symptoms amongst Liberia people, it is mostly like that substances will increase. According to Liberia: Social and Economic Impact of Illicit Drugs (LSEIID), (2016), “between 1990 and 2003, many children were conscripted and regularly drugged to fight wars for various factions. Fighting forces in the multidimensional Liberian civil war were dominantly children forcefully conscripted and drugged to engage into unconventional warfare.” It is most likely that children who had joined this event were children whose parents. The risk factor of substance abuse in Liberia seems to keep increasing, mainly amongst the youths and young faults population.

Research conducted in Kenya showed that high school students’ use of a substance such as tobacco, and alcohol is associated with peer pressure, poor academic performance, and a family chronicle of alcohol and drug use (Peltzer et al., 2011). The use of harmful substances leads to low academic achievement, other sexually transmitted infections (STIs), high risk of HIV infection, and or psychiatric disorders such as depressive symptoms, sleeplessness, hopelessness, and lethargy, (Birhanu et al., 2014).

1.1 Problem Statement

Substance use is a threat to well-being, health, and security, as well as safety and sustainable development (OSEWA 2017). Currently, substance use is a global problem and adolescents are the primary victims of these circumstances (UNODC 2013).

Liberia has a population of 4,689,021 with children from 15 to 24 years representing about 917,092, male (457,806), and female (459,286) accounting for 19.56%.

Substance use among young people, especially SHS students, is on the increase; this was reported by Gerald C. Koinyeneh, ([gerald.koinyeneh\(@frontpageafricaonline.com\)](mailto:gerald.koinyeneh@frontpageafricaonline.com)) in Liberia. Several local experts have suggested that substance abuse is one of the key issues affecting the health and well-being of Liberian youth (Ezard et al., 2011).

In Aug 2019, a retrospective study on Common Mental Health Disorders 2015 - 2018 was conducted with 600 patients admitted at E. S. Grant Mental Health Hospital, the only mental health referral hospital currently in Liberia.

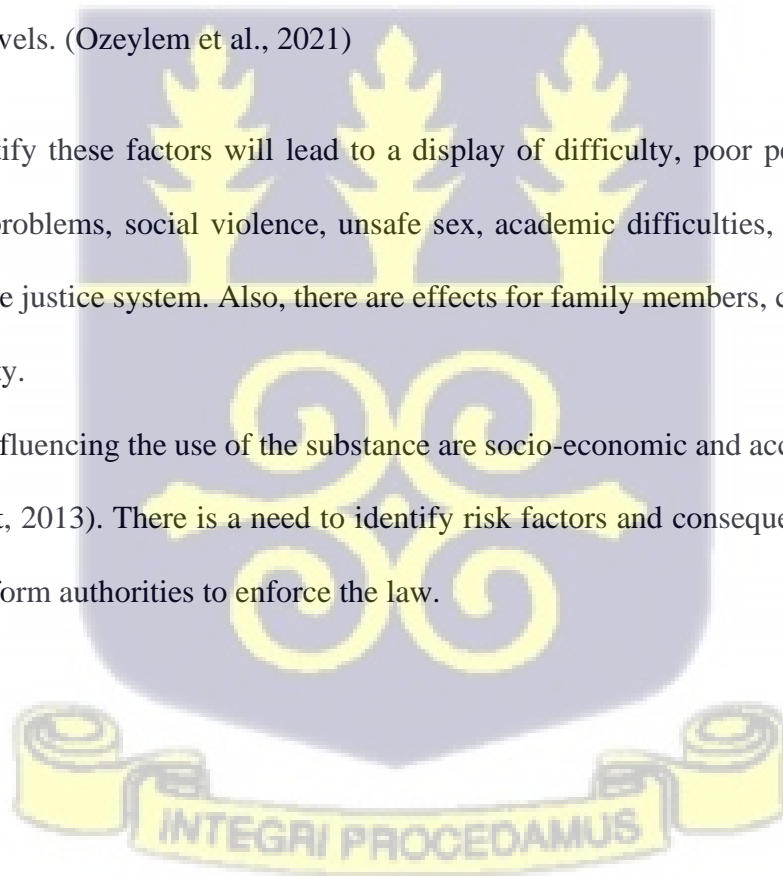
The study finding shows that of the 600 records reviewed, 56.8% were males. The mean age was 32 (± 7) years; the commonest age group was 20-24 years (19.7%) and never married (72.1%). Students were 17%. Commonest mental disorders were SUD (35%), mood disorders (29.3%), psychosis (23.5%) and schizophrenia (4.3%). SUD is more common among those aged less than 30 years (51.7%).), especially students. However, among those aged 30 years and above, mood disorders (74.4%) and psychosis (47.5%) are common. Compared to those that never married, mood disorders are common among the married people (51.5%) to (22.6%) in those that never married. (Dwalu et al, 2019) an unpublished research work.

In 2011, a cross-sectional study was conducted in greater and central Monrovia to explore the ratio of substance use among senior school students (Cheng, 2009).

The research findings showed that 51% of students reported using alcohol and 9% of students reported using marijuana, respectively (Harris et al., 2011). Substance use is also believed to contribute to interpersonal violence and sexual risk-taking in Liberia. Substance use is not well understood in Liberia. The lack of current and culturally-specific information about substance use makes it difficult to conduct meaningful research on this issue and develop policies and interventions to serve affected populations (Prust et al., 2018). Risk factors that contribute to premature deaths globally include but not limited to tobacco, alcohol and use of other psychoactive substances (e.g., marijuana, amphetamines). It is important to identify factors that put adolescents at risk to developing problematic substance use. Studies that have examined risk factors of substance use in adolescents have focused on factors at the individual and interpersonal levels. (Ozeylem et al., 2021)

Failure to identify these factors will lead to a display of difficulty, poor peer relationships, health-related problems, social violence, unsafe sex, academic difficulties, and involvement with the juvenile justice system. Also, there are effects for family members, communities, and the entire society.

Some factors influencing the use of the substance are socio-economic and accentuated by peer pressure (Lippit, 2013). There is a need to identify risk factors and consequences of usage of substance to inform authorities to enforce the law.



1.2 Conceptual Framework

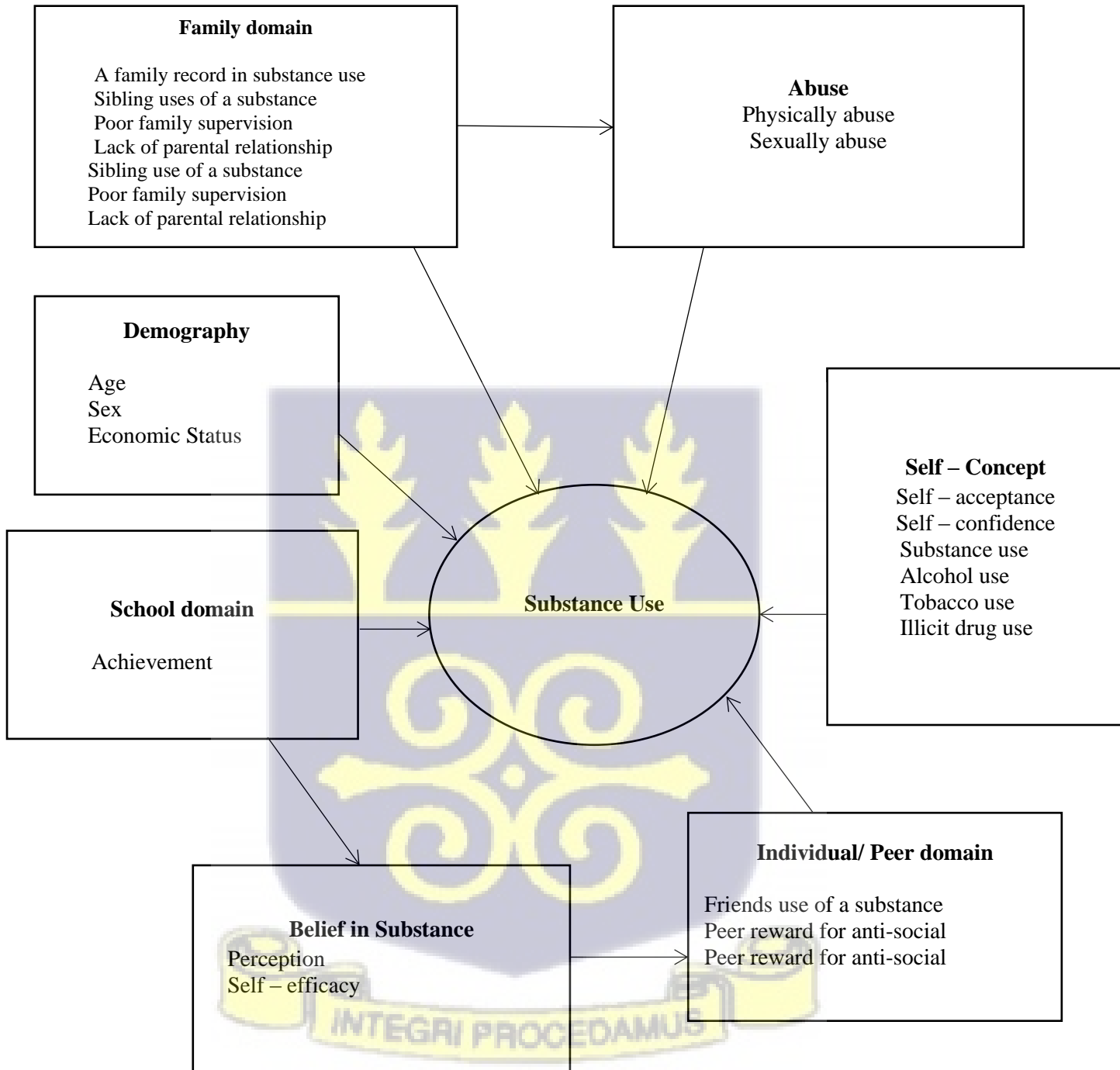


Figure 1: Conceptual framework

1.2.1 Description of the Conceptual Framework

The model was constructed to explain the incessantly increasing substance use disorder among school-going children. Based on the build model, the belief of substance use had important and straight effects in influencing high school students' use of the substance. However, other factors indirectly affected substance use. Those like self-concept, family environment, satisfaction with school life, social support, and personality vulnerability (Bae & Rosel,2009). There are so many factors that influence the use of substance among SHS students, most of which are outlined in figure 1 which is the framework. Substance use is the outcome of why the others such as family domain, school domain, and individual/peer domain are the independent variables. Family-level domain factors which include the history of the use of a substance within the family, school-going children use of the substance is directly associated with the following; sibling use of a substance, poor parental supervision, and poor parental relationship. The home is where every child gets his/her first idea from which is the way to approach things, so whatever they see while growing up, be it good or bad, will become part of them.

Also, since most of the school-going children are adolescents which means the area in the developmental stage, they could easily be attracted to things around them, be it right or wrong so those behaviors also influence them to want to experiment happenings around them. All the same, the use of substance among parents and siblings can also influence adolescents to become substance users. Parents and older siblings are most times seen as models, so children will always want to do things to be like their parents. Note that some parents and older siblings will have no worries to send their younger ones to get/buy substance for them. They will show the young ones the location where it is being sold and wouldn't mind taking it in the presence of the children, not considering the effect of their actions. At the same time, they will give the

younger ones substance like alcohol to take in a small amounts. Parenting is a very important factor in a child's upbringing.

The relationship between the child and the parents to a very large extent will determine the behavior pattern of the child; i.e whether he will be wayward or respectful. When parents let “loose” of their child such as freedom of movement irrespective of the time of day, the child picks up certain behavior including substance use which if not checked leads to substance misuse.

Most SHS students who belong to families of substance users are physically and sexually abused by their parents and older siblings. These students are victimized by their family members and warned never to disclose it to anyone. These students go through depression and become impulsive and anti-social and so to overcome such challenges they turn to substance use as an option of relief.

Moreover, most Senior High School students use all manner of methods to study. For those who are not pulling their way through academically, they are being advised to indulge in substance use. One of the most popular substances widely used on campuses is ‘wee’ (marijuana). It is thought to help students stay awake to learn for long hours and even give better understanding when studying difficult subjects. So, academic achievement contributes to some extent to substance use among SHS Students. They do all these because they want to raise their self-esteem. SHS students who are always bullied and timid in school turn to indulge in this act just to have self-confidence and be accepted by the so-called “hardcore” students in the school. For others, substance use is due to peer-influence. Students whose friends use the substance, invariably tend to try it to be accepted by the group and to avoid mockery from friends. Peers who give recognition to anti-social behaviors tend to influence their friends to take in substance to make them look wild and confident.

1.3 Justification

The outcome from the study on the prevalence of the use of substance among senior high schools students on the Bushrod Island will inform policymakers in Liberian education system to adopt policies that will be pertinent to the students in terms of their mental and psychological health.

The information collected from the study will help students who go through challenges like psychological problem be able to receive help from trained personnel so as to not get involved in substance use. Policymakers will work to strengthen and restructure the educational system by providing Student Psychologist in senior high schools or the country at large, and will also adopt policies when necessary and to improve the parent and teacher relationship. The result from the study factors associated with substance use will serve as a baseline for other researchers who will embark on future research in substance use.

1.4. Research Questions

To address the study objectives, the following questions were asked:

1. To what extent do senior high school students on the Bushrod Island use substances?
2. What type of substances do senior high school students on Bushrod Island commonly use?
3. What are those factors that are associated with the use of substance among senior school students on the Bushrod Island?

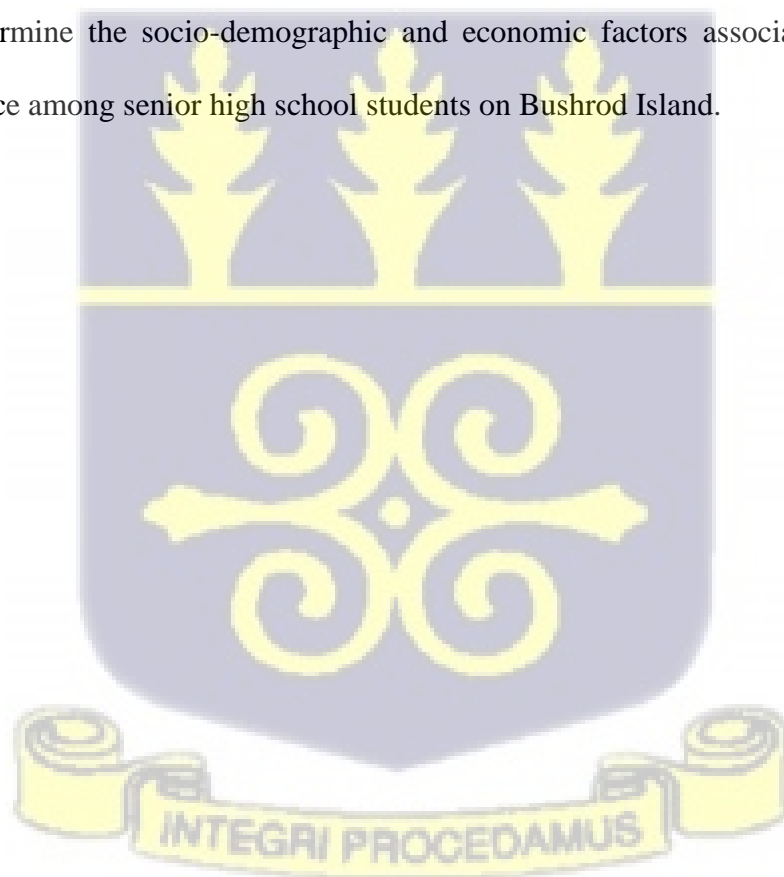
1.4.1 Study Objectives

1.4.2 General Objective

To assess substance use and associated factors among SHS students on the Bushrod Island.

1.4.3 Specific Objectives

1. To assess the prevalence of the use of substance among SHS students on Bushrod Island.
2. To assess the types of substances commonly used among SHS students on Bushrod Island.
3. To determine the socio-demographic and economic factors associated with use of substance among senior high school students on Bushrod Island.



CHAPTER TWO

2.0 Literature Review

This chapter looks at the relevant literature on the use of mind-expanding substances, considering the specific types often used and current use, and those factors related to their use.

2.1 Types of Substance Use

Worldwide, some of the most commonly used psychoactive substance, according to the WHO, include alcohol, tobacco, marijuana, and prescription medications. From the Monitoring future, over-the-counter medications and prescription reports for the absolute majority of the drugs are most commonly misused by senior high school students.

Tramadol has taken the lead in many countries, including Egypt, Ghana, Nigeria, and Liberia. In Liberia, it has become the new normal among senior high school children and this is usually done on Friday which is referred to as Super Friday.

