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Predictors of Psychoactive Substance Abuse Among Eastern Nigeran Youth

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This is to certify that the doctoral dissertation by

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2023

Abstract

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MSC, University of Ibadan, 2010

BSC, University of Ibadan, 2006

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Psychoactive substance (PAS) abuse is a major public health problem leading to increased morbidity and mortality. In Nigeria, the incidence rate of PAS abuse has remained high, particularly in the youth population. The purpose of this study was to examine the influence of social factors and school enrollment status on PAS abuse in youth in Southeast Nigeria. The social ecological model and the theory of reasoned action were the theoretical frameworks used for this study; they were selected due to their focus on multiple levels of factors that influence behavior. A quantitative cross-sectional study design approach was used to determine the relationship between social factors, school enrollment status, and PAS abuse. Primary data with a sample size of 420 (school enrolled = 240, school unenrolled = 180) were collected from the target population and analyzed using binary logistic regression analyses. The results of the analyses showed that social factors had a statistically significant influence on PAS abuse in both school enrolled and unenrolled youths ($p < 0.001$). Also, a statistically significant difference was observed between school enrollment status and PAS abuse in youth ($p < 0.001$); school unenrolled youths were more likely to abuse PAS compared to their school enrolled counterpart. Implications for positive social change include increased awareness on the influence of the social factors on PAS abuse in youth, existence of gap between school enrolled and unrolled youth in terms of PAS abuse; all will help to develop evidence-based policies and programs tailored at individual, interpersonal, community, and societal levels towards ameliorating incidents of PAS abuse in youths.

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Dedication

I would like to dedicate this dissertation to my family, friends, well-wishers, and especially to my dear wife Linda, who ensured that this project came to completion through her constant emotional support. This has been a very long and onerous journey that might not have been completed without their support. I also dedicate this dissertation to my parents who made me understand that education is tough, but it is the key to the knowledge of the fundamentals of life.

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I would like to acknowledge Dr. Heba Masood Athar, who was my dissertation committee chair, and whose numerous supports and motherly guidance throughout my dissertation process made it a lot easier for me to navigate through the entire process to the completion. I would like to also extend my gratitude to Dr. Clarence Schumaker, who served on my committee, for his contributions and guidance. Completing this dissertation was a long dream that now becomes a reality.

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Chapter 1: Introduction to the Study

Introduction

The incidence rate and prevalence of psychoactive substance abuse among youth in various African countries are escalating every year (UNODC, 2018). In Nigeria, the occurrence of substance related injuries, illnesses, and deaths among youth is on a steady increase (UNODC, 2018). Several authors reported psychoactive substance abuse to be a risk factor of many health problems including urological, cardiological, respiratory, and neurological diseases (Joseph et al., 2020; Novins et al., 2016; Tesema et al., 2020; UNODC, 2018). Additionally, psychoactive substance abuse has also been linked to high crime rate, low quality of life, low productivity, and premature death among youths (UNODC, 2018). The economic consequence of psychoactive substance abuse is significant. Ultimately, psychoactive substance abuse among youths has a negative consequence on national health, public safety, crime rate, productivity and governance (UNODC, 2018).

Psychoactive substances are naturally occurring, semi-synthetic, or synthetic substances that, when present in one's body, effect mental processing (WHO, 2014). These substances include cannabis, cocaine, non-cannabis depressants, non-cocaine stimulants, and local herbal concoctions (Chukwujekwu, 2017; Joseph et al., 2020; Oluoha et al., 2017; WHO, 2014). Psychoactive substance (PAS) use refers to the authorized intake or consumption of PAS products for medical purpose, whereas its abuse refers to unauthorized or inappropriate usage (UNODC, 2018; WHO, 2014).

In Africa, and particularly in Eastern Nigeria, researchers on PAS abuse have concentrated mainly on youths in colleges and universities (Abdulmalik et al., 2009; Chukwujekwu, 2017; Davoren et al., 2018; Joseph et al., 2020; Oluoha et al., 2017; Tesema et al., 2020). No similar studies had been conducted on youths who are not enrolled in school and particularly those youth from 18-21 years old. Hence, there are no available scholarly data on PAS abuse among this population (Abdulmalik et al., 2009; Chukwujekwu, 2017; Davoren et al., 2018; Joseph et al., 2020; Kanyoni et al., 2015; Oluoha et al., 2017; Tesema et al., 2020).

The need for information on patterns, prevalence, and predictors of PAS abuse among this population is paramount. Conducting this study in Eastern Nigeria is relevant to understand the predictors of PAS abuse among the youths. This study is also relevant in identifying youths who are at risk of PAS abuse, and in the design of early health intervention and health promotion programs. This study may help the governing body of Eastern Nigeria to properly allocate resources based on need and evidence. Identifying risk factors of PAS abuse among youths may lead to effective prevention of PAS abuse and improved health in the future, which will later bring overall excellent health performance among youths.

For this dissertation, I employed a quantitative cross-sectional study design to determine (a) the prevalence of PAS abuse among youths 18-21 years old, (b) the relationship between social factors and PAS abuse among youths 18-21 years old who are not enrolled in school, (c) the relationship between social factors and PAS abuse among youths 18-21 years old who are enrolled in school, and (d) the relationship between

youths' school enrollment or attendance status and PAS abuse. The social factors I investigated in this study were health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, and parental educational level. The psychoactive substances I investigated in this study were cocaine, cannabis, non-cocaine stimulants, non-cannabis depressants, and local herbal concoctions.

I used the social ecological model and the theory of reasoned action as theoretical foundations for this study. Data for my statistical analyses were primarily collected from the study participants. To recapitulate, the discussion in this chapter includes background of the study, problem statement, purpose of the study, research questions and hypotheses, theoretical framework for the study, nature of the study, source of information, limitations and challenges, significance, and the chapter summary.

Background of the Study

The history of PAS abuse in humans goes back to ancient times. The first biblical history of alcohol (PAS) abuse was recorded in Genesis chapter 19, when Lot's daughters had carnal contact with their father after making him drunk. Non-biblical records of human abuse of PAS such as cannabis, opioids, and some natural stimulants can be traced back to 10,000 BC during the Neolithic era (Foundation for Drug-Free World International, n.d.; Lee, 2012). These ancient people discovered PAS-bearing plants, cultivated them, and continued to propagate them for various uses such as food, medicines, and ritual purposes (Lee, 2012).

The knowledge of the utility of PAS-bearing plants was subsequently spread from their native origins to other parts of the world through commerce. Today, there is marked

evidence of illegal cultivation of these plants in most countries (Lee, 2012). For example, the cannabis plant was of central Asian origin, and its utilities spread from its central Asian native origin to other parts of the world; today, cannabis is abused in all countries of the world (Lee, 2012). Also, the cocoa plant is native to South America. The ancient South Americans chewed cocoa leaves as a stimulant to counter the health effects of extreme environment, and today, the utility of this plant as a source of cocaine has spread across the globe (Lee, 2012). The search for better PAS quality and subsequent development in science and technology has resulted in extraction and purification of various PAS from its plant origin, and due to its increasing demand and high monetary profit to the peddlers, all forms of PAS are illegally available for abuse.

In Africa, the cultivation, production, consumption, and trade of PAS-bearing plants such as cannabis, khat, and palm trees have a long history. Khat has been reportedly used as a recreational stimulant in East Africa since 12th century (Lee, 2012; Osman, 2016; UNODC, 2018). Cannabis originally imported from Asia was cultivated in North and South Africa for several centuries (Fareo, 2012; Lee, 2012). Alcohol, tobacco, caffeine, and many locally made herbal concoctions have been produced, consumed, and traded in Africa. The original control of PAS abuse in Africa was based on traditional social network, cultural practices, and cultural beliefs.

In West Africa, the use of alcohol and different types of herbal concoctions for various medicinal and ritual purposes were prehistoric (Fareo, 2012). In Nigeria, the history of PAS abuse such as cannabis, cocaine, and other various synthetic stimulants and depressants is relatively short apart from alcohol and herbal concoctions. The large-

scale trade in PAS and its subsequent widespread abuse in Nigeria is a more recent phenomenon and has raised a public health concern (UNODC, 2018).

Akanni and Adayonfo (2015), Akinbote and Omigbodun (2018), Chukwujekwu (2017), Davis et al. (2014), Joseph et al. (2020), and Tesema et al. (2020) provided information on the prevalence of PAS abuse among high school and college students in Africa. This vital information could be used to compare future results obtained from research on other populations. Degenhardt et al. (2019), Elizabeth et al. (2018), and Ijomantaa et al. (2016) provided information on the association between PAS abuse and an individuals' life experiences. The authors provided multiple views of strategies that could be employed to support victims of PAS abuse.

Adebowale and James (2018), Calhoun et al. (2015), Fisher et al. (2016), Hussey and Flynn (2019), Lev-Ran et al. (2013), and Shakya et al. (2012) all provided information on psychiatric morbidity and other various health morbidities resulting from PAS abuse. The authors found strong evidence of the existence of the public health challenges of PAS abuse and recommended further studies on different populations.

Additionally, Polcin and Korcha (2017) provided information regarding factors that influence PAS abuse among mild psychiatric individuals. The authors found that with well-organized and executed support, intervention and prevention of addiction is possible. Identification of susceptible populations is critical for the implementation and enforcement of social support programs. Chukwujekwu (2017), Oluoha et al. (2017), Tesema et al. (2020), Willmott et al. (2019), and Zhanga et al. (2018) provided information regarding sociodemographic predictors of PAS abuse among schooling

youths. The authors provided multiple views on the relationship between sociodemographic factors and PAS abuse among schooling youths. The authors recommended further studies on different populations to improve generalizability of results.

PAS abuse is a complex topic that requires a vast literature review process. To ensure a thorough literature review, I accessed MEDLINE, ProQuest Central, LexisNexis Academic, and Walden library databases in search of articles and journals related to PAS abuse. Inclusion criteria I used in search of articles and journals were all publications since 2014, observational studies, experimental trials, surveys, substance abuse in Africa, substance abuse in West Africa, substance abuse in Nigeria, substance abuse in Eastern Nigeria, types of psychoactive substance abused in Nigeria, intervention programs for substance abuse, health promotion programs for substance abuse, and current global trend on substance abuse. Search exclusion criteria employed were all publications prior to 2014, comments, conference articles, qualitative studies, study protocols, laboratory-based diagnosis, shot notes, and editorials.

Problem Statement

The persistent increase in psychoactive substance (PAS) abuse among youths across the globe is a major public health challenge (UNODC, 2018; WHO, 2014). Psychoactive substances are naturally occurring, semi-synthetic, or synthetic substances that, when present in one's body, impacts mental processing (WHO, 2014). These substances include cannabis, cocaine, non-cannabis depressants, non-cocaine stimulants, and local herbal concoctions (Chukwujekwu, 2017; Joseph et al., 2020; Oluoha, et al.,

2017; Trucco, 2014; WHO, 2014). Psychoactive substance use refers to the authorized intake or consumption of PAS products for medical purposes, whereas its abuse refers to unauthorized or inappropriate usage (UNODC, 2018; WHO, 2014). The global lifetime prevalence of PAS abuse among youths is reported to be above 50% (Beijer et al., 2018; Joseph et al., 2020; Novins et al., 2016; Tesema et al., 2020). Worldwide, over 400,000 direct deaths and 11,400,000 indirect deaths result annually from the abuse of PAS (Joseph et al., 2020; Novins et al., 2016; Tesema et al., 2020; UNODC, 2018). The global disease burden due to abuse of PAS has been estimated to be 1.5% and above 5% in some countries (Mallet, 2015; Tesema et al., 2020; UNODC, 2018). The lifetime abuse of PAS among the general population in Nigeria is estimated to be above 50% (Joseph, et al., 2020; Tesema et al., 2020; UNODC, 2018).

PAS abuse has many negative health effects (UNODC, 2018; Ven Gastel, 2013). Individuals who abuse PAS have a higher risk of being ill, require more health care attention, suffer a greater level of social discrimination, and have a higher risk of premature death (Joseph et al., 2020; Tesema et al., 2020; UNODC, 2018). In youths, the consequences of PAS abuse are more pronounced and affect their entire wellbeing (UNODC, 2018). Understanding PAS abuse predicting factors, and its prevalence among different populations is key to identifying appropriate interventions and prevention programs (UNODC, 2018).

In West Africa, and particularly in Eastern Nigeria, researchers on PAS abuse have concentrated mainly on schooling age youths (Abdulmalik et al., 2009; Chukwujekwu, 2017; Davoren et al., 2018; Joseph et al., 2020; Oluoha et al., 2017;

Tesema et al., 2020). No similar studies had been conducted on youths who are not attending school and particularly those youths from 18-21 years old. Hence, there are no available scholarly data on PAS abuse among this population (Abdulmalik et al., 2009; Chukwujekwu, 2017; Davoren et al., 2018; Joseph et al., 2020; Kanyoni et al., 2015; Oluoha et al., 2017; Tesema et al., 2020).