2.2 Illicit Drugs

According to the WHO, whether a drug is licit and illicit depends on its production, possession, or trafficking. It, therefore, proceeds to define an illicit drug as harmful substances that are produced, trade, and/or consumed illegally. (World Health Organization, 2019). These harmful substances are mention as either “narcotic or psychotropic substances” this depends on the schedule under which the international convention has been placed (Čepas & Risimović, 2019)

Drug use and disorders, with related health conditions, are a leading worldwide public health threat especially to children, young people, and their families (World Health Organisation, 2019). Combined figures on the use of illicit drugs are staggering. WHO reports that in the year 2010 alone, 148 countries, reported the use of inject-able drugs. Of these, 1 in 20 adults, or 230 million people, are estimated to have used an illicit drug at least once, and 120 persons among those who use inject-able illicit drugs were reported to have HIV. An estimated minimum of 15.3 million persons has drug use disorders. And the cost in the management of the use of the illicit drug is no less disturbing in that close to 2 beds per 100 000 population are accessible for the treatment of alcohol and substance use disorders (WHO, 2018). According to the 2015 report by the UNODC, West Africa ranks high in production, use, and a transshipment region of illicit drugs. Africa remains a transshipment region for cocaine traffic to Europe and Ghana reported impounding 901 kg of it. Among the most widely used illicit drugs on the global scale are cannabis, opioids, amphetamine-type stimulants (ATS), and cocaine. In Liberia, these and recently tramadol, are prevalent (World Health Organisation, 2015).

2.3 Prevalence of Alcohol Use

Alcohol use is, another psychoactive substance with dependence-producing properties (World Health Organization, 2014b) is only about half as harmful as tobacco. A report from Global Information Systems on Alcohol and Health (GISAH) explains that alcohol consumption kills 3.3 million annually. Moreover, alcohol accounts for 5.1% of the global burden of diseases and plays a causal role in 60 diseases or more than 200 health conditions in the world (World Health Organization, 2014b). The WHO estimates that out of the world population 38.3% of them consumes alcohol and whereas persons aged at least 15 years consume 6.2 liters of pure alcohol annually, and those who consume alcohol consume an average of 17 liters pure alcohol per year. According to global estimates in 2010, the average

consumption of pure alcohol per person age 15 years or older was 13.5 grams or 6.2 liters of pure alcohol (World Health Organization, 2014b). According to WHO, half of the recorded alcohol consumed is in the form of spirits. Of the total daily alcohol consumption, about a quarter 24.8% is unrecorded or produced and sold outside normal government controls.

Whereas 61.7% had not consumed in the past 12 months, drinkers who engaged in heavy episodic drinking account for 16%. The highest alcohol consumption per capita can be found in the WHO EU Regions and the Americas (World Health Organization, 2014b). An increase in alcohol consumption among high school students has contributed to approximately 4% of the global burden of disease. Alcohol consumption comes with its consequence, mostly associated with poorer outcomes from an infectious disease for heavy drinkers (Jürgen Rehm, 2010).

Alcohol can be classified into different types and according to the (WHO) report, people aged 15 and above in Ethiopia consume 33% of beer, 22% of spirits, others 43%, and 2% wine (World Health Organization, 2011).

2.4 Prevalence of Tobacco Use

According to the World Health Organization, tobacco use has attained an epidemic dimension, affliction is among the biggest public health threats that the world is faced with.

Related tobacco diseases kill more than 7 million people annually compared with malaria, HIV/AIDS, and tuberculosis combined (WHO, 2017).

The World Health Organization reports that from a nationally representative sample of students aged 13-15 years, the Global School-Based Student Health Survey 2012 revealed that the prevalence of cigarette smoking (whether daily or not) at the time of the survey among students was 8.3% (with males reporting for 9.2% and females 7.1% respectively). The 2013 LDHS national survey shows that in Liberia prevalence of cigarette smoking among secondary

high school students 7% of males and 0.3% of females (aged 15-49 years) use tobacco on a daily and non-daily basis any form of tobacco (including cigarettes, cigars, a pipe, snuff, shisha, water-pipe, etc). The specific use of cigarettes was common in male and not in female: 5.8% of males and 0.1% of females were current users of tobacco and any form of cigarettes including manufactured and roll-your-own at the time of the survey. The rates for smokeless use of tobacco (including chewing, sniffing, or placing the product in the cheek) for the same age group are available in the 2013 LDHS; and are for both males and females were respectively 0.5% and 0.1% the survey was conducted.

The age-standardized prevalence estimates (with lower credible and upper credible intervals) for daily tobacco smoking among persons in the country for persons at least 15 years of age is 18.3 (13.8 and 10.9)%; 13.8 (9.0 and 1.1)% for males, and 1.6 (1.2 and 0.4)% for females (Report from WHO on the global tobacco epidemic, 2017).

The Liberia Demographic and Health Survey, 9.6% (396 out of 4,118) of men aged 15 to 49 years reported smoking cigarettes or pipe or tobacco. Of the 4118, 2,383 were of high school going age (15-19 years) and 5.8% of those in this category smoked tobacco (Liberia Demographic Health and Survey, 2013a). Alternatively, of being on track to achieving a 30% comparative reduction in tobacco use among persons 15 years of age and older by 2025, the survey data showed that only a 14% reduction in prevalence rates would result from efforts made to date. The progress from the report shows that their global level countries are on track to achieve a 22% reduction by 2025. All the same, the voluntary global target is still short of a 30% reduction between 2010–2025 (WHO global Report in trends prevalence tobacco smoking). A study conducted in Kenya by Peltzer et al revealed that 69.8% of college students are victims of cigarette smoking (Peltzer et al., 2011). At the moment, the increase of tobacco use is growing at a fast rate among students in high schools in most countries but in Liberia, its

uses have not decreased even due to its ban on television and radio advertisement (Liberia Step Survey Report 2011.docx).

2.5 Cannabis use

Following the WHO usage of the term, cannabis refers to marijuana or hemp. The use of cannabis appears to have remained high at least from 2012 to 2013. The estimated prevalence of the use of this substance in 2012 was about 162 million to 324 million people worldwide (World Health Organisation, 2015). That is about 3.5% and 7% of the world's population.

According to the UNODC report, aged 15 – 64 years in the world used cannabis non-medically, accounting for approximately 181.8 million people in 2013, making this substance the most globally commonly used psychoactive substance under international control (United Nation Office on Drugs and Crime, 2015). A research found that an estimated 22.2 million Americans aged 12 and above were current users of marijuana (Mangerud et. al, 2014) This figure might be increasing considering the increasing demand for treatment for disorders related to the substance and associated health conditions in high- and middle-income countries (World Health Organization, 2016b). Moreover, Banys revealed that cannabis is an attractive option for users it has a relatively low cost, it can be accessed easily, reduced risk of overdose, and sensed a low risk of harm (Banys, 2013). Evidence shows that students who use marijuana have impaired short-term memory and judgment, and distorted perception resulting in poor academic performance. Also since the brain systems of young people are still maturing, regular use may have a long-lasting and negative effect on their cognitive development (Volkow, 2017).

Marijuana use comes with its consequences such as increases risk of a chronic cough, bronchitis, addiction, increases the risk of schizophrenia in vulnerable individuals, and depression, may increase the risk of anxiety, and a motivational syndrome (Volkow, 2011).

2.6 Cocaine use

The United Nations Office on Drugs and Crime 2015, Reported the prevalence of cocaine use in Southern, West, and Central Africa was high, i.e., 0.7% in 2013. Africa remains a transshipment region for cocaine traffic to Europe and Ghana reported an impounding 901 kg of it (United Nations Office on Drugs and Crime, 2015).

2.7 Prevalence of Opioid Use Disorder

Opioids are a category of drugs that include the following illicit drug heroin as well as the licit pain relievers prescription morphine, codeine, hydrocodone, oxycodone, fentanyl, and others (Authority, 2005). Global trends in the estimated number of drug users from 2009 to 2014 indicate that the use of opioids, opium, heroin, including the use of nonmedical pharmaceutical opioids, has stabilized at high levels (United Nations Office on Drugs and Crime, 2015). In 2015 it was estimated that 20.5 million American children age 12 or above suffer from substance use disorder, and 2 million involves in pain relievers prescription while 591,000 involve heroin (SAMHSA, 2016). Risky sexual behavior and Unsterile injecting practices among users of opioid is a major contributor to the spread of HIV, hepatitis, and other infections (Fischer B et al, 2017). This study focused on tramadol which belongs to the opioid family it is an analgesic with a multimode of action, it is used for treating both acute and chronic pain of moderate to severe intensity. Clinically tramadol is considered to be a safe analgesic but one can show the physical dependency of the opioid type when used for a sustained period (World Health Organisation, 2017). Recently tramadol has become a public health problem due to its

abuse especially, among adolescents. According to a study conducted among college schools in Iran, 12.5% of the students abuse tramadol (Bashirian, Barati, & Fathi, 2017). This calls for public health intervention since it can result in fatal intoxication. Abuse of tramadol can cause central nervous system depression, coma, and seizure (World Health Organisation, 2017).

2.8 Hallucinogens Use Disorder

Hallucinogens are a group of drugs that can cause hallucinations thus profound distortions in a person's perceptions of reality. Hallucinogens are man-made can be found in mushrooms and some plants (or their extracts). They are usually divided into two broad categories: classic hallucinogens (such as LSD) and dis-associative drugs (such as PCP). Consequences of the use of hallucinogens are swings intense emotional and hearing sounds, seeing images, and feeling sensations that seem real but are not (Authority, 2015).

2.9 Factors Associated with Substance Use

2.9.1 Demographic Factors

Some demographic background characteristics have been found risky for substance use. These include age, sex, race, and economic status (Peltzer et al., 2011). The role of sex in the consumption of alcohol is manifested in the recorded and unrecorded per capita average consumption between 2008 and 2010 in that the total average consumption was 7.8 liters and 1.9 liters for males and females. In the year 2010 alone the total capital per alcohol consumption among drinkers aged 15 or older was 23.6 liters and 13.9 liters of pure alcohol among males and females respectively (World Health Organization, 2014a).

2.9.2 Socio-economic factors: Adolescent Employment

One other factor whose effect on substance use among adolescents has been debated over a long time is their employment. Whereas some initially thought that employment was positive for adolescent development (Hamilton & Crouter, 1980), some have thought that employment

by adolescents is a poor academic achievement (Steitz & Owen, 1992). The Organization between substance misuse behaviors and employment among 4800 public high school black and white school-going children, (Valois and colleagues,1999) established that young people who work more than 15hours a week at a job for earnings during high school have a higher risk for misuse of substance and the resultant effects (Jackson, Waller, & Ph, 1999).

2.9.3 Psychosocial Factors

2.9.3.1. Relationship with Adults

One of the factors associated with substance use among second high school students cycle is their relationship with adults. Relationship with adults is defined in terms of children's self-disclosure, parental support, bonding with parents, parent-initiated monitoring of adolescent behavior, and relationships with school personnel. This relationship is either protective or risky for the use of psychoactive substances. An Adult relationship, defined in terms of children's bonding with parents, can have a double edged-sword effect on adolescent substance use. Whether it is protective against or risky for substance use among adolescents depends on whether the parents are themselves users of psychoactive substances. In a longitudinal study to examine the relationship between parent illicit drug use and bonding to parents as predictors of substance use in children in 150 heads of families by drug abusers in method one treatment for addiction of opiate, Fleming and colleagues observed that bonding to parents was moderately negatively correlated with drug use in children whose parents had stopped using psychoactive substances.

Linda Ryan and colleagues examined the protective effects of four adult relationships (parental support, self-disclosure to parents, adolescent behavior, parent-initiated monitoring, and relationships with school personnel), on three critical problems of adolescents: The use of substance among other problematic outcomes using an ethnically diverse adolescent in an

economically disadvantaged urban area in the southwestern United States. Investigators reported protective roles of four adult relationships against substance use (Ryan, Miller-loessi, &Nieri, 2007)

In a study of 1800 school-going Black, colored, and White adolescents the family predictors (parental monitoring/knowledge and limit setting, parental behavioral control, marital relations and stress of family) of adolescent substance use, Amoateng et al found that the rate of substance use was higher among adolescents were foretold by parental behavioral parental monitoring/knowledge, control, limit setting, marital relations, and family stress (Amoateng, Barber,& Erickson, 2009).

Relationship with adults is defined in terms of relations with significant adults at school and the family. Within the family, it has been reported that adolescents receiving parental support and encouragement have been noted to protect adolescents against the use of psychoactive substances (Crosnoe, Erickson, & DornBusch, 2002). However, investigators debate on the effectiveness of parental monitoring and restriction (Crosnoe et al., 2002).

Communication with parents in terms of both parental initiated communication and adolescent self-disclosure of parents are protective factors against substance use. One reason is that having discussions helps adolescents identify what issues that could be detrimental. Aside from feeling obliged to please a listening parent through communication, self-disclosure helps parents to know what is happening in the lives of their adolescents (Kerr & Stattin, 2015). In a study of 9th to 12th graders to find out the prevalence and correlates of substance misuse in the past year in Northern New Jersey, Chen et al found that substance abuse was higher among males than female students. However, after controlling for covariates, the prevalence of substance abuse was higher among females than males (Chen et al, 2004).

2.9.4 Psychological factors

Studies from neuroscience have associated risky behaviors occurring in adolescents with changes in brain networks involved in motivation and reward processing. This involves a network in the brain that is mainly responsible for reward processing. Evidence shows that the striatum dopamine circuit, a key node in this network, changes drastically in adolescence than in childhood or adulthood. Brain patterns show that adolescents have a greater desire for rewards and experience more pleasure when receiving rewards than do children and adults. The role of this network as expressed insensitivity to rewards and punishment is not very clear with regards to drug use including other risky behaviors characteristic of adolescents. Whereas some studies indicate that school-going children who exhibit reward higher sensitivity and punishment lower sensitivity are more prone to substance use, others think that the characteristic of high reward sensitivity confers benefits.

In a study to examine the association between sensitivity reward and misuse of substance in middle school children and 216 senior high school students, Jeremy Genovese and Deborah Wallace established a positive relationship between a high reward and low punishment sensitivities and substance abuse (Genovese & Wallace, 2010).

Anxiety has been found to increase the risk for substance use, and the use of substances has also been found to increase the risk for anxiety (Kushner G, Abram B, & Carrier, 2000). These feelings may lead to problems related to the high use of the substance, the use of substances is found to reinforcing by people (it minimize uncomfortable feelings) and hence maximize the occurrence and quantity of their use (Marmorstein, White, Loeber, & Stouthamer-loeber, 2010). Marmorstein et al (2010) examined generalized and social anxiousness as a predictor of age at first substances use and progression to the use of substance problems among boys. The study found that generalized anxiety, a "persistent and excessive worry about several different

things"1, and social anxiety (shyness and withdrawal) strongly predicted the age of first use of alcohol and tobacco than for marijuana use. It was also found that both generalized and social anxiety predicted risk for the development of marijuana problems but not alcohol or tobacco problems.

Factors that explain the prevalence of consumption of alcohol on a population level include socio-demographic factors, level of economic development, prevalence rates of self-discipline, preferred beverage types, and culture.

2.10 Illicit Drug Use

Report from WHO on the health and social effects of nonmedical use of cannabis categorized associated risk factors with illicit drug use or source of those factors as the community/society; the school and peers; the family; the individual and the media. Risk factors under the community or society include laws and norms that favor drug use, availability of drugs, and access to drugs, extreme poverty, and anti-social behavior in childhood. Risk factors which are more common among adolescence fall under the school/education and peers and include poor academic achievement, low commitment to school, and peer group attitudes towards substance. The media poses a risk for illicit drug usage by advertising norms that are favorable towards drug use (World Health Organization, 2014a). In the case of the use of an illicit drug, the WHO suspects the harm and protective factors associated with nonmedical cannabis use as well as other drugs are similar for high-income and developing countries, though further studies are needed for confirmation. In developing countries, the risk of increase factors onset of the use of cannabis includes easy access to substance, alcohol, and tobacco use at an early age, and social norms that are tolerant of drug use and alcohol. The use of illicit drugs is common among specific subgroups and party settings (World Health Organization, 2014a).

2.11 Summary

It was also found that some socio-demographic factors, familial factors such as relationship to adults in the family, and psychological factors, are associated with the use of psychoactive substances. However, it has been found that some of these factors, singularly or a combination with others, determine the use of substances more than they do for others in specific contexts.



CHAPTER THREE

3.0 METHOD

3.1 Introduction

In this chapter, we describe those methods that were used in the research. It includes design, study location, variables, study population, sampling methods, sampling size, data collection technique, data collection methods and tools, data processing, and ethical consideration.

3.2 Study Design

The research utilizes a cross-sectional descriptive design using a quantitative approach to gather data on substance use from senior high school students in Bushrod Island Montserrado county.

3.3 Study Area

The study area is Bushrod Island which encompasses three districts and is part of Montserrado county. There are forty-five schools on the Bushrod Island out of which are nine senior high schools in the three districts.

The study consist of students of the three which were randomly selected for the study.

3.4 Study Variables

The dependent variable was substance use.

The independent variables were socio-demographic characteristics, family domain (parents' use of the substance, sibling use of the substance and parental monitoring), school domain (awareness of substance use by students), community domain (physical and sexual abuse,) and individual domain (friends' use of substance). All of the independent variables will be measured directly from the questionnaire.

3.5 Study Population

The population of the study is students of senior high school on Bushrod Island who were selected during the period of data collection. The study targeted a total population of 3993 students from three different schools on the Bushrod Island. The targeted students were at 10th-12th grades and were so selected to give a broad picture of factors that are associated with the use of substance among senior high school students. All students who attended the school were both males and females ages above 16 years.

3.6 Sample Size Determination

In a research conducted by Harris et al (2012), the prevalence of the use of substance among senior school students in Liberia, alcohol was the most commonly used substance in the study sample, and participants 18 years and younger accounted for 44.5% of those who had consumed alcohol at least once. This was followed by marijuana as the second prevalent substance used; with 9% who reported using it at least once.

There has not been any study online that is in connection with the use of substance among students in the senior-high schools on Bushrod Island. Therefore, using the proportion of students who used substance from Harris's study, then the minimum sample size required for this study was calculated using the formula by Cochran (1977) as follows:

$$n = z^2 * p * q / d^2$$

Where:

n= desired sample size

z= standard deviation at 95% confidence interval (standard value = 1.96)

p= estimated proportion who use substance

q= proportion who do not use substance = 1-p

d= margin of error

Moreover, a 5% precision was assumed. Thus, substituting these parameters in the formula,

the sample size was computed as follows:

$$n = \frac{1.962 * 0.49 * 0.51}{0.05} = 384$$

$$0.05 = 384$$

An upward adjustment of the sample size was carryout and 5% non-response rate was calculated resulting in a final sample size of 402.

3.7 Sampling Methods

Three schools were selected randomly from a total of nine senior high schools on the Bushrod Island by balloting process. An appropriate sampling technique was put in place to determine the sample size for the selected schools. From the estimated minimum sample size, the proportion of students for each school was determined as shown in Table 3.1

Table 3.1 Enrolment of Schools for the Survey

Name of school	Total enrollment	Computed sample size
School 1	1625	164
School 2	942	95
School 3	1426	143
Total	3993	402

A systematic random sampling procedure was employed to select respondents from each school to select the samples, we calculated the total number of students required from each school (based on their total population using sample proportional to size). We also calculated the sampling interval wherein the total number of students from each school was divided by the required sample from of each school. So then the sampling interval was calculated where we used the number between one (1) and nine (9) as our starting point and a skip interval of eight (8) was used.

The study sample recruited students from 10th to 12th grades in each selected school. We also asked for the class register and select the required number of students for the study and the required number

of students was selected by systematic random sampling.

3.8. Sampling Procedure

A 3-stage random and systematic sampling procedure with probability proportional to size 1 was used to select respondents as follows: the first stage involved a random selection of three schools. A balloting approach was carryout to select three (3) out of nine (9) schools. The number of students in each school was the measure of size. The second stage was made of a selection of classes in each school. Each class has the same characteristics; hence, a random sampling was used to select the various classes from 10th grades to 12th grades. The third stage involved a systematic selection of participants from the classes using the class register. Firstly, the total number of participants from each school was calculated. For ethical reasons the name of the schools is not disclosed, therefore each school was represented with a number as shown in Table 3.1. In the selection of participants from each class, systematic sampling was used. Thus, if the total number of students in 10th grade is 400 and the total sample size for each class was 57

then,

$$\frac{400}{57} = 7$$

In order to have the desired sample size as a benchmark, a random sampling was used again to select the 1st to the 9th students and if the 2nd person was selected as the first respondent, then the second respondent will be the 9th respondent. We involved proportional stratified random sample to select all participants by sex, age group, number of people in stratum and strata sample size.

3.9 Inclusion Criteria

All students in the selected senior high schools on Bushrod Island who will enroll during the period of the research will be eligible.

3.9.1 Exclusion Criteria

All senior high school students enrolled in the selected schools during our research period but who were absent during the time of the interview.

3.10 Quality Control

The following activities were undertaken to ensure the quality of data collected; Two research assistants were recruited and provided one-day training on the purpose of the study, study objectives, method of sampling, data collection technique, and ethical consideration. The training session for research assistants covered in detail the protocols, techniques, and courtesies to be observed during interviews and the process for obtaining informed consent form study participants. Research assistants were taken through all the questions that were administered and were allowed to clarify issues pertaining to the questions that were not clear to them. Questions were numbered, coded, sorted out, and kept in files that were labeled with the names of the three schools within the study. The questionnaire was reviewed by the academic supervisor and data collected was cross-checked daily for accuracy and completeness before sending data to ensure validity and reliability.

3.11 Data Collection Technique and Tool

A structured questionnaire was adapted from the 2012 Global School-based Student Health Survey (GSHS). The questionnaire was modified to reflect the study objectives and was used to obtain quantitative data from the students in the three selected schools on Bushrod Island.

The questionnaire was made up of a close-ended question with a response set to each question. The questionnaire was in three sections comprising of socio-demographical characteristics, types of a substance commonly use (knowledge on substances use, types of substance use,

reasons for the use of the substance and the effects of the use), factors associated with the use of substance and prevalence of substance use. The questionnaire was developed and built in the Kobo collect platform. The questionnaire was administered from the kobo collect platform using a gadget. The questionnaire was self-administered. The research helper assisted students who found it difficult to answer the questions.

3.12 Data Processing and Analysis

A structured questionnaire was used to collect the data through Kobo collect ®(odk) platform, data were downloaded and analyzed by using Stata version 15. During the preparation of the questionnaire, a code was given to each answer of a question to facilitate data entry into Stata version 15.

Data cleaning was done, the frequencies of responses were generated categorically variables such as social-demographic characteristics are described in frequencies, and percentages in a table. The results of the analysis were presented in a frequency table and charts.

To investigate the factors associated with adolescent substance use, Pearson's chi-square, tabulations, bivariate and multivariate analyses of logistic regression were used. The significance level of 5 was used as cutoff hence, all p-values less than 0.05 were considered significant.

3.13 Ethical Consideration

Ethical clearance was obtained from the University of Liberia PIRE Ethics Board. {Protocol # 20-02-201}, An introductory letter was taken from the Department of Epidemiology of the School of Public Health and permission was sought from Liberia Education Ministry as well as principals of the selected schools. Permission was also obtained from the County Education Officer and a copy of the permission was sent to the principals of SHS selected for the study.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of participants

The 402 participants surveyed, 201 (50.0%) were males. Participants were between 13 to 24 years with mean age of 19.9 ± 1.7 years. Those between the ages of 19 to 21 years were 298 (74.1%). One-hundred and sixty-four (40.8%) were in SHS 1. Class 11 had 140 (34.8%) participants and they constituted the majority. On religious denomination, 302 (75.1%) of participants were Christians. Students who had both parents as their guardian were 192 (47.8%) and that constituted the majority. Students with 1 to 3 other siblings were 337 (83.8%) while only 17 (4.2%) had 6 or more other siblings (Table 4.1)

Table 4.1: Socio-demographic characteristics of participants

Variables	Frequency	Proportion (%)
N=402		
Age group		
<= 15years	15	3.7
16 - 18years	29	7.2
19 - 21years	298	74.2
22 -24years	60	14.9
Sex		
Female	201	50.0
Male	201	50.0
School		
SHS 1	164	40.8

SHS 2	95	23.6
SHS 3	143	35.6
Class		
10	125	31.1
11	140	34.8
12	137	34.1
Religion		
Christianity	302	75.1
Islam	100	24.9
Guardian		
Both parents	192	47.8
Self	13	3.2
Only father	42	10.5
Only mother	130	32.3
Relative	25	6.2
Number of siblings		
1 to 3	337	83.8
4 to 5	48	11.9
6 or more	17	4.3

4.2 Socio-economic characteristics of participants

Of the 402 students surveyed, only 17 (4.2%) had guardian/parents who were unemployed. Majority of students indicated they had their sibling/siblings employed while 187 (46.5%) indicated their sibling/siblings were not employed. Aside schooling, 180 (44.8%) of the 402

students surveyed indicated they were working. When average pocket money of students were enquired, 243 (60.4%) indicated 100 to 300 Liberian Dollars. Most students, 283 (70.4%) traced their source of money to their parents (Table 4.2)

Table 4.2: Socio-economic characteristics of participants

Variables	Frequency	Proportion (%)
N=402		
Guardian/parent employment		
Unemployed	17	4.2
Salaried worker	203	50.5
Farmer	9	2.2
Petty trading	152	37.8
Other	21	5.2
Siblings employment		
Unemployed	187	46.5
Salaried worker	69	17.2
Farmer	13	3.2
Fisherman/woman	6	1.5
Trader	127	31.6
Student work aside schooling		
Yes	180	44.8
No	222	55.2
Average pocket money		
<= 99 Liberian Dollars	35	8.7
100 - 300 Liberian Dollars	243	60.4
> 300 Liberian Dollars	63	15.7
Nothing/don't know	61	15.2

Source of money

Gifts or from working	100	24.9
Guardians	19	4.7
Parents	283	70.4

4.3 Prevalence of substance use among students

As shown in figure 2 below, of the 402 students surveyed, 291 (72.4%) had ever used a substance before. Prevalence of substance use was therefore 72.4% (95%CI = 67.8% – 76.6%).

Of these 291 students, use of only alcohol was indicated in 255 (87.6%) students (Figure

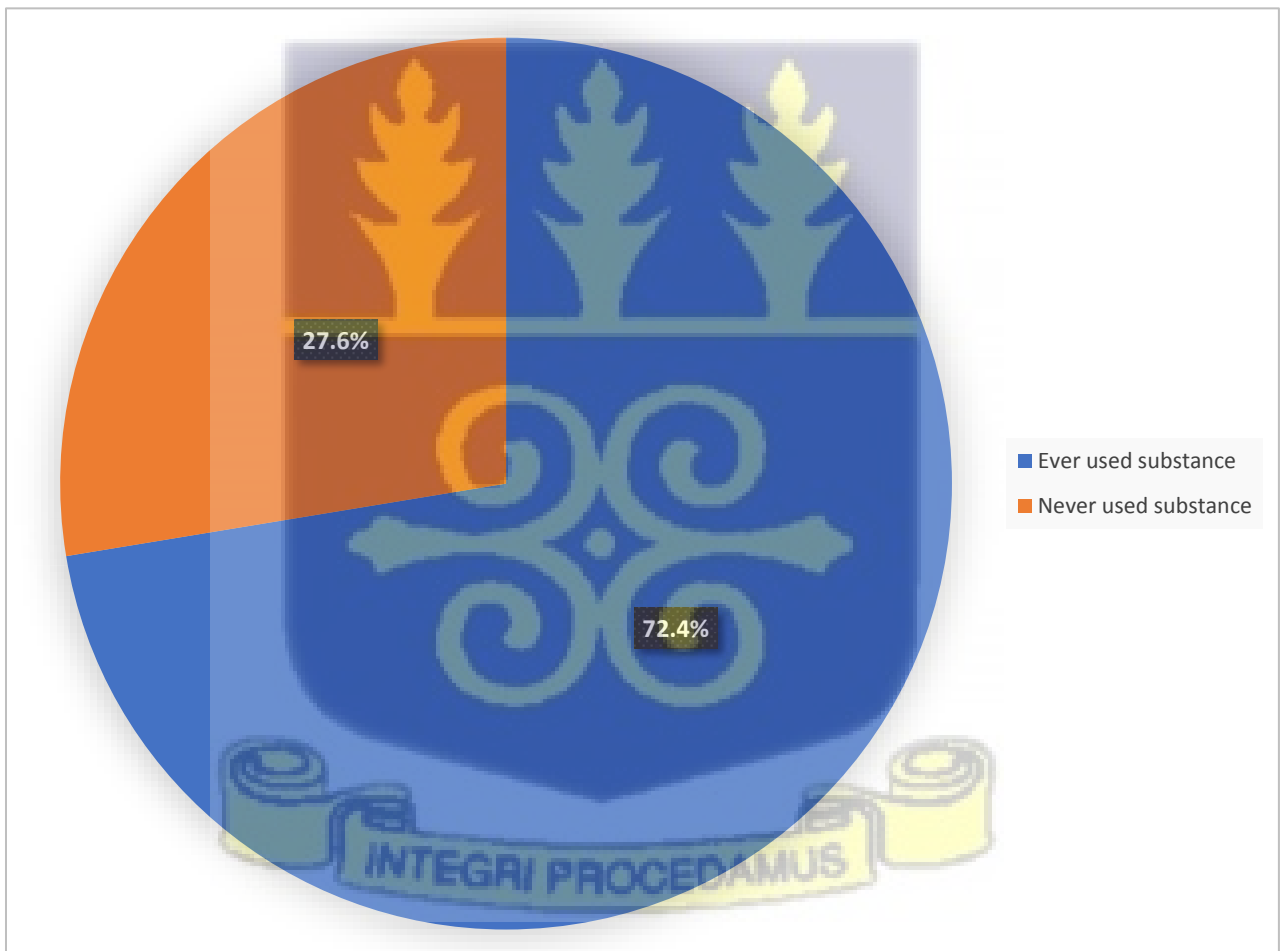


Figure 2: Prevalence of substance use among students

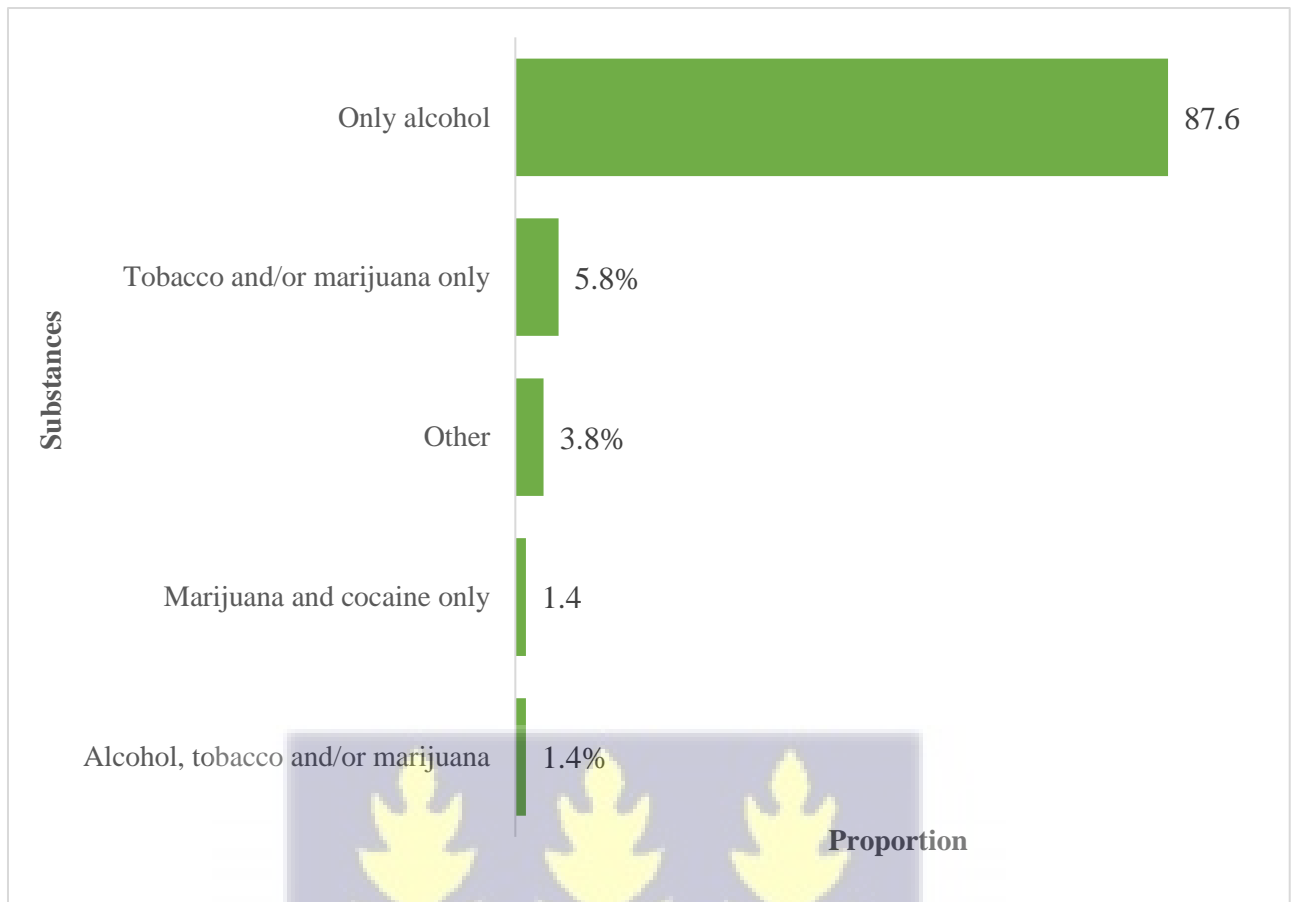


Figure 3: Types of substances used by students and the proportion of usage

4.4 Students knowledge/awareness of substance use by somebody/some people

Of the 402 students, 395 (98.3%) knew someone who uses or ever used a substance. Majority, 171 (43.3%) of these 395 students revealed that the person they knew who uses or ever used a substance was their friend. Only 1 (0.3%) indicated the person was a parent. Majority, 335 (84.8%) of the 395 students revealed that the person they know uses/used only alcohol (Table 4.4)