The United Nations and the World Health Organization define youths as individuals from 15-24 years old (United Nations, 2014; WHO, 2011). The Society for Adolescent Health and Medicine (2017) defined the same age bracket as "young adult;" however, there is no international consensus on this nomenclature. Individuals from 15-24 years are internationally recognized as youths, and this nomenclature will be adopted in this dissertation to describe individuals from 15-24 years age old (United Nations, 2014; WHO, 2011).

The Nigeria school system follows the 6-3-3-4 structure (Gbemisola & Adeola, 2015; Orluwene & Igwe, 2015). This means six years in primary school, three years in junior secondary school, three years in senior secondary school, and four years in college or university. In terms of education, youths can be individuals who are in senior secondary school, college students, young college graduates, and those who have dropped out of senior secondary schools and colleges. Youths within the ages of 18-21 years old are expected to be in high schools and colleges (Gbemisola & Adeola, 2015; Orluwene & Igwe, 2015). Due to financial, individual, and family factors, as well as societal influences, a significant number of youths are not attending or dropping out of school in West Africa (UNODC, 2018).

The target population was individuals who were not enrolled in any school for different reasons and are within the age bracket 18-21 years old. This group of people is important since they contribute significantly to the population of youths, and they are made up of active individuals who do not have access to various PAS abuse control measures available in schools for school enrolled youths. As a result, the need for information on patterns, prevalence, and predictors of PAS abuse among this population is paramount.

Purpose of the Study

The purpose of this empirical research was to determine (a) the prevalence of PAS abuse among youths 18-21 years old; (b) the relationship between social factors and PAS abuse among youths 18-21 years old who were not attending/enrolled in any school; (c) the relationship between social factors and PAS abuse among youths 18-21 years old who were attending/enrolled in school; and (d) the relationship between youths' school attendance/enrollment status and PAS abuse. The social factors investigated in this study were health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, and parental educational level. The objective of (b) and (c) above was to evaluate how each of the two groups of youths responds to PAS abuse in relation to the selected social factors. The population of interest was youth between the 18-21 years old and living in Southeast Nigeria.

Research Question and Hypothesis

RQ1: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not schooling?

$H_0$1: There is no significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not schooling.

$H_1$1: There is a significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and substance abuse among youths aged 18-21 years old and not schooling.

RQ2: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are schooling?

$H_0$2: There is no significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are schooling.

$H_1$2: There is a significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years and are schooling?

RQ3: What is the relationship between school attendance status and PAS abuse among youths aged 18-21 years old?

$H_0$3: There is no relationship between school attendance status and PAS abuse among youths aged 18-21 years old.

$H_1$3: There is a relationship between school attendance status and PAS abuse among youths aged 18-21 years old?

Theoretical Framework

The theoretical foundation for this study was based on two models. The social ecological model (SEM) explains the multiple levels of factors that influence behavior. According to SEM, understanding individual, interpersonal/relationship, community, and societal/public policy levels of influence is important in developing effective health interventions and health promotion programs (Bronfenbrenner, 1977). The individual level of SEM explains that an individual's biological make-up and personal history can influence his or her attitudes, beliefs, and behaviors. The relationship/interpersonal level of SEM explains that a person's family members, partners and closest social circle/peers may influence the person's behaviors and contribute to the person's experience (Bronfenbrenner, 1977). This model is important in assessing the influence of close relations on youth's PAS abuse behavior. The third level of SEM are the community level factors. The community level of SEM explains that a person's social and physical environmental settings may influence the person's attitudes, beliefs, and behaviors. The final level of SEM are the societal level factors. According to SEM, factors such as cultural and social norms, economic, educational, health, and social policies are important influencers of individual's attitudes and behaviors (Bronfenbrenner, 1977).

The principles of SEM are consistent with the theory of reasoned action (TRA). TRA is an individual level theory that provides a valid framework for explaining the antecedents of PAS abuse among individuals (Fishbein & Ajzen, 2010; Madden et al., 1992; Lorenzo-Blancoa et al., 2016; Stoddard & Pierce, 2018; Willmott et al., 2019; Zhanga et al., 2018). According to TRA, the intentions of an individual influence his or her behaviors. Intentions are determined by attitudes and perceived subjective norms. Attitude in this context means self-assessment of the consequences of one's behavior (Willmott et al., 2019). Perceived subjective norms relate to self-perception of approval or rejection of one's behavior by others (Stoddard & Pierce, 2018; Willmott et al., 2019; Zhanga et al., 2018). Various researchers have proposed that intentions and perceived subjective norms are critical in predicting PAS abuse among youths (Fishbein & Ajzen, 2010; Lorenzo-Blancoa, et al., 2016; Stoddard & Pierce, 2018; Willmott et al., 2019; Zhanga et al., 2018). Youths may engage in PAS abuse when they perceive the behavior as having little or no consequences and is generally acceptable by close associates and or society (Stoddard & Pierce, 2018; Willmott et al., 2019).

Nature of the Study

My study was a quantitative cross-sectional survey. The study was void of any intervention and involves a representative sample that allowed for comparison (Creswell & Creswell, 2018; Rudestam & Newton, 2015). The aim of the study was not to make causal inferences but to explain patterns, prevalence, and possible predictors of PAS abuse among youths (Creswell & Creswell, 2018; Rudestam & Newton, 2015). I collected the data for this research at one time from each participant using a self-

administered questionnaire, and I used SPSS software version 28.0 for both data editing and analysis, respectively. In addition, I generated descriptive statistics of the data and determined associations between predictors of PAS abuse by binomial logistic regression using SPSS software. Data on gender, family status, friend/family abuse of PAS, current parental marital status were measured at nominal levels. These group of variables are nominal and categorical in nature, and the association between these variables and PAS abuse will be determined using binomial logistic regression. Data on health literacy level and parental educational level will be measured at ordinal levels. The association between health literacy level, parental educational level and PAS abuse were also determined using logistic regression. Furthermore, data on school enrollment status of the participants were measured and recorded at nominal and categorical levels. I performed binomial logistic regression to determine the relationship between enrolled in school, not enrolled in school, and PAS abuse while controlling for age and gender.

Sources of Information

I collected primary data for this study. Primary data ~~w~~ere collected for this dissertation since there was no available database in Eastern Nigeria and Nigeria proper that contain the required PAS abuse information on the target population. No routine data collection on substance abuse, health and demographic information were available in the country. The study population included all youths who were between the age of 18-21 years old and living in Eastern Nigeria. I employed quota sampling strategy to ensure a representative sample (Rudestam & Newton, 2015). Samples gathered by quota sampling approach had proven to have characteristics close to the studied population compared to

samples collected via other nonprobability methods. Also, quota sampling generates results that possess considerable external validity (Creswell & Creswell, 2018; Rudestam & Newton, 2015). The choice of quota sampling was driven by the nature of this study and the target population.

I collected my research data with a well-structured, designed, developed, and tested questionnaire comprised of three sections. This questionnaire served as my primary data collection tool. The first section contained questions required to gather demographic information from the participants, section two contained questions related to PAS abuse, and the last section contained questions required to gather information on PAS abuse predictors such as health literacy level, gender, religious affiliation, family status, friend/family abuse of PAS, current parental marital status, and parental educational level. The questions used were adopted from already validated questions from the *World Health Organization's Questionnaire for Youth Drug-Use Survey and from Brief Health Literacy Screening Tool (BRIEF)* (Haun, et al., 2012). I utilized this tool to capture all information required to address my research questions after securing permission from the respective authors.

The target population for this study was youth aged 18-21 years old and living in Eastern Nigeria. Eastern Nigeria is comprised of five states out of the 36 States in Nigeria. The states are Abia, Anambra, Ebonyi, Enugu, and Imo, which are located in the Southeast region of the country. The total population of these states is about 40,000,000 people, and the population of individuals between the age 10-21 years old is estimated to be 8,400,000 (21% of the total population). This population contains a significant number

of youths aged 18-21 years old. There was no documented literature that contained the exact population of youths in these states. The people who made up the population of youths aged 18-21 years old are usually found in high schools, colleges, universities, marketplaces, workshops, factories, homes, and at other public places.

I used printed questionnaires with an attached informed consent form to collect the required information from the participants, and every participant was given a small gift worth $2 upon successful completion of his or her questionnaire. The gift was meant to reward them for their time and energy spent in completing the questionnaire. From Fisher's formula for sample size calculation, I required a minimum of 385 participants for this study; however, I increased my questionnaire print by 50% (193) to accommodate for non-responses or incomplete responses.

As noted above, there was no routine national data collection process or database available in Nigeria where secondary data in relation to PAS abuse could be accessed. The only feasible secondary database that may contain information on PAS abuse is the hospital records. There was no common database among the hospitals in Nigeria. Each hospital collects data from their patients and maintains the records independent of other hospitals. Even so, I considered obtaining secondary data from these hospitals to substitute or supplement my primary data in case I encountered impediments that prevented me accessing sufficient primary data. However, collection of secondary data did not happen because I was able to access enough primary data for the study.

Limitations, Challenges, and/or Barriers

There were so many challenges I dealt with in this study. My research involved collection of primary data from the study participants. Therefore, this study was susceptible to various challenges and limitations of primary data collection such as data collection locations, willingness of participants, health literacy level of the participants, and language of the questionnaire, issues of inform consent, as well as challenges of dealing with sensitive information, duration of data collection, researcher fatigue, and cost. The second group of challenges was the availability of relevant literature and research articles required to synthesize an acceptable dissertation proposal document. Finally, data collation and analysis pose another level of limitations and challenges to research that involves primary data, which include making sure that data were properly encoded and edited into SPSS software.

To address these limitations and challenges, I have made several considerations and obtained some provisions that will lessen the magnitude of these challenges. First, I am mobile and possess a valid driving license, which made my movement and data collection faster. I also live in Eastern Nigeria, so location was not a serious problem. I made provision to give a thank you gift to boost the morale of the participants and to boost increase willingness. To address the issue of the health literacy level of my participants, I made literacy level one of the variables to be measured, and my questionnaire was designed using simple (or plain) English without altering its validity. English is the official language in Nigeria, and the general population understands simple English. Fatigue is a natural phenomenon for every stressful task, and I managed it

accordingly by ensuring that I had enough daily rest and a good diet. Regarding cost, I made sufficient financial provision for my dissertation work.

Regarding the literature, many relevant studies are available on PAS abuse. Walden University Library had a sufficient number of these resources, and they were available for students' use. Data were not collected from minors; thus, no parental consent was required. Only the consent of the individual participants was required and obtained. Data collation and analysis were a huge task but allowing sufficient time and using SPSS software eased the stress and demands.

Significance of the Study

Scholarly information on PAS abuse prevalence and predisposing factors among youths who are not enrolled in school is significantly lacking in Africa, and no comparison study on PAS abuse had been conducted among school enrolled and unenrolled youths in West Africa. This information is paramount to identifying appropriate intervention and prevention programs for PAS abuse among youths. This study was designed to identify various factors that influence PAS abuse among youths in West Africa. The information gained from this study may help in the development of evidence-based policies and programs aimed at individual, interpersonal, community, and societal levels towards ameliorating PAS abuse among youths (Calhoun et al., 2015; UNODC, 2018).

Full implementation of the developed programs and policies will bring positive social change in Nigeria. Positive social change is a beneficial significant shift of social structure and cultural patterns over time and may be brought about by collective change

in attitudes, beliefs, and behaviors (Calhoun et al., 2015). Evidence-based health intervention and promotion programs are known to be very effective in bringing positive social change. This study is the first comprehensive research on PAS abuse among youth in Nigeria and West Africa at large; thus, this study has the potential to contribute to social change and to literature. (Akinbote & Omibgodun, 2018; Chukwujekwu, 2017, UNODC, 2018).

Summary

Youth psychoactive substance abuse is both global and local in Nigeria. In Nigeria, occurrences of substance related injuries, illnesses, and deaths among youth are on a steady increase. Various health problems such as urological, cardiological, respiratory, and neurological diseases have been associated with psychoactive substance abuse. Apart from the economic consequence of psychoactive substance abuse, high crime rate, low quality of life, low productivity, and premature death have been reported among youths who abuse PAS. Furthermore, individuals who abuse PAS have a higher risk of being ill, require more health care attention, suffer a greater level of social discrimination, and have a higher risk of premature death. The predisposing factors of PAS abuse among youth are multifaceted and complex and include various social factors and school engagement. In this dissertation, I aimed to determine the relationship between these factors (school enrollment status and various social factors) and PAS abuse among youths in Southeast Nigeria. The social ecological model (SEM) and theory of reasoned action (TRA) served as the theoretical framework for this dissertation. I chose this combination of theories because SEM and TRA act in synergy and cover all levels of

influencing factors of PAS abuse. The results of this study could be beneficial to individuals, families, health promotion workers, and state policy makers. Additional information on SEM and TRA are provided in Chapter 2, as well as a review of several literature sources.