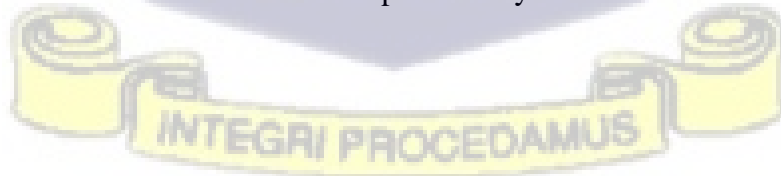


Table 4.4: Students knowledge/awareness of substance use by somebody/some people

Variables	Frequency	Proportion (%)
Know of anybody who use or ever used substance		
Yes	395	98.3
No	7	1.7
Relationship with person		
Classmate	84	21.3
Friend	171	43.3
Neighbor	42	10.6
Parent	1	0.3
Relative	23	5.8
School mate	70	17.7
Teacher	4	1.0
Substances used by this known person		
Only alcohol	335	84.8
Tobacco and/or marijuana only	21	5.3
Alcohol, tobacco and/or marijuana only	21	5.3
Marijuana and cocaine only	5	1.3
Other	13	3.3

4.5 Substance usage by students and/or persons known to them

Overall, 398 students indicated they had either ever used a substance or know someone who uses/used a substance. Of this number, 332 (83.4%) indicated usage of substance still persist. Of this 332 students, usage of only alcohol was highest with 285 (85.8%) students. Of the 398

students, 147 (36.9%) revealed age at first time use of substance by them or the person they claimed to know was 18 to 20years and this constituted the majority. Of the 398 students, 208 (52.3%) were introduced to substance use by friends. Substance was mostly taken at home as revealed by 338 (84.9%) of the 398 students. Substance was mostly bought “in the area” as revealed by 273 (68.6%) of the 398 students. Majority, 346 (86.9%) indicated there has not been any harm to oneself or others due to influence of substance in the past year (Table 4.5)

Table 4.5: Substance usage by students and/or persons known to them

Variables	Frequency	Proportion (%)
Do you/the person still use substances		
Yes	332	83.4
No	66	16.6
If yes, which substances		
Only alcohol	285	85.8
Tobacco and/or marijuana only	17	5.1
Alcohol, tobacco and/or marijuana only	19	5.7
Only cocaine	3	0.9
Marijuana and cocaine only	3	0.9
Other	5	1.5
Age at first substance use by you/the person		
15 - 17years	79	19.9
18 - 20years	147	36.9
21 - 23years	53	13.3
24years or more	119	29.9
Who introduced you/the person to use substance		

Drug pushers	6	1.5
Family member	20	5.0
Friends	208	52.3
Myself	141	35.4
Other	23	5.8

Venue where substance is mostly taken

Home	338	84.9
School	27	6.8
Both home and school	33	8.3

Place substance is bought

Beach	19	4.8
Dealers	11	2.8
Ghettos	18	4.5
In the area	273	68.6
Market	77	19.3

Harm to oneself or others in the past year due

to the influence of substance

Yes	52	13.1
No	346	86.9

4.6 Reasons for substance use

Of the 398 students who had ever used substance or know someone who uses/used substance, 351 (88.2%) indicated they had reasons for using substance. Out of this 351 students, 191 (54.4%) indicated reason for substance use is just to have fun. Of the 398 students, 117 (29.4%) revealed that curiosity led them or some people they know to take substance for the first time (Table 4.6)

Table 4.6: Reasons for substance use

Variables	Frequency	Proportion (%)
You/the person have reason for using substance		
Yes	351	88.2
No	14	3.5
Don't know	33	8.3
If yes, reason		
To cope with stress	21	6.0
When I am bored	10	2.8
I like the feeling	66	18.8
To be like my friend	9	2.6
To have fun	191	54.4
To relax	54	15.4
What influenced you/the person to take first substance		
Curiosity	117	26.9
Encouraged by friends	107	51.6
Offered by parents or relatives	56	14.1
To overcome problems	91	22.9
To get high	27	6.8

4.7 Effects of substance use on students or persons known to them in the last year

Of the 398 students, 129 (32.4%) indicated that at no point in time in the last year were they or some persons known to them unable to do homework or study for test due to effects of substance use. Of the 398 students, 316 (79.4%) indicated that at no point in time in the last

year were they or some persons known to them got into a fight with other people. The experience of missing out on other things because much time was spent on getting high was not experienced by 325 (81.7%) of the 398. Going to school intoxicated with a substance in the last year was absent in 333 (83.7%) of the 398. Of the 398 students, 351 (88.2%) never caused shame or embarrassment to someone at any point in time in the last year by themselves or some persons known to them. The history of neglecting duties and responsibilities due to effects of substances was absent in 250 (62.8%) of the 398 students. Being shunned by friends and relatives was not experienced/witnessed by 333 (83.7%) of the 398. Of the 398 students who had ever used a substance or know of someone who uses/used substance, 170 (42.7%) missed at least a day at school in the last year due to the harmful effects of substance use. Of the 398, only 49 (12.3%) were involved in an accident that resulted in injury to oneself or others due to substance use in the last year. Of the 398 students, 214 (53.8%) had not receive any advice from friend, neighbours or relatives to quit substance use in the last year (Table 4.7)

Table 4.7a: Effects of substance use on students or persons known to them in the last year

Variables	Frequency	Proportion (%)
Unable to do homework or study for test		
None	129	32.4
1 - 2times in a year	178	44.7
3 - 5times in a year	54	13.6
More than 5times in a year	37	9.3
Got into a fight with other people (friends, relatives, strangers)		
None	316	79.4
1 - 2times in a year	57	14.3

3 - 5times in a year	18	4.5
More than 5times in a year	7	1.8

Missed out on other things because much time

was spent on getting high

None	325	81.7
1 - 2times in a year	41	10.3
3 - 5times in a year	22	5.5
More than 5times in a year	10	2.5

Went to school high

None	333	83.7
1 - 2times in a year	26	6.5
3 - 5times in a year	20	5.0
More than 5times in a year	19	7.8

Caused shame or embarrassment to someone

None	351	88.2
1 - 2times in a year	14	3.5
3 - 5times in a year	25	6.3
More than 5times in a year	8	2.0

Neglected duties and responsibility

None	250	62.8
1 - 2times in a year	122	30.7
3 - 5times in a year	14	3.5
More than 5times in year	12	3.0

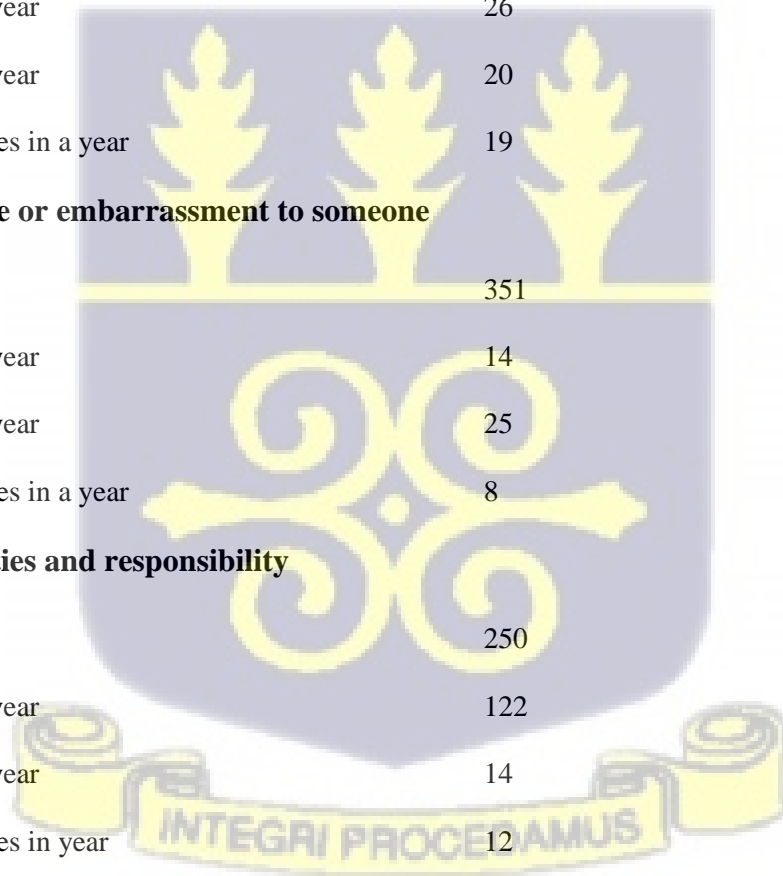


Table 4.7b: Effects of substance use on students or persons known to them in the last year

Variables	Frequency	Proportion (%)
Shun by friends and relatives		
None	333	83.7
1 - 2times in a year	31	7.8
3 - 5times in a year	15	3.8
More than 5times in a year	19	4.8
Missed a day at school		
None	57	14.3
1 - 2times in a year	170	42.7
3 - 5times in year	100	25.1
More than 5times in a year	71	17.8
Found oneself in a place that one could not remember getting there		
None	347	87.2
1 - 2times in a year	19	4.8
3 - 5times in a year	11	2.8
More than 5times in a year	21	5.3
Passed out or fainted suddenly		
None	368	92.5
1 - 2times in a year	14	3.5
3 - 5times in a year	16	4
Ever been involved in an accident due to substance use that resulted in injury either to oneself or others		

Yes	49	12.3
No	349	87.7

Was told by a friend, neighbor, or relative to stop using substances

None	214	53.8
1 - 2times in a year	109	27.4
3 - 5times in a year	34	8.5
More than 5times in a year	41	10.3

4.8 Association of socio-demographic characteristics with personal usage of substances among students

Of the 402 students surveyed, 291 had ever used a substance before while 111 indicated they had never used a substance before. Of the 291 who had ever used substance before, 221 (76.0%) were within the age group 19 to 21years. Of the 111 students who had never used substance before, 77 (69.4%) were also within the age group 19 to 21years. There was statistically significant association between age group and use of substance ($\chi^2 = 16.4$, p-value = 0.001). There was no association between sex and use of substance ($\chi^2 = 2.1$, p-value = 0.147). Of the 291 students who had ever used substance, 120 (41.2%) were in SHS 1. Of the 111 who had never used substance, 44 (39.6%) were in SHS 1. There was no statistically significant association between school and use of substance ($\chi^2 = 4.7$, p-value = 0.095). Of the 291 students who had ever used substance, majority 116 (39.9%) were in form 12 while majority 48 (43.2%) of the 111 who had never used substance were in form 10. Association between form and substance use was significant ($\chi^2 = 18.02$, p-value < 0.001). Of the 291 students who had ever used substance, 219 (75.3%) were Christians while 83 (74.8%) of the 111 who had never used substance were also Christians. Association between religion and use of substance

was not significant ($\chi^2 = 0.01$, p-value = 0.92). Of the 291 students who had ever used substance, 113 (38.8%) indicated their guardian was only their mothers. Of the 111 students who had never used substance, 80 (72.1%) had both parents as their guardians. There was statistically significant association between religion and use of substance (p-value <0.001). of the 291 who had ever used substance and the 111 who had never used substance, 247 (84.9%) and 90 (81.1%) respectively had 1 to 3 siblings. There was statistically significant association between number of siblings and use of substance ($\chi^2 = 12.94$, p-value = 0.002) (Table 4.8)

Table 4.8: Bivariate analysis of socio-demographic characteristics for usage of substances among students

Variables	Ever used N= 291 (72.4%)	Never used N= 111 (27.6%)	χ^2	P-value
Age group			16.4	0.001*
<= 15years	10 (3.4)	5 (4.5)		
16 - 18years	12 (4.1)	17 (15.3)		
19 - 21years	221 (76.0)	77 (69.4)		
22 -24years	48 (16.5)	12 (10.8)		
Sex			2.1	0.147
Female	139 (47.8)	62 (55.9)		
Male	152 (52.2)	49 (44.1)		
School			4.7	0.095
SHS 1	120 (41.2)	44 (39.6)		
SHS 2	61 (21.0)	34 (30.6)		
SHS 3	110 (37.8)	33 (29.7)		
Form			18.02	<0.001*
10	77 (26.5)	48 (43.2)		

11	98 (33.7)	42 (37.8)		
12	116 (39.9)	21 (18.9)		
Religion			0.01	0.92
Christianity	219 (75.3)	83 (74.8)		
Islam	72 (24.7)	28 (25.2)		
Guardian				<0.001†*
Both parents	112 (38.5)	80 (72.1)		
Self	13 (4.5)	0 (0.0)		
Only father	33 (11.3)	9 (8.1)		
Only mother	113 (38.8)	17 (15.3)		
Relative	20 (6.9)	5 (4.5)		
Number of siblings			12.94	0.002*
1 to 3	247 (84.9)	90 (81.1)		
4 to 5	38 (13.1)	10 (9.0)		
6 or more	6 (2.1)	11 (9.9)		

†Fisher's exact test; †*Significant (p<0.05) using Fisher's exact test; *Significant (p<0.05) using chi-square test

4.9 Association of socio-economic characteristics with usage of substances among students

Of the 291 students who had ever used a substance, 133 (45.7%) had their guardian/parents being salaried workers. Of the 111 students who had never used a substance, 70 (63.1%) also had their guardian/parents being salaried workers. There was statistically significant association between guardian/parents' employment and use of substance by students (p-value <0.001). Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 124 (42.6%) and 63 (56.8%) respectively had unemployed siblings. There was statistically significant association between sibling's employment and use of substance by students (p-value = 0.003). Of the 291 students who had ever used a substance,

150 (51.6%) indicated they work aside schooling. Of the 111 students who had never used a substance, 30 (27.0%) were working aside schooling. Association between student working aside schooling and substance use was statistically significant ($\chi^2 = 19.54$, p-value <0.001). Majority of students in both those who had ever used a substance and those who had never used a substance indicated their average pocket money were in the range of 100 to 300 Liberian Dollars. There was no association between average pocket money and use of substance ($\chi^2 = 2.97$, p-value = 0.397). Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 186 (63.9%) and 97 (87.4%) respectively traced their source of money to their parents. There was statistically significant association between source of money and use of substance by students (p-value < 0.001) (Table 4.9)

Table 4.9: Bivariate analysis of socio-economic characteristics for usage of substances among students

Variables	Ever used N= 291 (72.4%)	Never used N= 111 (27.6%)	χ^2	P-value
Guardian/parent employment				<0.001†*
Unemployed	9 (3.1)	8 (7.2)		
Salaried worker	133 (45.7)	70 (63.1)		
Farmer	9 (3.1)	0 (0.0)		
Petty trading	126 (43.3)	26 (23.4)		
Other	14 (4.8)	7 (6.3)		
Siblings employment				0.003†*
Unemployed	124 (42.6)	63 (56.8)		
Salaried worker	47 (16.2)	22 (19.8)		
Farmer	13 (4.5)	0 (0.0)		

Fisherman/woman	4 (1.4)	2 (1.8)		
Trader	103 (35.4)	24 (21.6)		
Student work aside schooling			19.54	<0.001*
Yes	150 (51.6)	30 (27.0)		
No	141 (48.4)	81 (73.0)		
Average pocket money			2.97	0.397
<= 99 Liberia Dollars	29 (10.0)	6 (5.4)		
100 - 300 Liberia Dollars	174 (59.8)	69 (62.2)		
> 300 Liberia Dollars	47 (16.2)	16 (14.4)		
Nothing/don't know	41 (14.1)	20 (18.0)		
Source of money				<0.001†*
Gifts or from working	90 (30.9)	10 (9.0)		
Guardians	15 (5.2)	4 (3.6)		
Parents	186 (63.9)	97 (87.4)		

†Fisher's exact test; †*Significant (p<0.05) using Fisher's exact test; *Significant (p<0.05) using chi-square test

4.10 Association of knowledge on substances with use of substances among students

All 402 students surveyed indicated they had heard of at least one substance. Of the 291 students who had ever used a substance, 151 (51.9%) indicated they had heard of alcohol, tobacco (cigarette), and/or marijuana only. Of the 111 students who had never used a substance, 74 (66.7%) indicated they had heard of alcohol, tobacco (cigarette), and/or marijuana only. There was statistically significant association between substance heard of and use of substance (p-value = 0.008). Only 2 (1.8%) of the 111 students who had never used a substance indicated they had never seen a substance before. No association was found between ever seen a substance before and use of substance (p-value = 0.076). Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 119 (40.9%) and 49

(45.0%) respectively had seen only alcohol. There was statistically significant association between substance seen and use of substance (p-value = 0.001).

Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 288 (99.0%) and 107 (96.4%) respectively knew of someone who uses/had ever used a substance. Association between knowing someone who uses/used a substance and personal usage of substance was not significant (p-value = 0.095). On assessing the relationship of students with the persons known to them who uses/used a substance, 151 (52.4%) of the 291 students who had ever used a substance indicated the persons were their friends. Majority, 32 (29.9%) of the 111 students who had never used a substance revealed the persons known to them who uses/used a substance were their schoolmates. There was statistically significant association between relationship with person and use of substance (p-value < 0.001). Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 252 (87.5%) and 83 (77.6%) respectively revealed substance used by the persons known to them was only alcohol. Association between substances used by persons known to students and the personal usage of substance by students was statistically significant (p-value < 0.001) (Table 4.10)

Table 4.10: Bivariate analysis of knowledge on substances for usage of substances

Variables	Ever used N= 291 (72.4%)	Never used N= 111 (27.6%)	χ^2	P-value
Substances heard of				0.008†*
Only alcohol	58 (19.9)	24 (21.6)		
Tobacco and/or marijuana only	8 (2.8)	2 (1.8)		
Alcohol, tobacco and/or marijuana	151 (51.9)	74 (66.7)		

Alcohol, cocaine, tobacco and/or

marijuana 61 (21.0) 9 (8.1)

Cocaine or heroin only 8 (2.8) 0 (0.0)

Other 5 (1.7) 2 (1.8)

Ever seen substance before

0.076†

Yes 291 (100.0) 109 (98.2)

No 0 (0.0) 2 (1.8)

Substance seen

0.001†*

Only alcohol 119 (40.9) 49 (45.0)

Tobacco and/or marijuana only 87 (29.9) 49 (45.0)

Alcohol, tobacco and/or marijuana 48 (16.5) 8 (7.3)

Alcohol, cocaine, tobacco and/or

marijuana 7 (2.4) 0 (0.0)

Cocaine or heroin only 21 (7.2) 1 (0.9)

Other 9 (3.1) 2 (1.8)

Know of anybody who use or ever used

substance

0.095†

Yes 288 (99.0) 107 (96.4)

No 3 (1.0) 4 (3.6)

Relationship with person

<0.001†*

Classmate 53 (18.4) 31 (29.0)

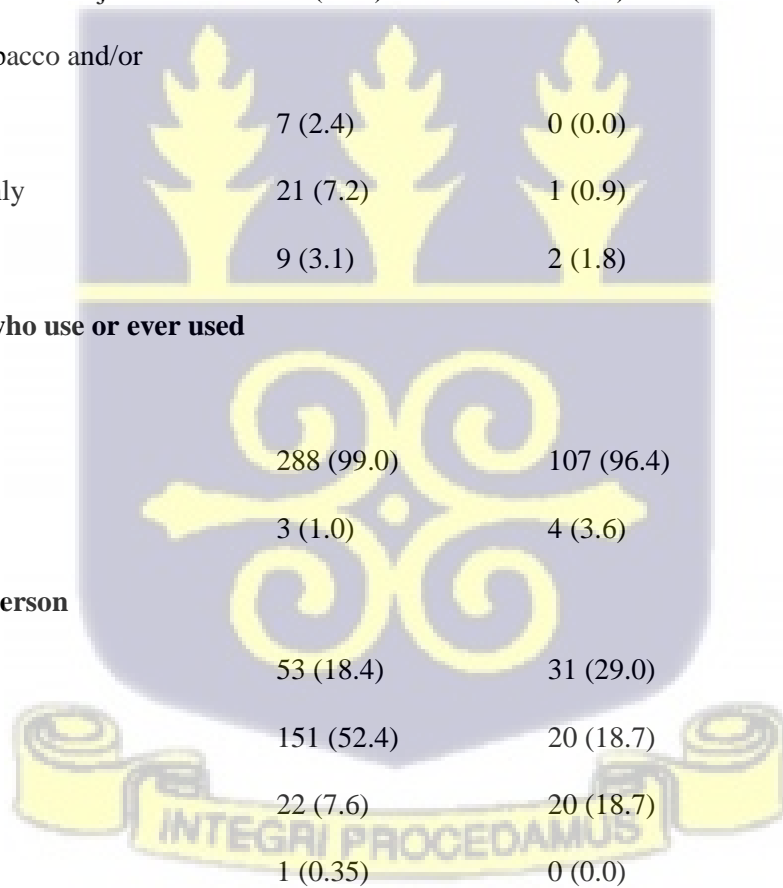
Friend 151 (52.4) 20 (18.7)

Neighbour 22 (7.6) 20 (18.7)

Parent 1 (0.35) 0 (0.0)

Relative 22 (7.6) 1 (0.9)

Schoolmate 38 (13.2) 32 (29.9)



Teacher	1 (0.3)	3 (2.8)	
Substances used by this known person			<0.001†*
Only alcohol	252 (87.5)	83 (77.6)	
Tobacco and/or marijuana only	17 (5.9)	4 (3.7)	
Alcohol, tobacco and/or marijuana only	4 (1.4)	17 (15.9)	
Marijuana and cocaine only	4 (1.4)	1 (0.9)	
Other	11 (3.8)	2 (1.9)	

†Fisher's exact test; †*Significant ($p < 0.05$) using Fisher's exact test

4.11 Association of knowledge on effects of substance use on persons, family and community with use of substance among students

Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 171 (58.8%) and 51 (46.0%) respectively knew substances cause tiredness/sickness in individuals who use substances. There was no statistically significant association between knowledge on effects of substances on a person and use of substance (p -value = 0.098). Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 146 (50.2%) and 69 (62.2%) respectively knew use of substances lead to disgrace on families. There was statistically significant association between knowledge on effects of substances on the family and use of substance (p -value = 0.001). Of the 291 students who had ever used a substance and the 111 students who had never used a substance, 200 (68.7%) and 76 (68.5%) respectively knew substances use lead to crime/violence in the community. Association between knowledge on effects of substances on the community and use of substance was statistically significant (p -value = 0.014).

Of the 291 students who had ever used a substance and the 111 students who had never used a substance, only 18 (6.2%) and 12 (10.8%) respectively never knew possession and use of substances is an offence in Liberia. There was no association between awareness that

possession and use of substance is an offence in Liberia and the use of substance (p-value = 0.622) (Table 4.11)

Table 4.11: Bivariate analysis of knowledge on effects of substance use on persons, family and community for the use of substance among students

Variables	Ever used N= 291 (72.4%)	Never used N= 111 (27.6%)	χ^2	P-value
Effects of substances on a person				0.098†
Bad temper	38 (13.1)	17 (15.3)		
Failure to do well at school/work	79 (27.1)	42 (37.8)		
Fear/disturbed sleep	3 (1.0)	1 (0.9)		
Tiredness/sickness	171 (58.8)	51 (46.0)		
Effects of substances on the family				0.001†*
Worry/fear	14 (4.8)	4 (3.6)		
Breakdown in family relationship	57 (19.6)	18 (16.2)		
Disgrace	146 (50.2)	69 (62.2)		
Loss of trust in child	46 (15.8)	20 (18.0)		
Sickness	28 (9.6)	0 (0.0)		
Effects of substances on the community				0.014†*
Accidents	65 (22.3)	33 (29.7)		
Reduce productivity	26 (8.9)	2 (1.8)		
Crime/violence	200 (68.7)	76 (68.5)		
Aware that possession and use of substances is an offence			2.489	0.115
Yes	273 (93.8)	99 (89.2)		
No	18 (6.2)	12 (10.8)		

Do you have the urge to use any narcotic

substance			0.622
Yes	2 (0.7)	1 (0.9)	
No	289 (99.3)	110 (99.1)	

†Fisher’s exact test; †*Significant (p<0.05) using Fisher’s exact test

4.12 Multiple logistic regression analysis for factors associated with substance use among senior high school students

Multiple logistic regression analysis was conducted on all factors that were statistically significant at 95% CI and P value < 0.05 at the bivariate level of analysis. Overall, 14 variables were significant at the bivariate level of analysis. Of these 13 variables, 6 were statistically significant and had an association with substance use in the multiple logistic regression model (p-value< 0.05). These variables were, guardian, sibling employment, source of money, relationship with known person who uses/used substance, substances used by the known person, and knowledge on effects of substances use on the community.

The magnitude of association are explored in table 4.11 using simple and multiple logistic regression analysis to determine the crude and adjusted odds ratios respectively, their corresponding 95%CI and p-values.

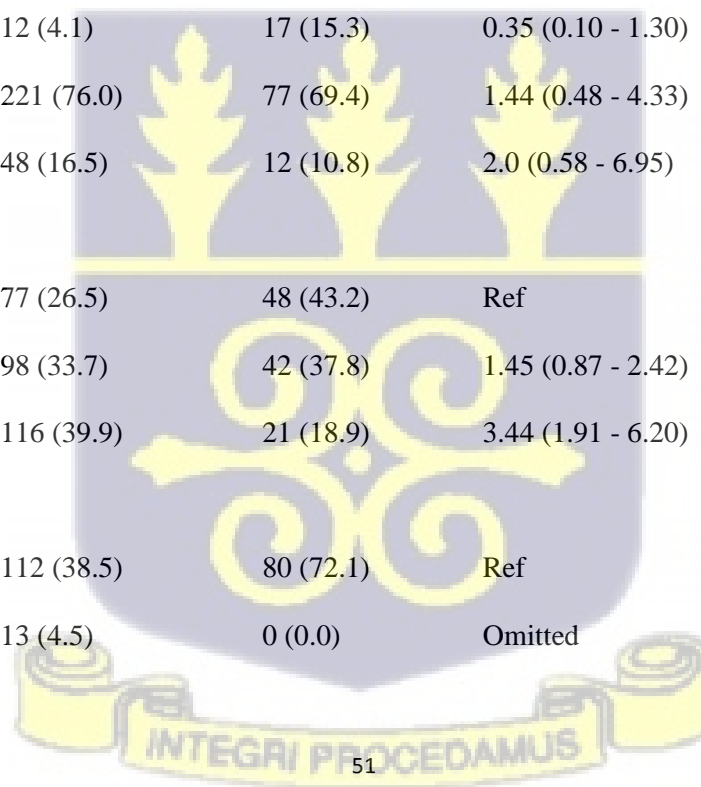
With other variables controlled for, there is 4.59 folds increased odds of substance use among senior high school students with their guardian being only their mothers compared to senior high school students who have both parents (mother and father) as guardian (aOR = 4.59, 95% CI = 1.65 – 12.78). Controlling for other variables, there is 66% reduced odds of substance use in senior high school student with unemployed siblings compared to senior high school students who have siblings who are salaried workers (aOR = 0.34, 95%CI = 0.12 – 0.97). After adjusting

for all other variables, there is an 82% reduced odds of substance use among senior high school students whose parents are their source of money compared to senior high school students whose source of money are from gifts or working (aOR = 0.18, 95%CI = 0.05 – 0.73). Adjusting for other variables, odds of substance use among senior high school students is 4.42 times higher among students have friends who use substance compared to students who have classmates who use substance (aOR = 4.42, 95%CI = 1.67 – 11.67). Controlling for other variables, there is 97% decreased odds of substance use if tobacco (cigarette) and/or marijuana is/are the substances used by a person known to a student compared to only alcohol use (aOR = 0.03, 95%CI = 0.004 – 0.19). With other variables controlled for, there is 12.65 folds increased odds of substance use among senior high school students with knowledge that substance use leads to crime/violence in the community compared to student who knew substance use leads to accidents in the community (aOR = 12.65, 95%CI = 3.84 – 41.65).



Table 4.12a: Multiple logistic regression analysis for factors associated with substance use among students

Variables	Ever used	Never used	Unadjusted	p-value	Adjusted	p-value
	N= 291 (72.4%)	N= 111 (27.6%)	OR (95% CI)		OR (95%CI)	
Age group						
<= 15years	10 (3.4)	5 (4.5)	Ref		Ref	
16 - 18years	12 (4.1)	17 (15.3)	0.35 (0.10 - 1.30)	0.117	1.95 (0.20 - 19.05)	0.567
19 - 21years	221 (76.0)	77 (69.4)	1.44 (0.48 - 4.33)	0.522	3.47 (0.37 - 32.78)	0.278
22 -24years	48 (16.5)	12 (10.8)	2.0 (0.58 - 6.95)	0.276	2.53 (0.23 - 27.51)	0.445
Form						
10	77 (26.5)	48 (43.2)	Ref		Ref	
11	98 (33.7)	42 (37.8)	1.45 (0.87 - 2.42)	0.15	1.49 (0.66 - 3.38)	0.342
12	116 (39.9)	21 (18.9)	3.44 (1.91 - 6.20)	<0.001	2.40 (0.96 - 6.01)	0.062
Guardian						
Both parents	112 (38.5)	80 (72.1)	Ref		Ref	
Self	13 (4.5)	0 (0.0)	Omitted		Omitted	

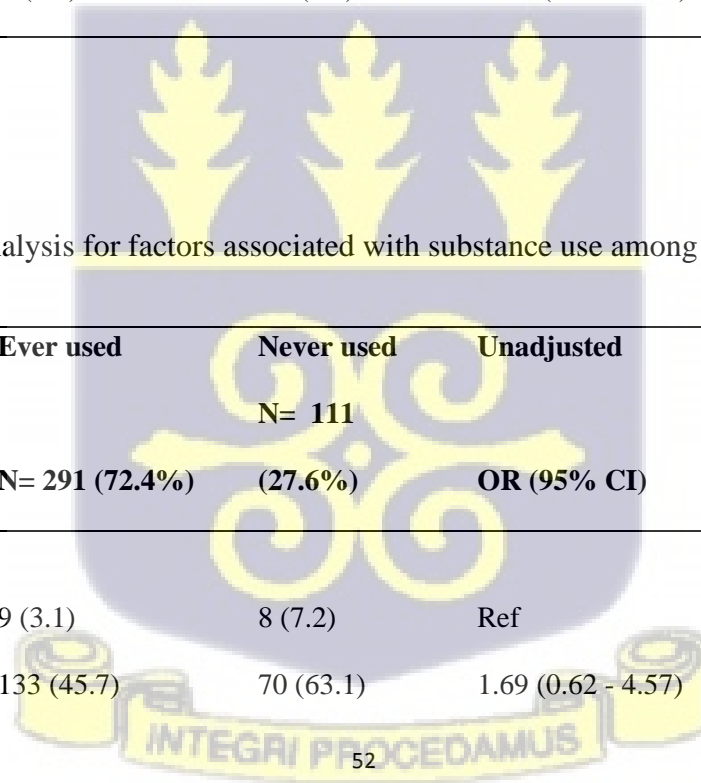


Only father	33 (11.3)	9 (8.1)	2.62 (1.19 - 5.78)	0.017	1.69 (0.51 - 5.56)	0.389
Only mother	113 (38.8)	17 (15.3)	4.75 (2.64 - 8.52)	<0.001	4.59 (1.65 - 12.78)	0.004
Relative	20 (6.9)	5 (4.5)	2.86 (1.03 - 7.93)	0.044	0.63 (0.09 - 4.55)	0.645
Number of siblings						
1 to 3	247 (84.9)	90 (81.1)	Ref		Ref	
4 to 5	38 (13.1)	10 (9.0)	1.38 (0.66 - 2.89)	0.387	1.76 (0.51 - 6.05)	0.371
6 or more	6 (2.1)	11 (9.9)	0.20 (0.07 - 0.55)	0.002	0.64 (0.07 - 5.73)	0.693