Chapter 2: Literature Review

Introduction

The objectives of this empirical study were (a) to determine the prevalence of psychoactive substance abuse (PAS) among youths; (b) examine the association between social factors and PAS abuse among youths who were not enrolled and not attending any school; (c) evaluate the association between social factors and PAS abuse among youths were enrolled and attending school; and finally (d) to determine the association between youths' school enrollment status and PAS abuse. The social factors that were investigated in this study are youths' health literacy level, gender, family status, friend or family abuse of PAS, current parental marital status, and parental educational level. The aim of (b) and (c) above was to evaluate how each of the two groups of youths responds to PAS abuse in relation to social factors. The target population for this study were youths between the ages of 18-21 who were living in Eastern Nigeria.

PAS abuse among youths is a major public health problem worldwide. Globally, over 400,000 direct deaths and 11,400,000 indirect deaths resulting from PAS abuse have been reported yearly (Harding et al., 2016; Joseph et al., 2020; Tesema et al., 2020; UNODC, 2018). In Nigeria, the lifetime abuse of PAS among youths was estimated to be above 50 percent (Joseph et al., 2020; Tesema et al., 2020). Research on prevalence and risk factors of PAS abuse focused mainly on students. This literature review provides general insight on the prevalence and risk factors of PAS abuse among youths. This literature review chapter comprised of five sections: (a) introduction; (b) literature search strategy; (c) theoretical foundation; (d) literature review related to major risk factors of

Psychoactive Substance (PAS) abuse in youths; and (e) summary and conclusion of literature review chapter.

Literature Search Strategy

I conducted a search for articles in various databases available through Walden's Library and other related sites. The databases I used for article search include CINAHL Plus, Google Scholar, LexisNexis, MEDLINE, ScienceDirect, ProQuest Central, Academic, and Thoreau Multi-Database Search. Inclusion criteria I used in search of articles and journals were "all articles written and published between 2014 and 2022, observational studies, experimental trials, surveys, substance abuse in Africa, substance abuse in West Africa, substance abuse in Nigeria, substance abuse in Eastern Nigeria, global prevalence of substance abuse in youths, intervention programs for substance abuse, health promotion programs for substance abuse, and current global trend on substance abuse (UNODC, 2018)." Search exclusion criteria I employed were "all publications prior to 2014, comments, conference articles, qualitative studies, study protocols, laboratory-based diagnosis, shot notes and editorials".

Search key terms I used were *substance abuse AND Africa OR West Africa OR Nigeria OR Eastern Nigeria; psychoactive substances AND Nigeria youth; substance abuse AND social factors; substance abuse AND West Africa youths OR Nigeria youths; substance abuse AND health programs AND Nigeria policy; substance abuse AND socioeconomic factors;* and *substance abuse AND social economic model OR theory of reasoned action*. I accessed and reviewed over 500 articles written and published between 2014 and 2022.

Theoretical Foundation

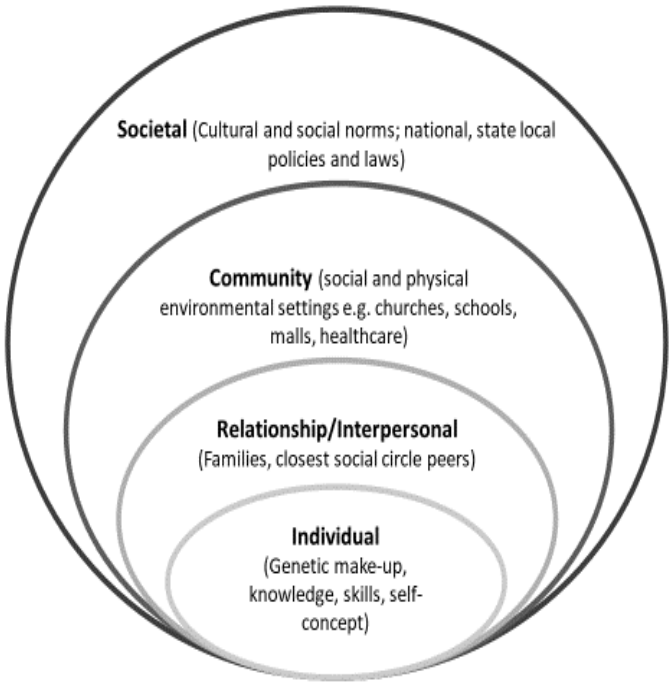
The theoretical foundation I used for this dissertation was based on two models: the social ecological model (SEM) and the theory of reasoned action (TRA). Due to the complexities and interactions of the risk factors of substance abuse, there is no single theory or model that fully explains the etiology, patterns, and ecology of substance abuse (Bogg & Finn, 2009; Fishbein & Ajzen, 2010; Madden et al., 1992). However, SEM and TRA provided critical insight about potential influencers of PAS abuse.

The social ecological model was formally known as ecological systems theory, which was developed by Bronfenbrenner in 1977. This ecological systems theory was later refined by Bronfenbrenner and Stokols and subsequently renamed the social ecological model (Glanz et al., 2008). SEM explains the multiple levels of factors that influence behavior. According to SEM, understanding individual, interpersonal, community, and societal levels of influences are important in developing effective health interventions and health promotion programs (Glanz et al., 2008; McLeroy et al., 1998). Figure 1 is an illustration of levels of influences, as posited by SEM.

The individual level of SEM explains that an individual's biological make-up and history may influence his or her belief and behavior towards substance abuse (Glanz et al., 2008; McLeroy et al., 1988). Personal factors such as gender and age have been found to influence PAS abuse among youths.

Figure 1

The Social Ecological Model



Adopted from Centers for Disease Control and Prevention (CDC), (2020).

Jacobs et al. (2016) and Joseph et al. (2020) reported that most female youths described their PAS abuse as experimental, whereas their male counterparts who engaged in PAS abuse described their abuse of PAS more occasional. CDC (2014) reported that males were more likely to engage in PAS abuse compared to females. In another study, the CDC (2014) found that older adolescents and youths aged 15 years and above were more likely to abuse PAS as compared to individuals aged 14 years and below. Individuality factors that may predict PAS abuse among youths are likely to be seen in anxiety and depression symptoms, antisocial behaviors, lack of self-control, and high-sensation seeking individuals (Doumas & Esp, 2017; NIAAA, 2017).

The relationship or interpersonal level is the second level of SEM. This explains that a person's family members, partners, closest social circle/peers or network and support systems may influence the person's behaviors and contribute to the person's experience (Glanz et al., 2008; Jacobs et al., 2016; McLeroy et al., 1988). The interpersonal level for the study of PAS abuse in youths consisted of interactions with friends, parents or guardian or parental figures, and family members. Type of friends and level of parenting have shown to impact PAS abuse behavior in youths (Jacobs et al., 2016; Patrick & Schulenberg, 2014; Stoddard & Pierce, 2018). Relationship between deviant peers, involvement in antisocial groups, and parental abuse of PAS all may increase the risk of PAS abuse in youths (Joseph et al., 2020; Stoddard & Pierce, 2018). Interspersal issues such as being bullied by peers or relations may also influence PAS abuse in youths (Patrick & Schulenberg, 2014; Stoddard & Pierce, 2018).

The third level of SEM are the community level factors. The community level of SEM explains that a person's social and physical environment settings may influence the person's attitudes, beliefs, and behaviors. For example, youths spend a considerable amount of their time outside their homes, which may be in schools, churches or other social organizations; thus, the process and structure of these organizations influence their attitudes negatively or positively towards PAS abuse (McLeroy et al., 1988). Furthermore, availability of PAS shops or illegal vendors within the neighborhood may increase the chances of PAS abuse among youths (Joseph et al., 2020; Stoddard & Pierce, 2018). Many authors have reported a strong association between community and PAS abuse (Joseph et al., 2020; Tesema et al., 2020; UNODC, 2018). The risk of PAS abuse

in youths increases with increased community consumption, tolerance, and availability of PAS (Connell et al., 2010; Freisthler et al., 2014; Gruenewald et al., 2014).

The final level of SEM are the societal level factors. According to SEM, factors such as cultural and social norms, economic, educational, health, and social policies are important controllers of an individual's attitudes and behaviors (Bronfenbrenner, 1977; McLeroy et al., 1988). Policies are regulations, laws, and practices developed and enforced by authorities of a society to decrease and regulate PAS abuse and its negative consequences (Frieden 2015; Xuan et al., 2015a). Several authors had reported low prevalence of PAS abuse in countries with strict laws and regulations against PAS abuse (Connell et al., 2010; Freisthler et al., 2014; Gruenewald et al., 2014).

In addition, the principles of SEM are consistent with theory of reasoned action (TRA) in relation to substance abuse. TRA is an individual level theory that provides a valid framework for explaining the antecedents of PAS abuse among individuals (Fishbein & Ajzen, 2010; Madden et al., 1992; Lorenzo-Blancoa et al., 2016; Stoddard & Pierce, 2018; Willmott et al., 2019; Zhanga et al., 2018). According to the TRA, the intentions of an individual influence his or her behaviors. Intentions are determined by attitudes and perceived subjective norms. Attitude, in this context, means self-assessment of the consequences of one's behavior.

Perceived subjective norms relate to self-perception of approval or rejection of one's behavior by others (Stoddard & Pierce, 2018; Willmott et al., 2019; & Zhanga et al., 2018). Several scholars have proposed that intentions and perceived subjective norms are critical in determining PAS abuse among youths (Fishbein & Ajzen, 2010; Lorenzo-

Blancoa, et al., 2016; Stoddard & Pierce, 2018; Willmott et al., 2019; & Zhanga et al., 2018). Youths may engage in substance abuse when they perceive the behavior as having little or no consequences on them, and at the same time, it is generally acceptable by close associates and or society in which they live (Stoddard & Pierce, 2018; & Willmott et al., 2019).

Literature Review Related to Key Variables and Concepts

Adebowale and James (2018) conducted a quantitative study among pregnant women in Nigeria and the objectives of their study were (a) to determine the prevalence and patterns of psychoactive substance use among pregnant women in an antenatal clinic in Nigeria; (b) to determine the feasibilities of screening for psychoactive substance use among pregnant women in an antenatal clinic in Nigeria; and (c) to determine the relationship between psychoactive substance use risk severity and psychiatric morbidity among pregnant women in an antenatal clinic in Nigeria. The authors conducted a cross-sectional study on 395 pregnant women who were previously booked for antenatal care using a 20-item self-reporting sociodemographic questionnaire, the alcohol smoking and substance involvement test (ASSIST) as a data collection tool. The researchers performed t-test and ANOVA on the data to determine the relationship between substance use risk severity of probable psychiatric symptoms and lifetime use of psychoactive substance/risk severity, respectively. The result of the study showed that 50.4% of the participant had used alcohol in their lifetime, 0.5% had used nicotine and sedatives, and 11.6% of the participants screened positive for psychiatric morbidity. The authors further reported that those who reported yes on alcohol use were statistically significantly more

likely to report a greater severity of probable psychiatric symptoms (1.79 vs. 0.92; $t = 3.43$, $p < 0.002$). Also, statistically significant differences were observed among the participants in reporting of probable psychiatric symptoms according to severity of risk (moderate risk [2.08] vs. low risk [1.72] vs. never used [0.92], $F = 6.043$, $p = 0.03$), and pregnancy was significantly positively associated with psychiatric morbidity. The authors concluded that ASSIST is feasible screening tool for pregnant women and substance.

Akinbote, and Omigbodun (2018) determined the prevalence of PAS abuse among adolescents and its association anxiety, depression, and sociodemographic factors. According to the authors, PAS abuse among adolescents is a global concern especially for mental health professionals because of its association with anxiety and depression. Akinbote, and Omigbodun (2018) collected primary data from 1059 adolescents using the World Health Organization (WHO) Student Drug Use Questionnaire and the Hospital Anxiety and Depression Scale. The result of the data analysis by the authors showed 57.2% lifetime prevalence of PAS abuse among the adolescents. The authors further observed a three-fold increase on lifetime prevalence on PAS abuse among adolescents with anxiety issue and the observation was statistically significant and independently predicted by older age, poor academic performance, family background, low social class and parental drug use ($p< 0.05$). These findings suggested that anxiety plays major role on PAS abuse among adolescents.