*Significant (p<0.05)

Table 4.12b: Multiple logistic regression analysis for factors associated with substance use among students

Variables	Ever used	Never used	Unadjusted	p-value	Adjusted	p-value
	N= 291 (72.4%)	N= 111 (27.6%)	OR (95% CI)		OR (95%CI)	
Guardian/parent employment						
Unemployed	9 (3.1)	8 (7.2)	Ref		Ref	
Salaried worker	133 (45.7)	70 (63.1)	1.69 (0.62 - 4.57)	0.302	3.40 (0.36 - 31.87)	0.284



Farmer	9 (3.1)	0 (0.0)	Omitted		Omitted	
Petty trading	126 (43.3)	26 (23.4)	4.31 (1.52 - 12.21)	0.006	4.14 (0.35 - 48.52)	0.257
Other	14 (4.8)	7 (6.3)	1.78 (0.48 - 6.62)	0.391	3.80 (0.25 - 58.61)	0.339
Siblings employment						
Salaried worker	47 (16.2)	22 (19.8)	Ref		Ref	
Unemployed	124 (42.6)	63 (56.8)	0.92 (0.51 - 1.66)	0.785	0.34 (0.12 - 0.97)	0.04
Farmer	13 (4.5)	0 (0.0)	Omitted		Omitted	
Fisherman/woman	4 (1.4)	2 (1.8)	0.94 (0.16 - 5.50)	0.942	1.21 (0.05 - 27.24)	0.904
Trader	103 (35.4)	24 (21.6)	2.01 (1.02 - 3.94)	0.042	1.18 (0.30 - 4.61)	0.812
Student work aside schooling						
Yes	150 (51.6)	30 (27.0)	2.87 (1.78 - 4.63)	<0.001	1.11 (0.37 - 3.37)	0.852
No	141 (48.4)	81 (73.0)	Ref		Ref	
Source of money						
Gifts or from working	90 (30.9)	10 (9.0)	Ref		Ref	
Guardians	15 (5.2)	4 (3.6)	0.42 (0.12 - 1.50)	0.181	1.45 (0.13 - 16.45)	0.764
Parents	186 (63.9)	97 (87.4)	0.21 (0.11 - 0.43)	<0.001	0.18 (0.05 - 0.73)	0.016

*Significant (p<0.05)

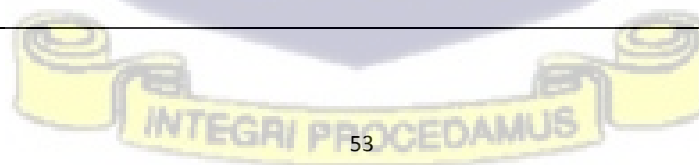
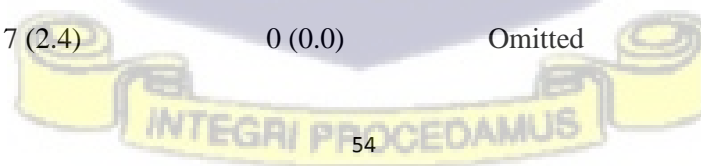


Table 4.12c: Multiple logistic regression analysis for factors associated with substance use among students

Variables	Ever used	Never used	Unadjusted	p-value	Adjusted	p-value
	N= 291 (72.4%)	N= 111 (27.6%)	OR (95% CI)		OR (95%CI)	
Substances heard of						
Only alcohol	58 (19.9)	24 (21.6)	Ref		Ref	
Tobacco and/or marijuana only	8 (2.8)	2 (1.8)	1.66 (0.33 - 8.37)	0.542	0.62 (0.01 - 66.47)	0.843
Alcohol, tobacco and/or marijuana	151 (51.9)	74 (66.7)	0.84 (0.49 - 1.47)	0.547	1.00 (0.34 - 2.95)	0.995
Alcohol, cocaine, tobacco and/or marijuana	61 (21.0)	9 (8.1)	2.80 (1.20 - 6.54)	0.017	3.73 (0.82 - 16.91)	0.088
Cocaine or heroin only	8 (2.8)	0 (0.0)	Omitted		Omitted	
Other	5 (1.7)	2 (1.8)	1.03 (0.19 - 5.70)	0.969	0.27 (0.02 - 4.96)	0.381
Substance seen						
Only alcohol	119 (40.9)	49 (45.0)	Ref		Ref	
Tobacco and/or marijuana only	87 (29.9)	49 (45.0)	0.73 (0.45 - 1.18)	0.204	1.47 (0.59 - 3.65)	0.409
Alcohol, tobacco and/or marijuana	48 (16.5)	8 (7.3)	2.47 (1.09 - 5.60)	0.03	1.51 (0.39 - 5.87)	0.551
Alcohol, cocaine, tobacco and/or marijuana	7 (2.4)	0 (0.0)	Omitted		Omitted	



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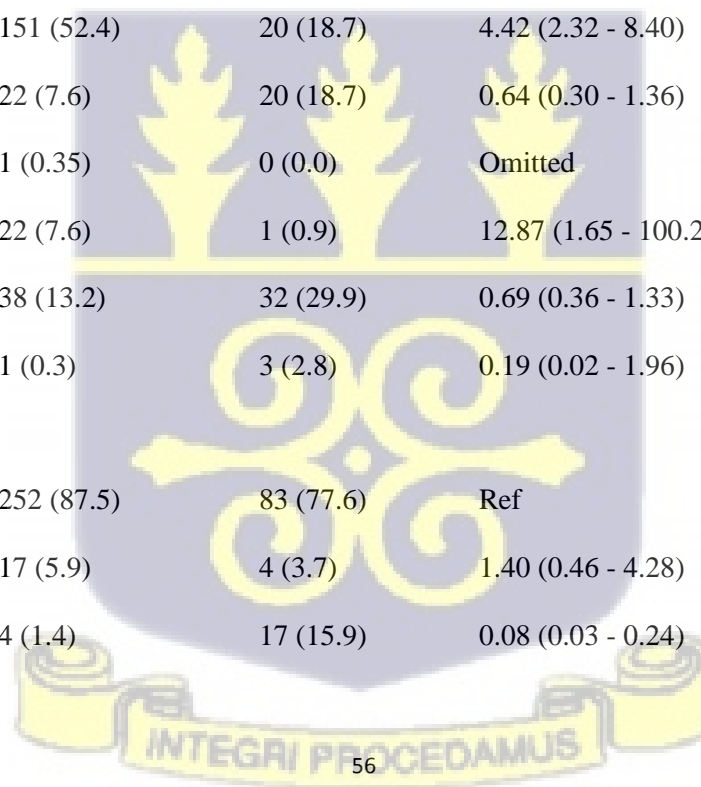
Cocaine or heroin only	21 (7.2)	1 (0.9)	8.65 (1.13 - 66.07)	0.038	2.22 (0.04 - 112.27)	0.691
Other	9 (3.1)	2 (1.8)	1.85 (0.39 - 8.89)	0.441	35.46 (0.36 - 3507.16)	0.128

*Significant ($p < 0.05$)



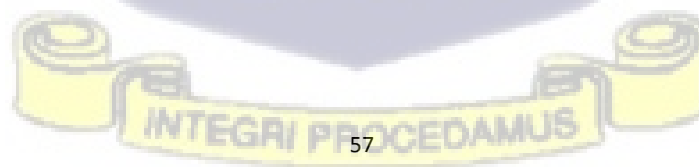
Table 4.12d: Multiple logistic regression analysis for factors associated with substance use among students

Variables	Ever used	Never used	Unadjusted	p-value	Adjusted	p-value
	N= 111					
	N= 291 (72.4%)	(27.6%)	OR (95% CI)		OR (95%CI)	
Relationship with person						
Classmate	53 (18.4)	31 (29.0)	Ref		Ref	
Friend	151 (52.4)	20 (18.7)	4.42 (2.32 - 8.40)	<0.001	4.42 (1.67 - 11.67)	0.003
Neighbor	22 (7.6)	20 (18.7)	0.64 (0.30 - 1.36)	0.249	0.54 (0.15 - 1.86)	0.326
Parent	1 (0.35)	0 (0.0)	Omitted		Omitted	
Relative	22 (7.6)	1 (0.9)	12.87 (1.65 - 100.20)	0.015	71.70 (0.49 - 10545.81)	0.093
School mate	38 (13.2)	32 (29.9)	0.69 (0.36 - 1.33)	0.269	0.43 (0.16 - 1.16)	0.096
Teacher	1 (0.3)	3 (2.8)	0.19 (0.02 - 1.96)	0.165	Omitted	
Substances used by this known person						
Only alcohol	252 (87.5)	83 (77.6)	Ref		Ref	
Tobacco and/or marijuana only	17 (5.9)	4 (3.7)	1.40 (0.46 - 4.28)	0.555	1.01 (0.06 - 17.13)	0.994
Alcohol, tobacco and/or marijuana only	4 (1.4)	17 (15.9)	0.08 (0.03 - 0.24)	<0.001	0.03 (0.004 - 0.19)	<0.001



Marijuana and cocaine only	4 (1.4)	1 (0.9)	1.32 (0.15 - 11.95)	0.806	0.19 (0.003 - 13.87)	0.449
Other	11 (3.8)	2 (1.9)	1.81 (0.39 - 8.34)	0.446	1.08 (0.11 - 10.18)	0.947
Effects of substances on the family						
Worry/fear	14 (4.8)	4 (3.6)	Ref		Ref	
Breakdown in family relationship	57 (19.6)	18 (16.2)	0.90 (0.26 - 3.10)	0.873	1.72 (0.27 - 10.94)	0.565
Disgrace	146 (50.2)	69 (62.2)	0.60 (0.19 - 1.90)	0.39	0.85 (0.15 - 4.74)	0.854
Loss of trust in child	46 (15.8)	20 (18.0)	0.66 (0.19 - 2.25)	0.503	0.65 (0.11 - 3.74)	0.627
Sickness	28 (9.6)	0 (0.0)	Omitted		Omitted	
Effects of substances on the community						
Accidents	65 (22.3)	33 (29.7)	Ref		Ref	
Reduce productivity	26 (8.9)	2 (1.8)	6.6 (1.48 - 29.52)	0.014	6.10 (0.48 - 77.92)	0.164
Crime/violence	200 (68.7)	76 (68.5)	1.34 (0.81 - 2.19)	0.252	12.65 (3.84 - 41.65)	<0.001

*Significant (p<0.05)



CHAPTER FIVE

5.0 Discussion

5.1 Introduction

Substance use is a growing problem of public health concern, especially among adolescents. This study therefore sought to find factors associated with substance use among senior high school students on Bushrod Island, Montserrado County, Liberia.

5.2 Prevalence of Substance Use

The study found that the prevalence of substance use among senior high school students was 72.4%. This prevalence is higher than the 65.4% reported in Woreta Town, Northwest Ethiopia among high school adolescents (Birhanu, Bisetegn, & Woldeyohannes, 2014). In Kenya, the prevalence of substance use among college students was found to be 69.8% (Atwoli et al., 2011). According to Idowu et al. (2018), the prevalence of substance use among students in selected secondary schools of an urban community of Oyo-state, southwest Nigeria was found to be 21.7%. In a survey of knowledge, attitude, and opinion of adolescent high school students in India, substance use was revealed to be low with a reported prevalence of 12.5% (Tsering, Pal, & Dasgupta, 2010). As revealed in this current study, substance among males was 52.2% compared to 47.8% in females. This is in agreement with findings from several other studies where it was established that the use of the substance was high in males compared to females (Birhanu et al., 2014; Negussie, 2012; Rudatsikira, Abdo & Muula, 2007; Deressa & Azazh, 2011). This higher prevalence of substance use in males compared to females may be because society sees substance use as a masculine behavior and thus results in the social influence of males to take in more substances.

5.3 Commonly used substances

The study found that the substance commonly used by senior high school students was alcohol and this was indicated in 87.6% of students who use/used substance. This high proportion of alcohol use could be as a result of availability and easy access to various alcoholic drinks in the study area. The proportion of alcohol use as found in this study is higher than the 51% reported in a similar study among 802 secondary school students in Monrovia (Harris et al., 2011). This is similar to what was revealed in a similar study among adolescent secondary school students in Abakaliki, Nigeria (Anyanwu et al., 2016). Shehu & Idris (2008) in their study in Zaria, Nigeria, however, found that cigarette was the most commonly used substance. In a systematic review and meta-analysis of Substance use among adolescents in sub-Saharan Africa, Olawole-Isaac, Ogundipe, Amoo, & Adeloye (2018) found that the use of caffeine-containing products such as kola nut or coffee was most predominant at 41.2% but was limited to West Africa. Alcohol followed with 32.8%, tobacco products 23.5%, khat 22.0%, and cannabis 15.9%. The use of depressants was 11.3%, amphetamines 9.4%, heroin 4.0%, and cocaine 3.9%.

5.4 Factors associated with use of substances

The study found that students with only mothers being guardians had 4.59 times increased odds of substance use compared to students who had both parents as guardians. This is likely so because mothers mostly find it difficult to solely control adolescents compared to the combined control of both fathers and mothers. This is consistent with suggestions from other studies that poor management of family is a significant predictor of substance use among adolescents (Beyers et al., 2004; Hemphill et al., 2011).

This study found that having an unemployed sibling reduced a student's likelihood of substance use compared to a student with a sibling who is a salaried worker. This could be because students who have unemployed siblings are limited in terms of their source of money. They will therefore be compelled to live within their means and not waste the money given to them by their guardians/self-acquired on buying substances. Similarly, the study further found reduced odds of substance use among students whose parents were their source of mother compared to the student whose source of money was gift/from personally working. This is also so because students who depend on parents for money are compelled to rationally use the little given to them hence unlikely to waste it on substances. On the contrary, students who work for money may have more than necessary and are assured of frequent in-flow and thus may be tempted to live an extravagant life and use substances.

The study revealed that having a friend who uses substance increases the odds of substance use by 4.42 times compared to having a classmate who uses the substance. Students can be mates in the same class but may not be close friends and thus there exist the very little possibility of influence. Friends on the other hand may have certain things in a common and increased chance of peer pressure. Several studies have revealed adolescents were introduced into substance use by friends (Öztaş et al., 2018; Idowu et al., 2018). This is consistent with 43.3% of students in this study indicating they had friends who use substances and 84.8% of students stating they know persons who use alcohol. Students, therefore, practiced what they have witnessed others do and more importantly were lured to practice what their friends were doing as 52.3% indicated friends introduced them substance use, and 54.4% took substance for fun. The study further found curiosity and encouragement from friends mainly influenced the first intake of the substance. All this explains why alcohol was the most used substance by students. In a study on substance use

behaviors of secondary school students in post-conflict Liberia, it was revealed that the use of the substance is thought to be a contributory factor to increased interpersonal violence, sexual risk-taking, violent crime, and other problems in Liberian society (Harris et al., 2011). In this present study, the majority of students perceived substance use could lead to crime/violence in the community. The perception however did not reduce the odds of substance use. This could be because students placed much value on the fun they sought to gain from taking substance than the effects of the substance intake.

5.5. Limitations & strengths of the study

The cross-sectional design only allows for the description of behavior at one point in time. A major strength of our study is that results are largely consistent with past literature.

5.6. Summary

This chapter discussed the findings concerning other findings from studies that were conducted around the world. The discussion in this chapter shows that alcohol was the most commonly used substance among the students. However, only mother as guardian appear to justify risk factor associated with substance use among senior high school students on the Bushrod Island. Therefore, interventions should be put in place to help to address the increased intake of substance among SHS students.