Cambron et al. (2020) conducted a longitudinal quantitative survey on 766 grade 9th students to determine the association between youth substance use and neighborhood structural factors such as socioeconomic disadvantage and residential stability. According

to the authors, the participants and the data for their research were collected from *Seattle Social Development Project* in Washington State and logistic regression analysis of the data shows that neighborhood socioeconomic disadvantages was statistically, significantly, and positively associated with substance use among youth. Youths with more neighborhood socioeconomic disadvantages are more likely to engage in PAS abuse compared to those with less or no neighborhood socioeconomic disadvantages.

Chukwujekwu (2017) conducted a quantitative cross-sectional study on 293 undergraduate students in a Nigerian University to determine the patterns and sociodemographic factors of PAS abuse. A validated self-administered questionnaire was used to collected data on PAS abuse and sociodemographic variables from the participants. The author generates the descriptive statistics of the data using SSPS version 15 and chi-square test and student's t-test were performed by the author to determine association between sociodemographic factors and PAS abuse. The researcher reported a statistically significant association between PAS abuse and gender ($\chi^2 = 7.846$, df=1, $p< 0.05$), PAS abuse and academic class ($\chi^2 = 14.916$, df=5, $p< 0.05$). The results showed that male gender is more likely to engage in PAS abuse compared to their female counterpart and the higher the academic class the more vulnerable to engage in PAS abuse. Chukwujekwu (2017) concluded that the rate of PAS abuse among university students is alarming and the future consequences maybe detrimental therefore, efforts should be concerted to address the perceived challenges. This was a cross-sectional study performed on people in a single university, studies on other populations are required to increase the external validity of the findings. My dissertation is an extension of

Chukwujekwu (2017) study and will involve both students and non-students within the age bracket of 18-21 years old.

Dikko and Sarkingobir (2020) investigated PAS abuse among in-school and out-school youth aged 18-22 years old in Sokoto State, Nigeria using a qualitative cross-sectional descriptive survey. The authors assessed the commonly abused PAS, causes of PAS abuse, effects of PAS abuse, and protection among the participants. Dikko and Sarkingobir (2020) utilized purposive, snowballing, and convenience sampling technique to obtain data from the 60 participants through a structured questionnaire and subsequently analyzed the data using content analysis. The authors findings indicated cannabis, alcohol, inhalants, tranquilizers, opiates, and hallucinogens as most commonly abused PAS among the studied population. The authors further reported peer pressure, rebellion, overwork, shyness, fear, parental influence, fun, and lack of role model as predicting factor of PAS abuse among the participants. The researchers found no relationship between in-school, out-school, and PAS abuse among the studies population. Dikko and Sarkingobir (2020) presents various limitations such as inclusion of mainly male participants (98%), and most (93%) of the out-school participants were married with several kids despite falling within the studied age bracket 18-22 years.

Henderson et al. (2017) compared the sociodemographic characteristics and mental health concerns of youths 12-24 years of age who were not in employment, education or training (NEET) with those of their non-NEET peers. The authors conducted a quantitative cross-sectional analysis on a secondary data obtained from Canadian National Youth Screening Project (NYSP) comparing the characteristics of NEET (n =

690 (26.8%) and non-NEET (n = 1885 (73.2%) youth. Henderson et al. (2017) found that NEET youth showed multiple psychosocial risk factors, more likely to engage in substance abuse, and crime/violence than their non-NEET peers. Furthermore, the authors found that NEET status have more adverse effects on male compared to female. Henderson et al. (2017) concluded by recommending further study that aimed at closing the gap between NEET and non-NEET youths.

Johnson et al. (2017) conducted a quantitative cross-sectional study on 324 undergraduate students of University of Uyo Nigeria, on prevalence and predicting factors of PAS abuse between March and July 2016. The aim of the study was to determine the association between age, gender, academic performance, family member PAS abuse, friend PAS abuse, intra family relationship and PAS abuse among undergraduate students of the University of Uyo Nigeria. The authors collected data from the participants using self-administered questionnaire and analyzed it using SPSS version 23. The researchers reported 27.5% PAS abuse prevalence in all with more in female (37.7%) than male (18.2%). The authors reported peer influence (94.3%), stress (70.5%), and curiosity (58.7%) as the major influencing factors of PAS abuse among undergraduate students. The result of the study showed a statistically significant association between age, gender, academic performance, family member PAS abuse, friend PAS abuse, intra family relationship and PAS abuse ($p<0.05$). This study had a limited external validity because the samples for the study were drawn from only one university out of so many universities in the state. Also, only individuals who were enrolled in school participated in the study, non-students were not involved. PAS abuse

data are also needed from similar individuals who are enrolled in school for comprehensive understanding of predicting factors of PAS abuse among youths.

Joseph et al. (2020) assessed the knowledge of secondary school adolescents on the harmful effects of PAS and also determined the association between PAS and quality of life among the study participants. The researchers obtained data from 360 student's participants in four public and three private secondary schools located at Akoko North-East local government of Ondo State, Nigeria using a self-administered questionnaire. The result of the data analyses indicated that 85% of respondents had good knowledge of health effects of PAS, 11% had fair knowledge whereas 4% reported poor knowledge. Fifty-five percent of the participants reported high quality of life and 41.1% had low quality of life. The authors further reported a negative statistically significant association between awareness of harmful effects of PAS and current use. The authors concluded that high proportion of secondary school students use PAS and there is no correlation between PAS and quality of life in the studies population. This dissertation study will further look into association between student's social factors and PAS abuse.

Kabore et al. (2019) conducted a qualitative study on ten participants using a photovoice method with the objective to determine the individual, interpersonal, organizational, community, and policy factors influencing PAS abuse in Ghana, West Africa. The authors utilized social ecological model and participatory action research theory to guide their study. The authors identified the following as factors influencing PAS abuse in Ghana: ignorance and belief at the individual level, family and peer pressure at the interpersonal level, availability of PAS, cost of PAS, media, urbanization

and slum communities at the community level, and inadequate policy and lack of enforcement at the policy level. The researcher recommended further studies to quantitatively address the various social factors that positively influence PAS abuse among Ghanaians.

Mokwena and Setshego (2021) assessed the prevalence of PAS abuse, and the association between PAS abuse and a set of demographic variables among students aged 14-20 years who were attending public schools located within rural areas of Free State province, South Africa using a quantitative cross-sectional survey design. The authors collected the required data from 629 participants using a self-administered questionnaire, analyzed the data using STATA version 13 software to generate descriptive statistics, and the association between variables was determined by chi-square test. Mokwena, & Setshego (2021) reported 47% prevalence of PAS abuse among the participants with alcohol (87%), cigarette (45%), and dagga (24%) to be the highest consumed PAS among the participants. Abuse of cocaine (2%), nyaope (4%), ecstansy (2%), and others (6%) were also reported by the authors. The author noted that participants who abuse non-alcoholic PAS also abuse alcohol. Mokwena, & Setshego (2021) reported a statistically significant association between gender and PAS abuse (male = 53%, female = 42%, $p = 0.007$), age and PAS abuse (0-15 years of age = 35%, 16-17 years of age = 44%, 18 years and above = 56%, $p = 0.002$), and interpersonal relationship introduction into PAS abuse (parents = 67%, friends = 74%, sibling = 63%, noted stated = 24%, $p = 0.001$). The authors further reported no statistically significant association between parents' employment status, living together with parents, and PAS abuse.

Omotoso et al. (2021) studied the prevalence and patterns of PAS abuse among 2,001 secondary school students in Ilorin, North-Central Nigeria using a multistage sampling technique and a quantitative cross-sectional study design. Research data were collected from the participants by the authors via modified WHO Students' Drug Use Survey Questionnaire, and the collected data was analyzed to determine the prevalence and patterns of PAS abuse among the sample population. The authors reported 83.7% lifetime abuse and 62.4% current abuse of PAS among the participants. The authors also reported that stimulants, cannabis, alcohol, and organic solvents were the most commonly abused PAS among the population. Furthermore, the authors reported a statistically significant association between students' PAS abuse and PAS use by the close relative or friend. The authors stated that students whose close relative/friend uses PAS is more likely to engage in PAS abuse than those who do not have close relative/friend that uses PAS. The researchers also reported that positive perception about PAS among the students is statistically significantly associated with PAS abuse among the population.

Soremekun et al. (2021) examined PAS abuse among 850 student participants drawn from private and public higher institutions in South-West Nigeria, by a comparative quantitative cross-sectional study design and found a statistically significant association between type of institution, level of study, and PAS abuse. Soremekun et al. (2021) also reported that alcohol and heroine were mostly abuse by students from private institutions whereas, amphetamines, cannabis, cocaine, hallucinogens, tobacco, and other PAS were mostly abuse by students from state and federal institutions. The authors

further observed a significantly lower prevalence of PAS abuse among undergraduates between the age of 14-19 compared to older students.

Stoddard and Pierce (2018) examined the association between peer influence, school environment, and past 30-day PAS abuse using positive future orientation and PAS perception in line with theory of reasoned action. The sample for the study includes 392 high school students who were living within Midwestern United State and composed of 49% male and 73% female. Stoddard and Pierce (2018) collected data from the participants using a questionnaire which contain questions related to parents and peer relationship, positive future orientation, PAS abuse perception, and PAS abuse after receiving consent from the parent of each participant. Stoddard, & Pierce (2018), data analysis results showed that positive future orientation is associated with lower PAS abuse in last 30 days, lower positive PAS expectancies, lesser perceived injunctive norms, and greater perceived control over PAS abuse. The authors future reported that negative peer behavior was statistically significantly associated to higher PAS abuse in the past 30 days, and a positive school environment was associated with lesser PAS abuse in the past 30 days, lesser positive PAS expectancies, lesser descriptive norms, and greater perceived control over PAS abuse.

Tesema et al. (2020) conducted an institution-based quantitative cross-sectional survey on 1214 undergraduate students of Mekelle University, Ethiopia using multistage sampling method. The objectives of the study were to determine the prevalence of psychoactive substance use, factors associated with psychoactive substance use and level of dependence among Mekelle University undergraduate students in Ethiopia. The

authors reported that lifetime prevalence of psychoactive substance use was 66.5% among the participants (95% Confidence Interval (CI) = 64% to 69%), while the current prevalence was 49% (95% CI = 46% to 52%). According to the authors, a history of, but not current psychoactive substance use was reported by 18%, while 33.5% reported never used psychoactive substances.

Tesema et al. (2020) reported current prevalence use of alcohol to be 35.5%, tobacco 7.8% and khat 5.7%. According to the authors, of the current users, 17% (95% CI = 14% to 20%) were at a moderate to high risk of dependency; Being over 21 years of age the adjusted odds ratio (AOR) was 1.6(95% CI = 1.37 to 2.25); for male, the AOR was 3.13(95% CI = 2.26 to 4.34); living in urban areas the AOR was 2.39(95% CI = 1.77 to 3.23); being an Orthodox Christian the AOR was 7.55(95% CI = 4.56 to 12.48); and being in 3rd year of study the AOR was 2.3(95% CI = 1.49 to 3.55); being in 4th year of study the AOR was 2.0(95% CI = 1.2 to 3.51) and being in 5th year the AOR was 4.0(95% CI = 2.81 to 7.67). This study provides insight on the prevalence and some factors influencing PAS use among undergraduate students however, self-report, more male in the study (73.7%), more orthodox Christian (88.3%) and the inclusion of only one institution limits the external validity of the study. Though, the authors had stated that future studies that assessed more extensive risk factors using students from more universities could complement the findings in their study.

United Nations Office on Drugs and Crime (UNODC) (2018) noted that PAS abuse among youths is a major public health concern in Nigeria and in most other countries of the world. UNODC (2018) global survey reported an increasing prevalence

of PAS abuse among high school and college students in Africa and in Nigeria, alcohol, tobacco, cannabis and opioids are the most PAS abused by youths. According to UNODC (2018) reports, one in every seven individuals aged 15-64 years in Nigeria had engaged in PAS abuse and the highest prevalence was found among individuals aged 25-39 years. UNODC (2018) reported cannabis as the most abused PAS in Nigeria with the prevalence of 18.8% (in male) and 2.6% (in female). UNODC (2018) reported that other significantly abused PAS in Nigeria were opioids, and cough syrups. UNODC (2018) report also demonstrated that the average age for cannabis abuse initiation in Nigeria was 19 years. This observation strengthened the aim of this dissertation which is partly aimed to characterize PAS abuse among youths aged 18-21 years.

Other non-significantly abused PAS in Nigeria as reported by UNODC (2018) were heroin, cocaine, tranquilizers/sedatives, amphetamines, ecstasy, hallucinogens, and solvents/inhalants. The observed low prevalence abuse of these later PAS may be due to the fact that these groups of PAS are not common in Nigeria and when available are obtained at high cost and an average Nigerian youth may not financially afford the cost (UNODC, 2018). PAS abuse in the form of herbal concoctions was not reported on UNDC (2018) reports but had been reported by several authors. This report provided an insight into various classes of PAS that are commonly abused in Nigeria.

Gap in the Literature

In West Africa, and particularly in Nigeria, researchers on PAS abuse have concentrated mainly on school attending youths (Abdulmalik et al., 2009; Chukwujekwu, 2017; Davoren et al., 2018; Joseph et al., 2020; Oluoha et al., 2017; Tesema et al., 2020).

No similar studies had been conducted on youths who are not attending school and particularly those aged 18-21 years old. These two groups of youths composed of two different populations with different environmental and social exposures. There is no available scholarly data on PAS abuse among youths who are not attending school (Abdulmalik et al., 2009; Chukwujekwu, 2017; Davoren et al., 2018; Joseph et al., 2020; Kanyoni et al., 2015; Oluoha et al., 2017; Tesema et al., 2020). Youths within the age 18-21 years old are expected to be in high schools and colleges (Gbemisola & Adeola, 2015; Orluwene & Igwe, 2015). However, due to some reasons such as financial, individual and family factors, societal influences, and political reasons, significant number of youths had dropped out of school and many are not enrolled in school at all in West Africa. Literature, comparison studies, and information of PAS abuse and the associated risk factors on this population of youths is relatively unavailable.

Literature Review Summary and Conclusion

PAS abuse in youths is a major public health challenge worldwide. There is an increasing prevalence of PAS abuse among youths globally. PAS abuse has many negative health consequences in youths and burden to society. Different levels of mental disorders in youths have been linked to PAS abuse. Youths who abuse PAS have higher risk of being ill, require more health care attention, suffer a greater level of social discrimination, have general low productivity or performance and have a higher risk of premature death. The association between education, health literacy, social factors, and PAS abuse in school attending youths is well established in literature whereas this vital knowledge and information on PAS abuse among youths who were not enrolled in school

is relatively lacking. Also, influence of social factors on PAS abuse among youths is understudied in Nigeria. This dissertation is aimed to decipher this hidden knowledge and information.

Chapter 3: Research Method

Introduction

Psychoactive substance (PAS) abuse among youths is a serious public health concern because of its undesirable consequences on the population (Marshal, 2014). The purpose of this research was to determine the association between school attendance status, social factors, and PAS abuse among youths aged 18-21 in Eastern Nigeria. Specifically, the PAS abuse examined in this study were grouped into five classes: cannabis, cocaine, non-cocaine stimulants, non-cannabis depressants, and herbal concoctions. The social factors investigated in this study were health literacy level, family status, friend/family abuse of PAS, current parental marital status, and parental educational level. In this chapter, I discuss how this research was conducted, including the research design and rationale for selecting the design, the research methodology I adopted, threats to validity, the ethical concerns relating to this research, how the concerns were addressed, and finally the summary of the chapter.

Research Design and Rationale

For this dissertation, I employed a quantitative cross-sectional study design to assess possible effects of social factors and school attendance status on PAS abuse. Quantitative cross-sectional study is a point-in-time form of observation that involves analysis of data obtained at a specific point in time from a sample population isolated from the population of interest. In a quantitative cross-sectional study, a sample population is identified and taken from the target population and questioned using either questionnaires or other related tools in order to assess exposures or risk factors of interest

(Creswell & Creswell, 2018; Field, 2013; Rudestam & Newton, 2015). Quantitative cross-sectional study design is very helpful in assessing outcome prevalence and can provide valuable evidence that demonstrate causation (Creswell & Creswell, 2018; Field, 2013; Rudestam & Newton, 2015).

Quantitative cross-sectional design is appropriate for my dissertation because it allows for one-time observation of a population at a particular point in time; this also makes the results from the analysis generalizable to similar population, provided the sample is representative of the target population (Aschengrau & Seage, 2013; Creswell & Creswell, 2018; Rudestam & Newton, 2015). Results from quantitative cross-sectional studies are useful in the planning and evaluation of public health programs (Creswell & Creswell, 2018). Quantitative cross-sectional design was appropriate for my dissertation because it is possible to collect all required data at a specific point in time, and it also allowed for studying multiple independent and dependent variables at the same time. Data collected via questionnaires can be analyzed using quantitative cross-sectional study design (Creswell & Creswell, 2018; Rudestam & Newton, 2015).

The choice of this study design concurred with other similar studies aimed at understanding the association between the variables. Quantitative cross-sectional design is also appropriate for my dissertation because it allows numeric description, or comparison of associations, between variables obtained from data; it is also helpful in determining statistical significance of an association between a risk factor and outcome variable (Rudestam & Newton, 2015). There is also no known constraint on this dissertation due to this study design. The data for this study were primary data, which

was collected from youths aged 18-21 years in Eastern Nigeria. Primary data were collected because there was no available database in Eastern Nigeria or Nigeria proper that contained the required PAS abuse information on the target population. Also, there was no routine data collection on substance abuse, health, and demographic information available in the country.

The predictor variables for this study were school attendance status and social factors. The school attendance status is described as enrolled and attending school or not enrolled and not attending school, enrolled but stopped attending school. The social factors are specifically youths' health literacy level, gender, family status, friend or family abuse of PAS, current parental marital status, and parental educational level. The outcome variable for this study is PAS abuse, which is described as unauthorized intake or consumption of cannabis, cocaine, herbal concoction, other non-cannabis depressants or other non-cocaine stimulants (UNODC, 2018). Age was controlled.

Methodology

Population

The target population for this study is youths who are18-21 years old living in Eastern Nigeria. Eastern Nigeria is comprised of five out of the 36 States in Nigeria. The states are Abia, Anambra, Ebonyi, Enugu, and Imo, and are located in the Southeast region of the country. The combined population of these states is about 40,000,000 people, and the population of individuals between the age 10-21 years old is estimated to be 8,400,000 (21% of the total population). There were no documented literature sources or data that contained the exact population of youths in these states. The people that make

up the population of youths 18-21 years old are usually found in high schools (senior secondary schools), colleges, universities, marketplaces, workshops, various commercial and private establishments, and at homes.

Sampling and Sampling Procedures

I employed a nonprobability, specifically convenient quota sampling strategy to ensure a representative sample (Rudestam & Newton, 2015). The main reason for using quota sampling was to make sure that I selected a sample that was as similar as possible to the sampling population, and to ensure intra-population representation. Samples gathered by a quota sampling approach have proven to have characteristics close to the studied population, when compared to samples collected via other nonprobability methods. Also, quota sampling generates results that possess considerable external validity (Creswell & Creswell, 2018; Rudestam & Newton, 2015). The choice of quota sampling was driven by the nature of this study and the distribution of the target population in relation to school attendance status.

The sample size for this dissertation is estimated using Fisher's formula below (Fisher et al., 1991).

$$n = \frac{z^2 p(1-p)}{d^2}$$

n = required sample size

z = standard normal deviation, set at 95% confidence level corresponding to 1.96

p = population prevalence (50% is used since the population prevalence is not known)

d = degree of accuracy set at 0.05 for 95% confidence level.

From Fisher's formula for sample size calculation, for population exceeding 10,000, I required a minimum of 385 participants for this study. I increased the number of printed questionnaires by 50% (from 385 to 578) to accommodate for non-responses or incomplete responses.

Procedures For Recruitment, Participation, and Data Collection

The target population for this study was youths aged 18-21 years old living in Southeast Nigeria in one of the following five states: Abia, Anambra, Ebonyi, Enugu, and Imo for the last three years. I collected primary data for this study, as there was no available database in Southeast Nigeria or Nigeria proper that contained the required PAS abuse information on the target population. There was no routine data collection on substance abuse, health, and demographic information available in the country. Thus, I collected my research data via a well-structured, designed, developed, and tested questionnaire. This questionnaire served as my primary data collection tool.

The questionnaire was comprised of three sections. The first section contained questions required to gather demographic information from the participants; section two contained questions related to PAS abuse; and section three contained questions required to gather information on PAS abuse predictors such as health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, and parental educational level. The questions used were adopted from already validated questions from the *World Health Organization's Questionnaire for Youth Drug-Use Survey* and

from *Brief Health Literacy Screening Tool (BRIEF)* (Haun, et al., 2012). I utilized this tool to capture all information required to address my research questions.

I used printed questionnaires with an attached inform consent to collect the required information from the participants and every participant was given a small gift worth $2 upon successful completion of his or her questionnaire. The gift is meant to appreciate them for their time and energy spent in completing the questionnaire. As noted above, there is no routine national data collection process or database available in Nigeria where secondary data in relation to PAS abuse could be accessed. The only feasible secondary database that may contain information on PAS abuse was the hospital records. There was no common database among the hospitals in Nigeria. Each hospital collects data from their patients and maintain the records independently of other hospitals. I considered obtaining secondary data from these hospitals to substitute or supplement my primary data in case I encountered impediments that prevented me accessing sufficient primary data. However, I did not collect secondary data because I was able to access sufficient primary data for this study.

Instrumentation

The measuring instrument for this study consisted of three sections. Section A: this section consists of ten items meant to gather participants' sociodemographic characteristics and school attendance status. Section B: This consists of the alcohol, tobacco, cannabis, hallucinogens and stimulants use sections of the World Health Organization Questionnaire for youth drug use surveys. This instrument was developed by several persons from different parts of the world including Nigeria. The instrument

had been used in different cultures and countries, including Nigeria. A high validity and a mean test – retest reliability of 86.7% had been reported for all items of the questionnaire. An alpha reliability of 0.76 was obtained for this instrument. This tool is an open access tool and available on WHO website. Permission from WHO is not required for the use of WHO materials issued under the *Creative Commons Attribution-Non-Commercial-Share Alike 3.0 Intergovernmental Organization (CC BY-NC-SA 3.0 IGO) license*. I chose this tool for data collection because many previous studies of substance abuse had employed a similar tool. Section C of my measurement tool is a *Brief Health Literacy Screening Tool (BRIEF)* and I will use this tool to measure my participants' health literacy level. This tool consists of four items and validated to be used on adults 18 to 64 years with a sensitivity of 79 percent (Haun, et al., 2012). Permission to use this tool was granted to me by the author.

Operationalized Definition of Variables

Given the complexities of the variables and the multiple meanings they can have, the studied variables are defined as follows for the purposes of this dissertation.

- PAS in this study refers to psychoactive substances. Psychoactive substances in the context of this study refers to as substances that affects mental processing after abuse (WHO, 2014). Five categories of PAS used in this study are cannabis, cocaine, herbal concoction, other non-cannabis depressants or other non-cocaine stimulants.
- PAS abuse is defined as unauthorized intake or non-medical use of one or more of the five categories of PAS by injecting, inhaling, smoking, and or by swallowing.

PAS abuse is a dependent dichotomous categorical variable and coded as yes (1) for the abuser and no (0) for non-abuser.

- Youths is defined as individuals from 15-24 years old (United Nations, 2014; WHO, 2011).
- School attendance status is defined as been enrolled and attending school and coded as yes (1) and no (0) for not attending school or not enrolled in school
- Health literacy level is one of the social factors investigated in this study. It is defined as the degree to which one can read, understand, exchange, and use health information and resources (Haun, et al., 2012). Health literacy of the participants was measured using the *brief health literacy screening tool (BRIEF)* (Haun, et al., 2012). BRIEF is a four-item tool and each item on the tool was worth one to five points depending on the response. The values for the four responses were added up to get a total score, which can range from a minimum of four to a maximum of twenty. A total score of four to twelve was interpreted as having a limited health literacy and coded as (0), a total score of thirteen to sixteen was interpreted as having a marginal health literacy and coded as (1), and a total score of seventeen to twenty was interpreted as having an adequate health literacy and coded as (2) (Haun, et al., 2012).
- Gender is defined as a sexual orientation of an individual participant. Two sexual orientations were measured and coded as female (0) and male (1) respectively.
- Family Status is defined as the number of wives married by the father of each participant. Participants whose father married one wife were referred to as

monogamous family and coded as (0) and those whose father married more than one wife were categorized as polygamous family and coded as (1).

- Friend/Family abuse of PAS is defined as having a family member and or a friend who abuse PAS. This variable was measured categorically and coded as no (0) and yes (1) respectively.
- Parental marital status is defined as the current marital status of the parents of the participants. This is a categorical variable and coded as follows: separated or divorced (0), father and mother were alive and still living together (1), one parent is deceased (2), and both parents were deceased (3) respectively.
- Parental educational level is defined as the highest educational qualification of the participant's father and mother. This was measured and coded as follows: below college level (0), college level (1), university level and above (2), and do not know (5).