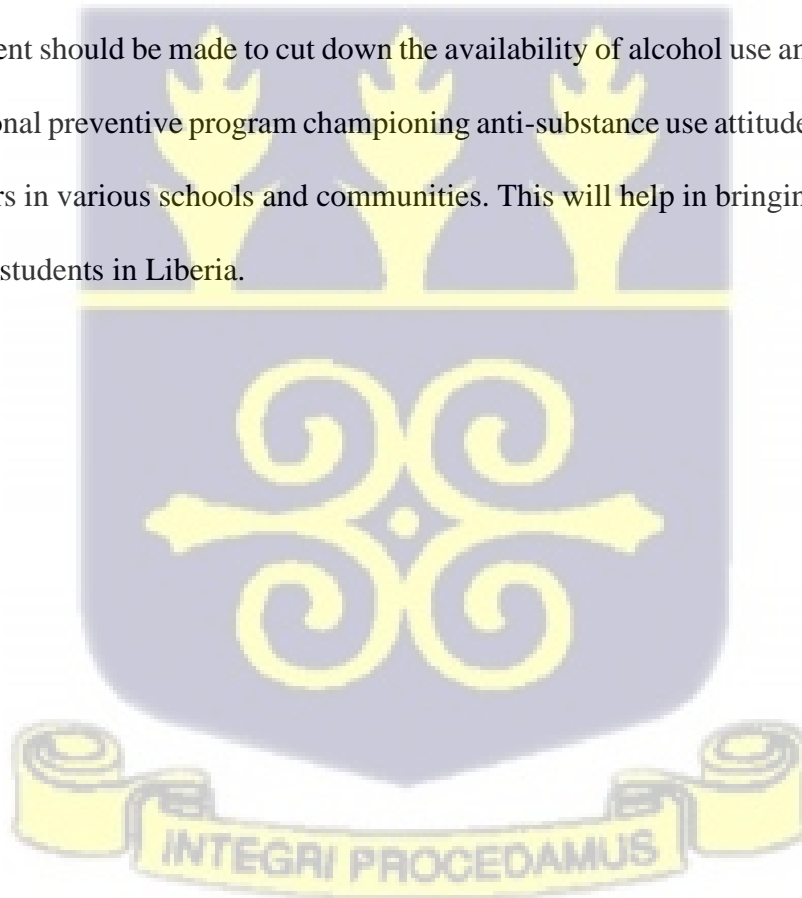


Chapter 6

6.0 Conclusion and Recommendation

6.1 Conclusion

The mostly used substance was alcohol and the prevalence of substance use among SHS students were high in Liberia. Most of the substance used among SHS student were identified to be alcohol, Marijuana, cocaine and tobacco (cigarettes). Significantly, substance use has a negative effect on the community at large which contribute to crimes and violence. Students who obtain money from parents however influenced others or by others to use substances. so the results of our data advise that an engagement should be made to cut down the availability of alcohol use and should establish a multi-dimensional preventive program championing anti-substance use attitudes among students, parents, and peers in various schools and communities. This will help in bringing down substance use among SHS students in Liberia.



6.2 Recommendation

Government of Liberia

Ensure further study be conducted to estimate the prevalence and use of other substances such as shisha, tramadol among adolescents.

The laws that ban selling and consumption of substances should be strengthened.

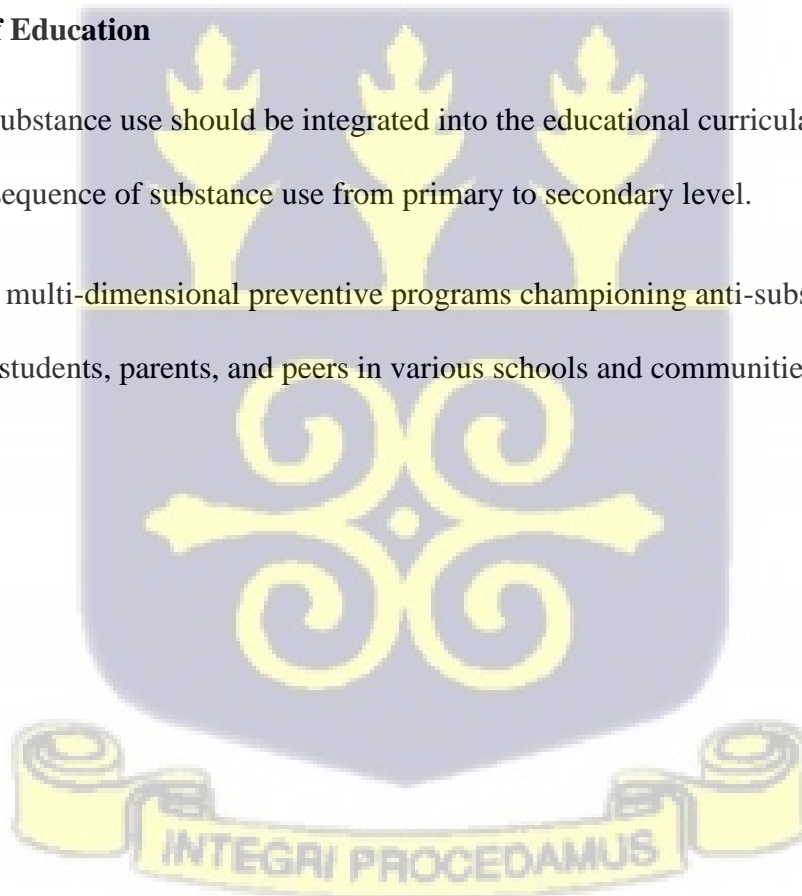
Proper orientation for law enforcement agencies personnel such as the police, Drug Enforcement Agency (DEA), who sanction those that engage in substance abuse transactions.

The same study should be conducted for Junior High school students in the district.

The Ministry of Education

Information on substance use should be integrated into the educational curricula with a focus on the harmful consequence of substance use from primary to secondary level.

Should establish multi-dimensional preventive programs championing anti-substance use attitudes among students, parents, and peers in various schools and communities.



REFERENCE

Amoateng, A. Y., Barber, B. K., & Erickson, L. D. (2009). Family predictors of adolescent substance use : the case of high school students in the Cape Metropolitan Area. *Journal of Adolescent Health*, 45(1), 37–41.

<https://doi.org/10.2989/17280580609486612>

Authority, N. I. of D. (2005). Drug of Abuse. Retrieved July 25, 2017, from <https://www.drugabuse.gov/drugs-abuse/opioids>

Authority, N. I. of D. (2015). Hallucinogens and Dissociative Drugs. Retrieved September 9, 2017, from <https://www.drugabuse.gov/publications/research-reports/hallucinogensdissociative-drugs/what-are-hallucinogens>

Bae, J., & Rosel, P. (2009). Construction of the Structural Equation Model on Substance Use in Adolescents. *Korean Academy of Nursing*. <https://doi.org/10.4040/jkan.2009.39.3.446>

Banys, P. (2013). Epidemiology of Adolescent Marijuana Use and Its Impact on Cognition and Education, 1–35.

Bashirian, S., Barati, M., & Fathi, Y. (2014). Prevalence and Factors Associated With Tramadol Abuse Among College Students in West of Iran : An Application of the Theory of Planned Behavior, *I*(1), 10–14. <https://doi.org/10.17795/ajnpp-20314>

Bassiony, M. M., Bassiony, M. M., El-deen, G. M. S., & Yousef, U. (2015). Adolescent tramadol use and abuse in Egypt, 2990(January 2016).

<https://doi.org/10.3109/00952990.2015.1014959>

Birhanu, A. M., Bisetegn, T. A., & Woldeyohannes, S. M. (2014). High prevalence of substance use and associated factors among high school adolescents in Woreta Town, Northwest Ethiopia: multi-domain factor analysis. *BMC Public Health*, 14, 1186. <https://doi.org/10.1186/1471-2458-14-1186>

Chen, K., Yeager, A., Alpa, S. J., & Deborah, E. K. (2004). Prevalence and Correlates of past year substance use, abuse, and dependence in Suburban community sample of high-school students. *Addictive Behaviors*, 29(2), 413–423. <https://doi.org/10.1016/j.addbeh.2003.08.013>
Crime, U. N. O. on D. and. (2014). *World Drug Report 2014*. United Nations publication. Vienna. <https://doi.org/10.1007/s12117-997-1166-0>

Crime, U. N. O. on D. and. (2015). *World Drug Report 2015*. United Nations publication (Vol. 53). Vienna. <https://doi.org/10.1017/CBO9781107415324.004>

Crosnoe, R., Erickson, K. G., & DornBusch, M. S. (2002). Protective functions of family Relationship and School factors on the deviant Behavior of Adolescent Boys and Girls: Reducing the Impact of Risky Friendship, 515–544 <https://doi.org/10.1177/0044118X02033004002>

Dennis-antwi, J. (2003). A NATIONAL SURVEY ON PREVALENCE AND SOCIAL CONSEQUENCES OF SUBSTANCE (DRUG) USE AMONG SECOND CYCLE AND OUT OF SCHOOL YOUTH IN GHANA PRINCIPAL INVESTIGATOR : Dereje, A. & G.

(2014). Child & Adolescent Behavior Prevalence and Predictors of Cigarette

Smoking among Adolescents of Ethiopia : School Based Cross Sectional Survey, 3(1), 1–8.

<https://doi.org/10.4172/2375-4494.1000182>

Fischer B et al. (2004). Injection drug use and the hepatitis C virus. Retrieved July 25, 2017, from <https://www.ncbi.nlm.nih.gov/pubmed/15273266>

Fleming, C. B., Brewer, D. D., Gainey, R. R., Msw, K. P. H., & Catalano, R. F. (2008). Parent Drug Use and Bonding to Parents as Predictors of Substance Use in Children of Substance Abusers, (November 2014), 37–41. <https://doi.org/10.1300/J029v06n04>

Genovese, J. E. C., & Wallace, D. (2010). The Journal of Genetic Psychology : Research and Theory on Human Development Reward Sensitivity and Substance Abuse in Middle School and High School Students Reward Sensitivity and Substance Abuse in Middle School and High School Students, (October 2014), 37–41. <https://doi.org/10.3200/GNTP.168.4.465-469>

Ghana Demographic Health and Survey. (2008). *Ghana*. Maryland. Retrieved from www.DHSprogram.com

Liberia Demographic Health and Survey. (2013a). Liberia Demographic Health and Survey. (2017b). *Global status report on alcohol and health*.

Maryland. Retrieved from www.DHSprogram.com of-marijuana-globally-Report-451744

Gil, A. G., Wagner, E. F., & Tubman, J. G. (2004). Associations Between Early-Adolescent Substance Use and Subsequent Young-Adult Substance Use Disorders and Psychiatric Disorders Among a Multiethnic Male Sample in South Florida, 94(9), 1603–1609.

Hamilton F, S., & Crouter C, A. (1980). Work and growth: A review of research on the impact of work experience on adolescent development. *Journal of Youth and Adolescence*, 323–338.

<https://doi.org/10.1007/BF02087984>

Hilton, C. N., Alan, Michael, R., Bollinger, L. C., Burns, U. M., Chenault, K. I., Dolan, P. R., ... Ph, D. (2011). Adolescent Substance Use :, (June).

Hyucksun, S., Edwards, E. M., & Heeren, T. (2009). Addictive Behaviors Child abuse and neglect : Relations to adolescent binge drinking in the national longitudinal study of Adolescent Health (AddHealth) Study. *Addictive Behaviors*, 34(3), 277–280.

<https://doi.org/10.1016/j.addbeh.2008.10.023>

Jackson, K. L., Waller, J., & Ph, D. (1999). Association Between Employment and Substance Abuse Behaviors Among Public High School Adolescents, (4), 256–263.

Johnson, G., & Chamberlain, C. (2008). Homelessness and Substance Abuse : Which Comes First ?, (773281958). <https://doi.org/10.1080/03124070802428191>

Jürgen Rehm, P. D. (2010). The Risks Associated With Alcohol Use and Alcoholism. Retrieved July 20, 2017, from <https://pubs.niaaa.nih.gov/publications/arh342/135-143.htm>

Kafka, & London. (1991). Communication in relationships and adolescent substance use: the influence of parents and friends. *Adolescence*, 587–98. Retrieved from www.researchgate.net/publication/21192548

Kerr, M., & Stattin, H. (2015). What Parents Know , How They Know It , and Several Forms of Adolescent Adjustment : Further Support for a Reinterpretation of Monitoring What Parents

Know , How They Know It , and Several Forms of Adolescent Adjustment : Further Support for a Reinterpretation of Monitoring, (February). <https://doi.org/10.1037//0012-1649.36.3.366>

Kushner G, M., Abram B, K., & Carrier, B. (2000). The relationship between anxiety disorders and alcohol use disorders: A review of major perspectives and findings. *Clinical Psychology Review*, 149–171. [https://doi.org/10.1016/S0272-7358\(99\)00027-6](https://doi.org/10.1016/S0272-7358(99)00027-6)

Lewis, S., Mcneill, A., Gilmore, A., & Britton, J. (2009). Smoking uptake and prevalence in Ghana, 365–370. <https://doi.org/10.1136/tc.2009.030635>

Liddle, H. A., Dakof, G. A., Turner, R. M., Henderson, C. E., & Greenbaum, P. E. (2008). Treating adolescent drug abuse : a randomized trial comparing multidimensional family therapy and cognitive behavior therapy, 1660–1670. <https://doi.org/10.1111/j.1360-0443.2008.02274.x>

Mangerud, W. L., Bjerkeset, O., Holmen, T. L., Lydersen, S., & Indredavik, M. S. (2014). Smoking, alcohol consumption, and drug use among adolescents with psychiatric disorders compared with a population based sample. *Journal of Adolescence*, 37(7), 1189–1199. <https://doi.org/10.1016/j.adolescence.2014.08.007>

Marmorstein, N. R., White, H. R., Loeber, R., & Stouthamer-loeber, M. (2010). Anxiety as a Predictor of Age at First Use of Substances and Progression to Substance Use Problems Among Boys, 211–224. <https://doi.org/10.1007/s10802-009-9360-y>

Peacefmonline.com. (2014). No Title50,000 People Abuse Drugs In Ghana Resulting In 70%

Mad Cases. Retrieved July 21, 2017, from

<http://www.peacefmonline.com/pages/local/social/201411/222894.php> Peltzer, K., Phaswana, N.,

Malaka, D., Kinoti, K. C., Ogot, E. M., & Temmerman, M. (2011).

Prevalence of substance use among college students in Eldoret, western Kenya. *BMC*

Psychiatry 2011 11:1, 36(Suppl), 447–462. <https://doi.org/10.1081/ja-100102636>

Rudatsikira, E., Maposa, D., Mukandavire, Z., Muula, A., & Siziya, S. (2009). Prevalence and Predictors of illicit drug use among school-going adolescents in Harare, Zimbabwe.

<https://doi.org/10.4103/1596.3519.59574>

Rugendo, M. M. (2016). Assessing Substance Abuse Among Secondary School Students in Kendu Zone , Homabay County , Kenya, 24, 73–81.

Ryan, L. G., Miller-loessi, K., & Nieri, T. (2007). RELATIONSHIPS WITH ADULTS AS PREDICTORS OF SUBSTANCE USE , GANG INVOLVEMENT , AND THREATS TO SAFETY AMONG DISADVANTAGED URBAN HIGH-SCHOOL ADOLESCENTS, 35(8), 1053–1071. <https://doi.org/10.1002/jcop.20211>

SAMHSA. (2009). *Results from the 2009 National Survey on Drug Use and Health : Volume I. Summary of National Findings* (Vol. I). Rickvilla. Retrieved from www.oas.samhsa.gov

SAMHSA. (2016). Results from the 2015 National Survey on Drug Use and Health : Detailed tables prevalence estimates. *2015 National Survey on Drug Use and Health*, 209. Retrieved from <http://www.samhsa.gov/data/population-data-nsduh/reports?tab=38>

Steitz, J. A., & Owen, T. P. (1992). School activities and work: Effects on adolescent self-esteem, 37–50.

Volkow, N. D. (2011). Marijuana Abuse.

Volkow, N. D. (2017). Marijuana. Retrieved September 9, 2017, from

<https://www.drugabuse.gov/publications/research-reports/marijuana/letter-director>

World Health Organisation. (2011). Global status report on alcohol and health.