Data Analysis Plan

To test the hypotheses for this study, I used IBM SPSS Statistical software standard version 28.0. I collected primary data for this study with printed questionnaire. The information gathered with the questionnaire were transformed into SPSS data editor and analyzed with SPSS software. The research questions and hypotheses tested were as follows:

RQ1: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not schooling?

$H_0$1: There is no statistically significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not schooling.

$H_1$1: There is a statistically significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and substance abuse among youths aged 18-21 years old and not schooling.

RQ2: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are schooling?

$H_0$2: There is no statistically significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are schooling.

$H_1$2: There is a statistically significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years and are schooling?

RQ3: What is the relationship between school attendance status and PAS abuse among youths aged 18-21 years old?

$H_0$3: There is no statistically significant relationship between school attendance status and PAS abuse among youths aged 18-21 years old.

$H_1$3: There is a statistically significant relationship between school attendance status and PAS abuse among youths aged 18-21 years old?

I used descriptive statistics to describe the demographic characteristics of the studied population. For my inferential statistics, I employed binary logistic regression tests to determine the relationship between the predicting and outcome variables for each research question. I used binary logistic regression test because of its wide application in determining relationship between nominal/categorical predictor variable and one or more outcome variables. The binary logistic regression was used to compute for both the association and direction of the association between dependent and independent variables. Odds ratios, significance levels, Wald statistics and beta values will be generated from the logistic regression tests.

The odds ratio is described as the risk estimate of dependent variable in the presence of the independent variable. The significance of the relationship between the dependent and independent variables was determined by the significance values in the equation tables of the variables. For the relationship to be significant, the significant value must be less than the set critical level of significance ($\alpha < 0.05$). The direction of the association will be determined by the beta values. The model summary table (Table 12) gives an estimate of the outcome that were predicted by the independent variable. In the analyses, the cofactor/covariable (age) will be included among the independent variables in order to detect their effects on the model.

Threats to Validity

Research findings are evaluated based on its internal and external validity. The internal validity deals with the accuracy of the association between dependent and independent variables, while external validity deals with the similarity between the

studies sample and the population. In otherwards, external validity assesses the applicability of the study finding in other studies (see Frankfort-Nachimias and Nachimias, 2008). My dissertation study is an observational cross-sectional study using primary data collected through quota sampling of a large sample size therefore, threats to both internal and internal validities were limited (see Frankfort-Nachimias and Nachimias, 2008).

Ethical Procedures

I used primary data for this dissertation study. Printed questionnaires was used for data collection from the participants and consent to participate was obtained from each participant through an informed consent form attached on each questionnaire distributed to individual participant. The participants in this study were youths between 18 to 21 years old and hence there will be no need for seeking consent from their parents. Finally, I received approval from Walden University Institution Review Board (IRB) before moving on to data collection.

Summary

This chapter identified and described the study design for this dissertation. The methodology and other components of the methodology such as the target population, sampling procedures, data collection and analysis were also described in this chapter. A quantitative cross-sectional approach was identified and used for data collection and data analyses. There were no significant threats to both internal and external validities present in this study. Ethical concerns of the study were assessed and addressed in this chapter.

Moving further is chapter four, which gave details of data analyses and the results of this study.

Chapter 4: Results

Introduction

Most of the studies conducted on psychoactive substance (PAS) abuse in West Africa, and Nigeria in particular, have concentrated on the elderly and college students (Chukwujekwu, 2017; Davoren et al., 2018; Joseph et al., 2020; Oluoha et al., 2017; Tesema et al., 2020). The purpose of this dissertation was to investigate the influence of social factors on PAS abuse among youth in Southeast Nigeria. The social factors investigated in this study were youth's school enrollment status, health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, and parental level of education. The dependent variable in this study was PAS abuse in five major categories; cocaine, non-cocaine stimulants, cannabis, non-cannabis depressants, and local herbal concoctions abuses were analyzed. The population studied was Southeast Nigerian youths aged 18 to 21 years. Primary data were collected and used to conduct this analysis. The research questions and hypotheses that guided this study are as follows:

RQ1: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not enrolled in school?

$H_0$1: There is no significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not enrolled in school.

H_11: There is a significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and substance abuse among youths aged 18-21 years old and not enrolled in school.

RQ2: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are enrolled in schooling?

H_02: There is no significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are enrolled in schooling.

H_12: There is a significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years and are enrolled in schooling?

RQ3: What is the relationship between school enrollment status and PAS abuse among youths aged 18-21 years old?

H_03: There is no relationship between school enrollment status and PAS abuse among youths aged 18-21 years old.

H_13: There is a relationship between school enrollment status and PAS abuse among youths aged 18-21 years old?

The study's research questions and hypotheses were addressed based on information obtained from primary data collection. In Chapter 4, I will address the data collection process, data collection time frame, participants' recruitment and response rates, baseline descriptive and demographic characteristics of the studied population, proportional representation of the sample population, and results of the analysis. The sample size for this study was estimated using Fisher's formula for sample size calculation for populations exceeding 10,000. The statistical analyses of the data were performed using the IBM SPSS version 28 software application. The processes and methodology used for data collection were discussed in Chapter 3.

Data Collection

This is a primary data study, and I started collecting data from the participants after receiving study approval from the Institutional Review Board (IRB) (approval number 10-20-2022-0326694). Data collection lasted from October 26, 2022 to January 04, 2023, over a total of 74 days. Participants for this study were recruited at public places in Owerri, Orlu, Akwa, Ihiala, Onitsha, Aba, Umuahia, and Enugu communities, all located within the states of Southeast Nigeria.

I distributed questionnaire prints to 578 potential participants, of which 72.7% (420) participants responded and returned a completed and valid questionnaire. The data from these valid questionnaires were the data used in statistical analyses for this study. Of these, 27.3% (158) of the returned questionnaires were invalid and were not included in the analysis. The invalid questionnaires were due to missing information. The data I

collected from the participants were transferred to IBM SPSS version 28 software data editor and analyzed accordingly.

School Enrollment Status

Table 1 shows the frequency distribution of the school enrollment status of all the participants. Students' participants made up of 57.1% (240) of the sample, and non-school enrolled (that is, non-students) participants were 42.9% (180) in total.

Table 1

Descriptive Statistics by School Enrollment Status of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Not enrolled in School	180	42.9	42.9	42.9
Enrolled in School	240	57.1	57.1	57.1
Total	420	100.0	100.0	100.00

Descriptive Statistics of the Social Factors

Gender

Table 2 shows the gender distribution proportion of the study participants. The split was 50% female and 50% male participants in the student's sample. For the non-student participants, about 33.3% were females and 66.7% were males.

Table 2

Descriptive Statistics by Gender of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Students				
Female	120	50.0	50.0	50.0
Male	120	50.0	50.0	100.0
Total	240	100.0	100.0	
Non-Students				
Female	60	33.3	33.3	33.3
Male	120	66.7	66.7	100.0
Total	180	100.0	100.0	

Table 3

Descriptive Statistics by Age of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Student Age (years)				
18	59	24.6	24.6	24.6
19	67	27.9	27.9	52.5
20	62	25.8	25.8	78.3
21	52	21.7	21.7	100.0
Total	240	100.0	100.0	
Non-Student Age (years)				
18	36	20.0	20.0	20.0
19	41	22.8	22.8	42.8
20	45	25.0	25.0	67.8
21	58	32.2	32.2	100.00
Total	180	100.0	100.0	

Table 3 represents the age distribution proportion of the study participants. Of the total, 24.6% of the student participants were 18 years old, 27.9% were 19 years old, 25.8% were 20 years old, and 21.7% were 21 years old. The age distribution of the non-students' participants were 18 years (20.0%), 19 years (22.8%), 20 years (25.0%), and 21 years (32.2%), respectively.

Health Literacy Level

Table 4 represents the health literacy level distribution proportion of the studied sample population. In the student sample, 31.7% indicated limited health literacy, 39.6% indicated marginal health literacy, and 28.7% reported adequate health literacy. In the non-student participants, 52.8% indicated limited health literacy, 36.7% indicated marginal health literacy, and 10.6% reported adequate health literacy.

Table 4

Descriptive Statistics by Health Literacy Level of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Students				
Limited	76	31.7	31.7	24.6
Marginal	95	39.6	39.6	71.3
Adequate	69	28.7	28.7	100.0
Total	240	100.0	100.0	
Non-Students				
Limited	95	52.8	52.8	52.8
Marginal	66	36.7	36.7	89.4
Adequate	19	10.6	10.6	100.0
Total	180	100.0	100.0	

Family Status

Table 5 shows the family status distribution proportion of the studied participants. The table indicated that 85.4% of the student participants come from a monogamous home, and 14.6% come from a polygamous home. Also, among the non-student participants, 76.1% of them come from monogamous home, whereas 23.9% come from a polygamous home.

Table 5

Descriptive Statistics by Family Status of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Students				
Monogamous	205	85.4	85.4	85.4
Polygamous	35	14.6	14.6	100.0
Total	240	100.0	100.0	
Non-Students				
Monogamous	137	76.1	76.1	76.1
Polygamous	43	23.9	23.9	100.0
Total	180	100.0	100.0	

Family/Friend Abuse of PAS

Table 6 shows the sample distribution proportion, based on having a family member or a friend who abuses PAS. Among the student sample, 34.2% responded *yes* to the family/friend abuse of PAS question, and 65.8% responded *no* to the family/friend abuse of PAS question. In the non-student sample, 57.2% responded *yes* to the family/friend abuse of PAS question whereas, 42.8% responded *no* to the family/friend abuse of PAS question.

Table 6

Descriptive Statistics by Family/Friend Abuse of PAS of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Students				
No	158	65.8	65.8	65.8
Yes	82	34.2	34.2	100.0
Total	240	100.0	100.0	
Non-Students				
No	77	42.8	42.8	42.8
Yes	103	57.2	57.2	100.0
Total	180	100.0	100.0	

Table 7 represents the parental marital status distribution proportion of the studied sample. Among the student participants, those whose parents were no longer living together, either due to separation or divorce, were 10.8%; those whose parents were still living together were 70.4%; 15.4% of the student sample reported demise of one parent; and 3.3% reported demise of both parents. In the non-student sample, the participants whose parents were no longer living together, either due to separation or divorce, were 13.3%; those whose parents were still living together were 67.8%; 12.2% of the non-student sample reported demise of one parent; and 6.7% reported demise of both parents.

Table 7

Descriptive Statistics by Parental Martial Status of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Students				
Separated or Divorced	26	10.8	10.8	10.8
Living with a Partner	169	70.4	70.4	81.3
One Parent is Deceased	37	15.4	15.4	96.7
Both Parents are Deceased	8	3.3	3.3	100.0
Total	240	100.0	100.0	
Non-Students				
Separated or Divorced	24	13.3	13.3	13.3
Living with a Partner	122	67.8	67.8	81.1
One Parent is Deceased	22	12.2	12.2	93.3
Both Parents are Deceased	12	6.7	6.7	100.00
Total	180	100.0	100.0	

Parental Level of Education

Table 8 represents the parental level of education distribution proportion of the studied sample. In the student sample, 16.7% of the participants reported fathers' education to be below college level; 30.4% of the participants reported fathers' education

to be at college level; 42.1% of the participants reported fathers' education to be at university level and above; and 10.8% of the participants were not aware of their fathers' education level. Also, 9.2% of the student participants reported mothers' education to be below college level; 31.3% reported mothers' education to be at college level; 47.9% reported mothers' education to be at university level and above; and 11.7% of the student participants were not aware of their mothers' education level.

Table 8 also shows the parental level of education distribution proportion of the non-student participants. Of these, 29.4% of the non-student participants reported fathers' education to be below college level; 37.8% of the participants reported fathers' education to be at college level; 16.7% of the non-student participants reported fathers' education to be at university level and above; and 16.1% (29) reported not been aware of their fathers' education level. Also, 16.1% of the non-student participants reported mothers' education to be below college level; 52.2% of the non-student participants reported mothers' education to be at college level; 16.1% of the non-student participants reported mothers' education to be at university level and above; and 15.6% reported not been aware of their mothers' education level.

Table 8

Descriptive Statistics by Parental Educational Level of the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Students' Father				
Below College Level	40	16.7	16.7	16.7
College Level	73	30.4	30.4	47.1
University Level and Above	101	42.1	42.1	89.2
Do not know	26	10.8	10.8	100.0
Total	240	100.0	100.0	
Students' Mother				
Below College Level	22	9.2	9.2	9.2
College Level	75	31.1	31.3	40.4
University Level and Above	115	47.9	47.9	88.3
Do not know	28	11.7	11.7	100.00
Total	240	100.0	100.0	
Non-Students' Father				
Below College Level	53	29.4	29.4	29.4
College Level	68	37.8	37.8	67.2
University Level and Above	30	16.7	16.7	83.9
Do not know	29	16.1	16.1	100.0
Total	180	100.0	100.0	
Non-Students' Mother				
Below College Level	29	16.1	16.1	16.1
College Level	94	52.2	52.2	68.3
University Level and Above	29	16.1	16.1	84.4
Do not know	28	15.6	15.6	100.0
Total	180	100.0	100.0	

Race and Ethnicity

The data for this study were collected from the communities in Southeast Nigeria. The people of the Southeast Nigeria are the Igbo speaking people of Nigeria, and the people are homogenous in culture, ethnicity, language, race, and religion. The population of the people of Southeast Nigeria was estimated to be about 40,000,000 (Worldometer, 2023). The population of individuals between the age 10-21 years old was estimated to be 8,400,000 (21% of the total population). There was no documented literature that contained the exact population of youths 18-21 years in this region, and the 420 samples included in this analysis were estimated to be a fair representative of the studied population.

Results

The results contained descriptive statistics for the dependent variable, PAS abuse, specifically, cannabis abuse, cocaine abuse, abuse of non-cannabis depressant, abuse of non-cocaine stimulants, abuse of local herbal concoctions, and alcohol drinking. The independent variables are also included, which are the social factors of gender, health literacy level, family status, friend/family abuse of PAS, current parental marital status, and level of parental education, while age is controlled. Descriptive statistics for gender, and age were shown in Table 2and 3 of Chapter 4, respectively.

As described in Chapter 3, binary logistic regression was used for the inferential statistical analysis because the independent variables (health literacy level, family status, friend/family abuse of PAS, current parental marital status, and parental educational level) and the dependent variable (PAS abuse) were all measured at nominal level of

measurements and as a result met the assumptions of logistic regression analysis. The result section also contained information on whether to reject or not to reject the null hypothesis for the stated research questions.

Descriptive Statistics of PAS Abuse in Non-Student Sample

A total of 180 non-student participants responded to the cannabis abuse question. Cannabis abuse was reported in 22.8% of the participants whereas, 77.2% reported no to the cannabis abuse question. This is illustrated in Table 9. Also, 180 non-student participants responded to the cocaine abuse question. Cocaine abuse was reported in 9.4% of the participants whereas, 90.6% reported no to cocaine abuse question. This is illustrated in Table 9. Herbal concoction abuse was also assessed among the 180 non-student sample. Local herbal concoction abuse was reported in 66.7% of the respondents whereas, 33.3% reported no to herbal concoction abuse question. This is illustrated in Table 9. Abuse non-cannabis depressants and non-cocaine stimulants were also measured in non-students. Non-cannabis depressants abuse was reported in 23.9% of the participants and non-cocaine stimulants abuse was reported in 23.3% of the participants. 76.1% reported no to non-cannabis depressants abuse question and 76.7% reported no to non-cocaine stimulants abuse question. Alcohol abuse was reported in 72.2% of the non-student participants. This is illustrated in Table 9.

Table 9

Descriptive Statistics of PAS Abuse in Non-Student Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Cannabis Abuse				
No	139	77.2	77.2	77.2
Yes	41	22.8	22.8	22.8
Total	180	100.0	100.0	100.0
Cocaine Abuse				
No	163	90.6	90.6	90.6
Yes	17	9.4	9.4	9.4
Total	180	100.0	100.0	100.0
Herbal Concoction Abuse				
No	60	33.3	33.3	33.3
Yes	120	66.7	66.7	66.7
Total	180	100.0	100.0	100.0
Non-Cannabis Depressant Abuse				
No	137	76.1	76.1	76.1
Yes	43	23.9	23.9	23.9
Total	180	100.0	100.0	100.0
Non-Cocaine Stimulant Abuse				
No	138	76.7	76.7	76.7
Yes	42	23.3	23.3	23.3
Total	180	100.0	100.0	100.0
Alcohol Abuse				
No	50	27.8	27.8	27.8
Yes	130	72.2	72.2	72.2
Total	180	100.0	100.0	100.00

Table 10

Descriptive Statistics of PAS Abuse in Student Population

	Frequency	Percent	Valid Percent	Cumulative Percent
Cannabis Abuse				
No	196	81.7	81.7	81.7
Yes	44	18.3	18.3	18.3
Total	240	100.0	100.0	100.0
Cocaine Abuse				
No	222	92.5	92.5	92.5
Yes	18	7.5	7.5	7.5
Total	240	100.0	100.0	100.0
Herbal Concoction Abuse				
No	136	56.7	56.7	56.7
Yes	104	43.3	43.3	43.3
Total	240	100.0	100.0	100.0
Non-Cannabis Depressant Abuse				
No	185	77.1	77.1	77.1
Yes	55	22.9	22.9	22.9
Total	240	100.0	100.0	100.0
Non-Cocaine Stimulant Abuse				
No	184	76.7	76.7	76.7
Yes	56	23.3	23.3	23.3
Total	240	100.0	100.0	100.0
Alcohol Abuse				
No	65	27.1	27.1	27.1
Yes	175	72.9	72.9	72.9
Total	240	100.0	100.0	100.00

Descriptive Statistics of PAS Abuse in Student Sample

A total of 240 student participants responded to the cannabis abuse question. Cannabis abuse was reported in 18.3% of the participants whereas, 81.7% reported no to the cannabis abuse question. This is illustrated in Table 10. Also, 240 student participants responded to the cocaine abuse question. Cocaine abuse was reported in 7.5% of the participants whereas, 92.5% reported no to cocaine abuse question. This is illustrated in Table 10. Herbal concoction abuse was also assessed among the 240 student participants, herbal concoction abuse was reported in 43.3% of the respondents whereas, 56.7% reported no to herbal concoction abuse question. This is illustrated in Table 10. The abuse of non-cannabis depressants and non-cocaine stimulants were also measured in student sample, non-cannabis depressants abuse was reported in 22.9% of the participants and non-cocaine stimulants abuse was reported in 23.3% of the participants. Alcohol abuse was reported in 72.9% of the student participants. This is illustrated in Table 10.

Descriptive Statistics of Abuse of at least One PAS in All Participants

Table 11

Descriptive Statistics of Abuse of at Least One PAS (Excluding Alcohol) Among the Participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Students				
No	121	50.4	50.4	50.4
Yes	119	49.6	49.6	49.6
Total	240	100.0	100.0	100.0
Non-Students				
No	54	30.0	30.0	30.0
Yes	126	70.0	70.0	70.0
Total	180	100.0	100.0	100.0

The responses from the 180 non-student and 240 student participants on PAS abuse were used to determine the proportion of the participants who abuse at least of the listed PAS excluding alcohol. The result showed that 70.0% of the non-student participants and 49.6% of the student participants had abused at least one of the listed PAS excluding alcohol and tobacco. This is illustrated in Table 11.

Inferential Statistics

RQ1: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not enrolled in school?

$H_0$1: There is no significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and not enrolled in school.

$H_1$1: There is a significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and substance abuse among youths aged 18-21 years old and not enrolled in school.

The correlational relationship between the social factors (health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level) and PAS abuse among the non-student population is shown in Table 12. The Cox and Snell estimate indicated that 23.9% of the non-students' PAS abuse could be explained by the given social factors. In contrast, the Nagelkerke estimate

showed that 33.9% of the non-students' PAS abuse could be explained by the studied social factors.

Table 12

Model Summary Table for Inferential Statistics

	Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square	Note
RQ1	1	170.722[a]	.239	.339	Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.
RQ2	1	270.069[a]	.230	.306	Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.
RQ3 for School Enrollment Status and Abuse of at least One PAS	1	552.622[a]	.040	.054	Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.
RQ3 for School Enrollment Status and PAS (Cannabis) Abuse	1	421.845[a]	.003	.005	Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.
RQ3 for School Enrollment Status and Cocaine Abuse	1	240.437[a]	.001	.003	Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.
RQ3 for School Enrollment Status and Herbal Concoction Abuse	1	557.576[a]	.053	.071	Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.
RQ3 for School Enrollment Status and Non-Cocaine Stimulants' Abuse	1	456.349[a]	.000	.000	Estimation terminated at iteration number 4 because parameter estimates changed by less than .001
RQ3 for School Enrollment Status and Non-Cannabis Depressants Abuse	1	456.295[a]	.000	.000	Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

The variables in the equation table in table 13 shows the effect of each social factors on PAS abuse among the non-student population. Table 34 indicated that each of the social factors had a specific influence on PAS abuse among non-students however, only the influence of the social factor "family/friend abuse of PAS" was statistically significant. The association between family/friend abuse of PAS and PAS abuse among non-students represented here, B = 1.639, W (1) = 16.492, Exp(B) = 5.150, p < 0.001, 95% Cl = [2.335, 11.360] showed that non-students who have a family/friend who abuse PAS were 5.150 times more likely to abuse PAS than non-students who do not have family/friend that abuse PAS. The effect of family/friend abuse of PAS on PAS abuse among non-students is statistically significant $p < 0.001$ and based on beta (B) estimate, a unit change in having a family/friend who abuse PAS had a 1.639 change in direction of PAS abuse.

The effect of gender on PAS abuse among the non-students' sample was not statistically significant as represented here, B = 0.574, W (1) = 1.979, Exp(B) = 1.775, p = 0.160, 95% Cl = [0.798, 3.946]. Though, genders' association with PAS abuse was not statistically significant ($p > 0.05$) but male non-students were 1.775 times more likely to engage on PAS abuse than the female counterpart. Based on beta (B) estimate, a unit change in gender will result in a 0.574 change in PAS abuse (see table 13).

Table 13

The Effects of Health Literacy, Gender, Family Status, Friend/Family Abuse of PAS, Current Parental Marital Status, and Parental Education on PAS Abuse among the Non-Student Sample Population

							95% C.I.for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Gender (1)	.574	.408	1.979	1	.160	1.775	.798	3.946
Health Literacy Levels			3.573	2	.168			
Health Literacy Levels (1)	.810	.438	3.414	1	.065	2.248	.952	5.308
Health Literacy Levels (2)	.579	.689	.705	1	.401	1.784	.462	6.893
Family Status (1)	-.048	.546	.008	1	.931	.954	.327	2.778
Family/Friend Abuse of PAS	1.639	.404	16.492	1	<.001	5.150	2.335	11.360
(1)			7.018	3	.071			
Parental Marital Status	-.945	.735	1.651	1	.199	.389	.092	1.642
Parental Marital Status (1)	.481	.969	.247	1	.620	1.618	.242	10.809
Parental Marital Status (2)	1.682	1.430	1.385	1	.239	5.378	.326	88.639
Parental Marital Status (3)			4.562	3	.207			
Father Educational Level	.297	.505	.346	1	.556	1.346	.500	3.620
Father Educational Level (1)	-.271	.799	.115	1	.734	.762	.159	3.650
Father Educational Level (2)	2.101	1.295	2.630	1	.105	8.174	.645	103.546
Father Educational Level (3)	.087	.186	.221	1	.638	1.091	.759	1.570
Participant's Age			6.102	3	.107			
Mother Education Level	-1.427	.673	4.500	1	.034	.240	.064	.897
Mother Education Level (1)	-.854	.909	.884	1	.347	.426	.072	2.526
Mother Education Level (2)	-2.359	1.304	3.274	1	.070	.094	.007	1.217
Mother Education Level (3)	-.819	3.834	.046	1	.831	.441		
Constant								

Note: Variable(s) entered on step 1: Gender, Health Literacy Levels, Family Status, Family/Friend Abuse of PAS, Current Parental Marital Status, Father Educational Level, Participant's Age, Mother Education Level.

For the social factor variable “family status”, two groups were compared, non-students from monogamous family and those from polygamous family. Family status had an effect on PAS abuse, but its effect was not statistically significant as indicated by the inferential statistics, B = -0.048, W (1) = 0.008, Exp(B) = 0.954, p = 0.931, 95% Cl = [0.327, 2.778]. This result showed that non-students from polygamous family were 0.931 times less likely to abuse PAS than those from monogamous family. Also, a unit change in family status will result to -0.048 change on PAS abuse but this association between family status and PAS abuse was not statistically significant.

The relationship between age and PAS abuse was also investigated and found to be non-statistically significant. The PAS abuse study was carried out on people who are from 18 years old to 21 years old. The inferential statistics [B = 0.087, W (1) = 0.221, Exp(B) = 1.091, p = 0.638, 95% Cl = [0.759, 1.570]], showed that age had no statistically significant influence on PAS abuse among the non-student sample. Though, a unit change in age results in a 0.087 change in the direction of PAS abuse in non-students.