World Health Organisation. (2015). WHO's role, mandate and activities to counter the world drug problem: A public health perspective. *Substance Abuse*, 16. <https://doi.org/10.1006/taap.1993.1141>

World Health Organisation. (2017). *Pre-Review Report*. Geneva. Retrieved from www.who.int

World Health Organization. (2014a). *country profiles*. Retrieved from www.who.int

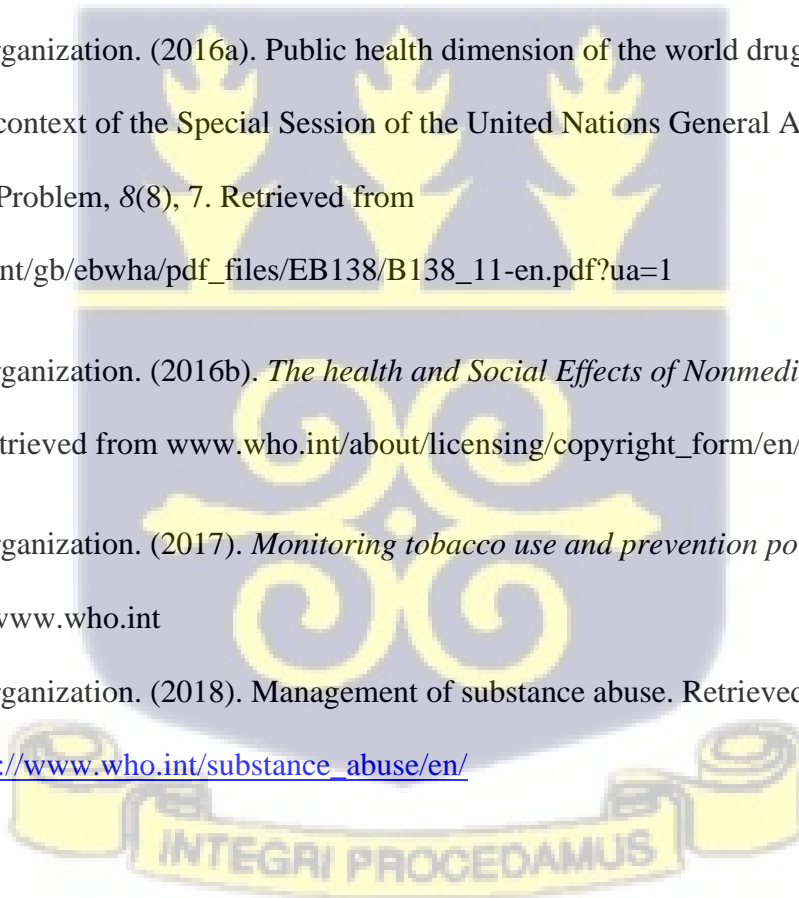
World Health Organization. (2014b). *Global status report on alcohol and health 2014*. Geneva. Retrieved from www.who.int

World Health Organization. (2016a). Public health dimension of the world drug problem including in the context of the Special Session of the United Nations General Assembly on the World Drug Problem, 8(8), 7. Retrieved from http://apps.who.int/gb/ebwha/pdf_files/EB138/B138_11-en.pdf?ua=1

World Health Organization. (2016b). *The health and Social Effects of Nonmedical Cannabis Use*. Geneva. Retrieved from www.who.int/about/licensing/copyright_form/en/index.html

World Health Organization. (2017). *Monitoring tobacco use and prevention policies*. Geneva. Retrieved from www.who.int

World Health Organization. (2018). Management of substance abuse. Retrieved December 11, 2018, from https://www.who.int/substance_abuse/en/



APPENDIXES

Appendix I: Assent Form for Participants

Introduction and consent

Study Title: Factors Associated with Substance Use Among Senior High Schools on the Bushrod Island.

PURPOSE OF RESEARCH STUDY:

This is a research study being undertaken by graduate student of the School of Public Health, University of Ghana, as part of the requirements for the Master of philosophy in Applied Field Epidemiology and Disease Control. The purpose of this study is to provide an falsifiable data on the prevalence of substance use among Senior High School Students on the Bushrod Island this will be used as a means for further research purposes. The research is to collect information from the students on commonly use substance in there schools, this will also express the magnitude of mental health issues among student in the school which will help stakeholder make decisions. The information on the level of knowledge on consequence associated with substance use among SHSS will be provider. This will aid policy makers adopt policies to address the consequence association with substance used among senior high schools.

PROCEDURES:

If you agree to join this research study, you will participate in an self-report-administered questionnaire in which we will used to collect. In each selected class, we will give a completed copy of the questionnaire to individuals to complete. There will be a Research Assistance to aid individuals who might have some difficulties in answering any of the questions. The questionnaire will last for 30 minutes.

RISKS/DISCOMFORTS:

The researcher believes this study presents minimal risk to you. The biggest risk of participating in the study is the risk of the loss of privacy. The researcher has taken a number of steps to prevent losses of privacy. The information you provide the researchers will be kept in a secure place where only the researchers have access to it. Once the information you have provided is summarized, your name will be separated from the summary of what you say, and all personal references that might be used to identify you will be omitted.

ALTERNATIVES TO PARTICIPATION:

Your participation in this study is voluntary. You do not have to join this or any research study. If you do join, and later change your mind, you may quit at any time. If you refuse to join or quit early from the study, you will not be punished or lose any benefits to which you have a right.

BENEFITS:

The benefits of participating in this study are that you have the opportunity to provide feedback in a structured manner regarding the inclusion of persons with mental disabilities, including mental health conditions, to support improved mental health outcomes.

WITHDRAWAL PROCEDURES:

You may quit from the study at any time. You do not have to answer any questions that you do not wish to answer. If you wish to discontinue the study, please notify the study staff right away. If you refuse to join or quit early from the study, you will not be punished or lose any benefits to which you have a right.

COMPENSATION:

You will be given a one exercises book a pen and a pencil for taken part in the study. Package will be available before the commencement of the study.

PRIVACY INFORMATION:

The researcher will take a number of steps to keep any personal information about you private to the fullest extent possible. Reports created will not identify you by name. The focus group discussion summaries will include general characteristics of each participant, but will not include enough information that would allow anyone to identify you. Finally, all focus group discussion summaries and related analytic files will be destroyed in one (1) years after the end of the project.

Individuals involved with the research directly or in a management capacity may review the notes of the focus group discussion. The entire research team is required to keep your identity confidential. The information that identifies you will not be given out to people who are not working on the study, unless you give permission.

CONTACT INFORMATION:

The information on this disclosure statement explains the rights to which you are entitled by joining this study. If at any time you have questions about the research study, you may ask the Research Assistance or you may call the Principal Investigator, (Hawa Marcelia Sherman TELEPHONE 0776913592/0886902292). If you have questions about your rights as a study participant, you may contact the UL-PIRE IRB:

Cecelia Morris
Institutional Review Board
University of Liberia-PIRE
Monrovia, Liberia
231-886 522 833



An Institutional Review Board is a committee organized to protect the rights and welfare of human subjects involved in research.

Appendix II: Consent Form for Participants

CONSENT:

_____ has been informed of the nature and purpose of the procedures described above including any risks involved in its performance. He or she has been given time to ask any questions and these questions have been answered to the best of the investigator's ability. A signed copy of this consent form will be made available to the subject.

Investigator's Signature Date

PARTICIPANT CONSENT:

I have been informed about this research study, its' possible benefits, risks, and discomforts. I hereby agree to take part in this research study as a subject. I recognize that I am free to withdraw this consent and quit this project at any time, and that doing so will not cause me any penalty or loss of benefits that I would be otherwise entitled to enjoy.

Subject's Signature Date

Appendix III: Student Questionnaire

University of Ghana, school of Public Health

Study Title: Factors Associated with Substance Use among Senior High School Students on the Bushrod Island Monrovia, Liberia.

STUDENTS QUESTIONNAIRE

NAME / SCHOOL CODE:

DATE OF INTERVIEW:

INTERVIEWER:

This questionnaire is to best help us to understand Factors Associated with Substance Use among SHS student (Effects and Influence) and young people (adolescents) between the ages of 13 to 24 years in Three Senior High School on the Bushrod Island. Participation is entirely voluntary. We assure you every information collected during the study period will remain confidential. The name and questionnaire number only help us to identify the respondent in case clarification is needed but your name will not appear on any document coming out of the study

→ Ask for oral consent.

In case you have any questions, please let us know.

Please also ask when you have a problem understanding a question.

SECTION A: DEMOGRAPHIC AND BACKGROUND

No	Questions	Response	Code
A1	What is your age? (Completed years)	Write age in years in the box provide	

A2	Sex	Male Female	
A3	School	SHS 1 SHS 2 SHS 3	
A4	Class		
A5	Religious Denominations	Christian Muslim Traditional No Religion other, specify-----	
A6	Who do you live with?	Both Parents Mother only Father only Relative Parents and siblings By self	
A7	What is your parent's/guardian's occupation?	Employed Petty trader Farmer Fisherman Unemployed	

		Others, specify.....	
A8	Do you work apart from schooling?	Yes No	
A9	On an average, how much do you use as pocket money?	-----	
A10	How many siblings do you have?	1-3 4-5 6-more	
A11	What type of work does your sibling do?	Employed Fishing Farming Selling/ Trading Others, specify	
A12	Where do you get money from if you do not work?	Parents Guardians Gifts From work	

SECTION B: KNOWLEDGE AND USE OF SUBSTANCES

<p>B1</p>	<p>What substances have you heard of?</p>	<p>Tobacco (cigarette)</p> <p>Alcohol</p> <p>Wee</p> <p>Cocaine</p> <p>Heroin</p> <p>Others (Specify).....</p> <p>(Tick as many as you have heard of)</p>	
<p>B2</p>	<p>Have you seen any of these substances before?</p>	<p>Yes</p> <p>No</p>	
<p>B3</p>	<p>If Yes, which one?</p>	<p>Tobacco (cigarette)</p> <p>Alcohol</p> <p>Wee</p> <p>Cocaine</p> <p>Heroin</p> <p>Others (Specify)</p> <p>.....</p> <p>(Tick as many as you have seen)</p>	
<p>B4</p>	<p>Have you used any of the above substances before?</p> <p>If yes, ignore 2e and 2f.</p>	<p>Yes</p> <p>No</p>	

B5	Do you know anybody who has used any of these substances?	Yes No	
B6	If yes, who is he/ she to you?	Friend School mate Classmate Parent Relative Neighbor Teacher Other Specify	
B7	Which of the substances did you/the person use?	Tobacco (cigarette) Alcohol Wee Cocaine Heroin Others (Specify) (Tick as many as you/ the person have used)	
B8	Do you/the person still use substances/ drugs?	Yes No	

B9	If yes, which one?	Tobacco (cigarette) Alcohol Wee Cocaine Heroin Others(Specify)..... (Tick as many as you/the person have using)	
B10	At which age did you/the person first use the substances?	15 -17 yrs 18 -20 yrs 21 – 23 yrs 24 - yrs	
B11	Who introduced you/the person to the use of substances?	Friend(s) Family member Myself Drug Pushers Others (specify).....	
B12	Do you/the person take more substances at home or at school?	School Home Both	

B13	Which place do you/the person buy the substances from?	In the area Market Ghettos dealer Beach	
B14	In the past year, have you/the person under the influence of some substance caused harm to others or oneself?	Yes No	

SECTION C REASONS FOR SUBSTANCE USE

C1	Do you/the person have any reason for using substances?	Yes No Not known	
C2	If yes to Q3a, what is the main reason?	To have fun I like the feeling To relax To cope with stress To be like my friends I am bored	

		I feel sad for myself To improve learning	
C3	Why did you/the person take your first substance?	Curiosity Parents or relative offer Friends encouraged me To get away from my problems To get high	

SECTION D: EFFECTS OF SUBSTANCE USE

For the set of question in this section, indicate how many times this has happened to you/the person while under the influence of substance for the last year

D1	Unable to do homework or study for a test.	None 1-2 times 3-5 times More than 5 times	
D2	Got into a fight with other people (friends, relatives, strangers)	None 1-2 times 3-5 times More than 5 times	

D3	Missed out on other things because much time was spent on getting high	None 1-2 times 3-5 times More than 5 times	
D4	Went to school high	None 1-2 times 3-5 times More than 5 times	
D5	Caused shame or embarrassment to someone	None 1-2 times 3-5 times More than 5 times	
D6	Neglected duties and responsibility	None 1-2 times 3-5 times More than 5 times	
D7	Shun by friends and relatives	None 1-2 times 3-5 times More than 5 times OtherSpecific.....	
D8	Missed a day at school	None 1-2 times	

		3-5 times More than 5 times	
D9	Found oneself in a place that one could not remember getting there	None 1-2 times 3-5 times More than 5 times	
D10	Passed out or fainted suddenly	None 1-2 times 3-5 times More than 5times	
D11	Ever been involved in an accident due to substance use that resulted in injury either to oneself or others?	Yes No	
D12	Was told by a friend, neighbor, or relative to stop using substances	None 1-2 times 3-5 times More than 5 times	

SECTION E : EFFECTS ON PERSON, FAMILY AND COMMUNITY

E 1	Generally, what effects do you think substances have on the person?	Tiredness/ sickness Bad temper Fear/ Disturbed sleep Failure to do well at school/ work	
E 2	What effects do you think substances have on the family?	Breakdown in family relationship Sickness Disgrace Loss of trust in child Worry/ Fear	
E 3	What effects do you think substances have on the community?	Crime/ Violence Accidents Breakdown in work relationship Reduce Productivity	
E 4	Are you aware that possession and use of substances specifically narcotic drugs/ illicit drugs in Ghana is an offence?	Yes No	

E5	If you have not used any narcotic substances before, do you feel the urge to use it?	Yes No	
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Appendix IV: Application for Ethical Clearance



UNIVERSITY OF GHANA
DEPARTMENT OF EPIDEMIOLOGY AND DISEASE CONTROL
SCHOOL OF PUBLIC HEALTH

Ref. No.:

23rd August, 2019

Dr. Lawrence Sherman (Co-chair)
National Research Ethics Board
1st Floor, East Wing
JFK Medical Center
21st Street
Sinkor, Monrovia

Dear Sir,

APPLICATION FOR ETHICAL CLEARANCE: HAWA MARCELIA SHERMAN

I write to request for ethical clearance of the research proposal of **Hawa Marcelia Sherman**, an MPhil. student in the Department of Epidemiology and Disease Control, School of Public Health, College of Health Sciences, University of Ghana, Legon.

The research proposal is entitled “**FACTORS ASSOCIATED WITH SUBSTANCE USE AMONG SENIOR HIGH SCHOOL STUDENTS ON BUSHROD ISLAND, MONTSERRADO COUNTY, LIBERIA.**”

Counting on your usual cooperation.

Thank you.

Yours sincerely,

Prof. Francis Anto
Ag. Head of Department

Appendix V: Ethical Clearance



UNIVERSITY OF LIBERIA
CAPITOL HILL
MONROVIA, LIBERIA
WEST AFRICA



Office of the Institution Review Board

IOR0004203

Certification of Human Approvals

March 13, 2020

Hawa M. Sherman
Ghana Field Epidemiology and Laboratory Training Programme, School of Public Health,
Department of Epidemiology and Disease Control, College of Health Sciences, University of Ghana
Email: hawasherm2002@gmail.com

Protocol Title: Factors associated with substance use among senior high school students on Bushrod Island, Montserrado County, Liberia2019

Protocol #: 20-02-201

Dear Ms. Sherman:

In accordance with 45 CFR 46, the human subjects protocol of the above referenced research study reviewed, as an initial, expedited review on February 10, 2020 has been approved by the University of Liberia-Pacific Institute for Research & Evaluation Institutional Review Board (UL-PIRE IRB). This IRB will review the protocol during the implementation of the study to confirm human subject procedures. The expiration date of this approval is March 12, 2020 at Midnight.

Proposed changes to approved human subject research protocol must be reported promptly to the IRB to be reviewed and approved prospectively utilizing a continuing review application. No changes may be initiated without prior approval by the IRB, except where necessary to eliminate apparent immediate hazards to subjects. Any unanticipated problems involving risks to participants or others must be submitted promptly to the UL-PIRE IRB.

The IRB will require you to submit a progress report during the implementation of this study. This institution is in compliance with requirements for protection of human subjects, including 45 CFR 46, 21 CFR 50, and 56, and 38 CFR16.

Kind regards,

Sincerely yours,


Ms. Cecelia A. Morris, MSN
Chairperson, UL-PIRE-IRB

IRB Review Date: 02/10/2020
Approval Period: 03/13/2020 through 03/12/2021
Review Type: INITIAL, EXPEDITED
IRB Review Action: APPROVED
Assurance #: FWA00004853

Appendix VI: Letter of Support



UNIVERSITY OF GHANA
DEPARTMENT OF EPIDEMIOLOGY AND DISEASE CONTROL
SCHOOL OF PUBLIC HEALTH

f. No.:.....

27th August, 2019

The County Education Officer
Montserrado County
Liberia

Dear Sir,

LETTER OF SUPPORT

I write to support the request for ethical clearance for the research proposal of **Hawa Marcellia Sherman**, an MPhil student in the Department of Epidemiology and Disease Control, School of Public Health, University of Ghana, Legon.

The research proposal is entitled, "**FACTORS ASSOCIATED WITH SUBSTANCE USE AMONG SENIOR HIGH STUDENTS ON BUSHROD ISLAND, MONTSERRADO COUNTY, LIBERIA.**"

Thank you for your cooperation.

Yours faithfully,

Dr. Adolphina Addo-Lartey
(Supervisor)



COLLEGE OF HEALTH SCIENCES



Appendix VII: Introductory Letter