Furthermore, all other social factors namely health literacy level of the non-students, parental marital status, father’s education level and mother’s education level contributed to PAS abuse among non-students, but their contributions were not statistically significant. The inferential statistics for health literacy was W(2) = 3.573, p = 0.168; parental marital status was W(3) = 7.018, p = 0.071; father’s education level was W(3) = 4.562, p = 0.207; and that of mothers’ education level was W(3) = 6.102, P = 0.107 respectively.

RQ2: What is the relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are enrolled in school?

$H_0$2: There is no significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years old and are enrolled in school.

$H_1$2: There is a significant relationship between health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level, and PAS abuse among youths aged 18-21 years and are enrolled in school?

The model summary for research question was obtained from the logistic regression statistical analysis, and it describes the correlational relationship between the social factors (health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level), and PAS abuse among the student sample population, as shown in Table 12. The Cox and Snell estimate indicated that 23.0% of the students' PAS abuse could be explained by the given social factors. In contrast, the Nagelkerke estimate showed that 30.6% of the students' PAS abuse could be explained by the social factors.

The variables in the equation table in Table 14 shows the effect of individual social factor on PAS abuse among the student sample population. Table 14 indicated that each of the social factors had a specific influence on PAS abuse among the students.

Among all the social factors analyzed, only the influence of the factors “family/friend abuse of PAS, current parental marital status, and mothers’ education level on students PAS abuse were statistically significant (see table 14).

The association between family/friend abuse of PAS and PAS abuse among students represented here, B = 1.316, W (1) = 14.566, Exp(B) = 3.728, $p < 0.001$, 95% Cl = [1.897, 7.327] showed that students that have a family/friend who abuse PAS were 3.728 times more likely to abuse PAS than students who do not have family/friend that abuse PAS. The effect of family/friend abuse of PAS on PAS abuse in students is statistically significant $p < 0.001$, 95% Cl = [1.897, 7.327] and based on beta (B) estimate, a unit change in having a family/friend who abuse PAS had a 1.316 change in direction of PAS abuse in students. Having a family member or a friend who abuses PAS is a push factor in students towards PAS abuse behavior.

Table 14

The Effects of Health Literacy, Gender, Family Status, Friend/Family Abuse of PAS, Current Parental Marital Status, and Parental Education on PAS Abuse among the Student Sample Population

							95% C.I.for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Gender (1)	-.119	.308	.149	1	.700	.888	.486	1.624
Health Literacy Levels			1.603	2	.449			
Health Literacy Levels (1)	-.258	.368	.492	1	.483	.773	.376	1.589
Health Literacy Levels (2)	.199	.390	.260	1	.610	1.220	.568	2.620
Family Status (1)	-.734	.524	1.965	1	.161	.480	.172	1.340
Family/Friend Abuse of PAS (1)	1.316	.345	14.566	1	<.001	3.728	1.897	7.327
Current Parental Marital Status			12.541	3	.006			
Current Parental Marital Status (1)	-1.877	.584	10.345	1	.001	.153	.049	.480
Current Parental Marital Status (2)	-.981	.666	2.171	1	.141	.375	.102	1.383
Current Parental Marital Status (3)	-.434	1.044	.172	1	.678	.648	.084	5.019
Father Educational Level			3.427	3	.330			
Father Educational Level (1)	.180	.492	.134	1	.715	1.197	.457	3.138
Father Educational Level (2)	-.373	.504	.548	1	.459	.689	.256	1.850
Father Educational Level (3)	.586	.737	.633	1	.426	1.797	.424	7.611
Participant's Age	.219	.142	2.368	1	.124	1.245	.942	1.645
Mother Education Level			8.260	3	.041			
Mother Education Level (1)	-.664	.713	.867	1	.352	.515	.127	2.083
Mother Education Level (2)	-1.111	.716	2.405	1	.121	.329	.081	1.340
Mother Education Level (3)	-2.238	.885	6.388	1	.011	.107	.019	.605
Constant	-1.952	3.001	.423	1	.515	.142		

Note: Variable(s) entered on step 1: Gender, Health Literacy Levels, Family Status, Family/Friend Abuse of PAS, Current Parental Marital Status, Father Educational Level, Participant's Age, Mother Education Level.

The effect of gender on PAS abuse among the students' sample population was not statistically significant as represented here, B = -0.119, W (1) = 0.149, Exp(B) = 0.888, p = 0.700, 95% Cl = [0.486, 1.624]. Though, genders' association with PAS abuse was not statistically significant ($p > 0.05$) but female students were 1.126 times more likely to engage on PAS abuse than their male counterpart. The odd ratio for male Exp(B) 0.888 showed that male students were 0.888 times less likely to abuse PAS compared to their female counterpart. Based on beta (B) estimate, a unit change in gender will result in a -0.119 change in the direction of PAS abuse (see Table 14).

For the social factor variable "family status", two groups were compared, students from monogamous family and those from polygamous family. Family status had an effect on PAS abuse but its effect was not statistically significant as indicated by the inferential statistics, B = -0.734, W (1) = 1.965, Exp(B) = 0.480, p = 0.161, 95% Cl = [0.172, 1.340]. This result showed that students from polygamous family were 0.480 times less likely to abuse PAS than those from monogamous family however, this finding was not statistically significant and a unit change in family status will result in a -0.734 change on the direction of PAS abuse in students however, this association between family status and PAS abuse in students was not statistically significant.

The relationship between age and PAS abuse was also investigated in students sample population and found to be non-statistically significant. The PAS abuse study was carried out on people who are from 18 years old to 21 years old. The inferential statistics shown here, B = 0.219, W (1) = 2.368, Exp(B) = 1.245, p = 0.124, 95% Cl = [0.942, 1.645] indicated that age had no statistically significant influence on PAS abuse among

the student sample. Though, a unit change in age results in a 0.219 change in PAS abuse in students.

The influences of parent education levels on students PAS behavior were also investigated. The results of binary logistic regression analysis indicated that mother education level had an overall statistically significant influence on PAS abuse in students [W(3) = 8.260, p = 0.041) but that of father on students' PAS abuse behavior was not statistically significant [W(3) = 3.427, p = 0.330]. The inferential statistical result on the table 36 shows that more educated mothers were less likely to have children who engage in PAS abuse and this finding is statistically significant ($p<0.05$).

Furthermore, health literacy level of the students contributed to PAS abuse among students but its contribution was not statistically significant. The inferential statistics for health literacy was W(2) = 1.603, p = 0.449. Compared to students with limited health literacy level, those with moderate health literacy level were less likely to abuse PAS [B = -0.258, W(2) = 0.492, Exp(B) = 0.773), p = 0.483, CI 95% = [0.376, 1.589]] whereas, students with adequate literacy level were 1.220 times more likely to abuse PAS [B = 0.199, W(2) = 0.260, Exp(B) = 1.220), p = 0.610, CI 95% = [0.568, 2.620)]. Meanwhile, these observed relationship between students' health literacy level and PAS abuse were not statistically significant (see table 14).

Finally, parental marital status had significant association with PAS abuse in students [W(3) = 12.541, P = 0.006). Table 14 shows that compared to students whose parents were separated/divorced, students whose parents were living/staying together were 0.153 times less likely to abuse PAS PAS [B = -1.877, W(3) = 10.345, Exp(B) =

0.153), p = 0.001, CI 95% = [0.049, 0.480]]. Also, compared to students whose parents were separated/divorced, students from deceased parent or parent were less likely to abuse PAS however, these relationships were not statistically significant p>0.05 and p>0.05 respectively (see table 14).

RQ3: What is the relationship between school enrollment status and PAS abuse among youths aged 18-21 years old?

$H_0$3: There is no relationship between school enrollment status and PAS abuse among youths aged 18-21 years old.

$H_1$3: There is a relationship between school enrollment status and PAS abuse among youths aged 18-21 years old?

The effect of school enrollment status on PAS abuse in youth was investigated by subjecting the combined sample (students and non-students) data to inferential statistics analysis using binary logistic regression. Abuse of at least one PAS (cannabis abuse, cocaine abuse, local herbal concoction abuse, non-cocaine stimulants abuse, and non-cannabis abuse), were analyzed and tested.

Table 12 model summary for inferential statistics analysis for the abuse of at least one PAS. The model summary obtained from the logistic regression statistical analysis described the correlational relationship between the independent variable “school enrollment status” and the dependent variable “abuse of at least one PAS”. Again, the Cox and Snell estimate indicated that 4.0% of the youth’s abuse of at least one PAS could be explained by the independent variable (school enrollment status). In contrast, the

Nagelkerke estimate showed that 5.4% of the PAS abuse could be explained by the school enrollment status.

The variables in the equation table shows the effect of school enrollment status on the abuse of at least one PAS in youths aged 18-21 years old. The result showed a statistically significant relationship between school enrollment status and the abuse of at least one PAS. As shown here, B = -0.847, W(1) = 16.649, P<0.001, Exp(B) = 0.429, CI 95% = (0.285, 0.644), youths who were enrolled in school were 0.429 less likely to abuse any PAS compared to their counterpart who were not enrolled in any school. This association was statistically significant P<0.001.

The following is the model summary for inferential statistics analysis for the effects of school enrollment status (SES) on cannabis abuse in youths. The model summary (see Table 12) obtained from the logistic regression statistical analysis described the correlational relationship between the independent variable “SES” and the dependent variable “cannabis abuse”. The Cox and Snell estimate indicated that 0.30% of the youth cannabis abuse could be explained by the independent variable (SES). In contrast, the Nagelkerke estimate showed that 0.5% of the cannabis abuse could be explained by the SES.

The variables in the equation table in Table 15 shows the effect of SES on cannabis abuse in youths aged 18-21 years old. Table 15 shows a non-statistically significant relationship between SES and cannabis abuse in youths. As shown here, B = -0.273, W(1) = 1.255, p = 0.263, Exp(B) = 0.761, CI 95% = (0.472, 1.227), youths who were enrolled in school were 0.761 times less likely to abuse cannabis compared to their

counterpart who were not enrolled in any school. Though, this relationship was not statistically significant P>0.05.

Table 145

The Effect of School Enrollment Status on Cannabis Abuse in Youth Sample Population

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
School Enrollment Status(1)	-.273	.244	1.255	1	.263	.761	.472	1.227
Constant	-1.221	.178	47.194	1	<.001	.295		

Note: Variable(s) entered on step 1: School Enrollment Status.

The model summary follows for inferential statistics analysis for the effects of SES on cocaine abuse in youths. The model summary (see Table 12) obtained from the logistic regression statistical analysis describes the correlational relationship between the independent variable “SES” and the dependent variable “cocaine abuse”. Given that he Cox and Snell estimate indicated that 0.10% of the youth cocaine abuse could be explained by the independent variable (SES). In contrast, the Nagelkerke estimate showed that 0.3% of the cocaine abuse could be explained by the SES.

The variables in the equation table in table 16 shows the effect of SES on cocaine abuse in youths aged 18-21 years old. Table 16 shows a non-statistically significant relationship between SES and cocaine abuse in youths. As shown here, B = -0.252, W(1) = 0.507, p = 0.476, Exp(B) = 0.777, CI 95% = (0.389, 1.555), youths who were enrolled in school were 0.777 times less likely to abuse cocaine compared to their counterpart who were not enrolled in any school. Also, this relationship between SES and cocaine abuse in youth was not statistically significant P>0.05.

Table 156

The Effect of School Enrollment Status on Cocaine Abuse in Youths Sample Population

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
School Enrollment Status(1)	-.252	.354	.507	1	.476	.777	.389	1.555
Constant	-2.261	.255	78.666	1	<.001	.104		

Note: Variable(s) entered on step 1: School Enrollment Status.

Table 12 shows the model summary table for inferential statistics analysis for the effects of SES on local herbal concoction abuse in youths. The model summary table obtained from the logistic regression statistical analysis described the correlational relationship between the independent variable “SES” and the dependent variable “herbal concoction abuse”. The Cox and Snell estimate indicated that 5.30% of the youth herbal concoction abuse could be explained by the independent variable (SES). In contrast, the Nagelkerke estimate showed that 7.10% of the herbal concoction abuse could be explained by the SES.

The variables in the equation table in Table 17 shows the effect of SES on herbal concoction abuse in youths aged 18-21 years old. Table 17 shows a statistically significant relationship between SES and herbal concoction abuse in youths. As shown here, B = -0.961, W(1) = 22.024, $p < 0.001$, Exp(B) = 0.382, CI 95% = (0.256, 0.571), youths who were enrolled in school were 0.382 times less likely to abuse locally made herbal concoction compared to their counterpart who were not enrolled in any school. This observed relationship between SES and herbal concoction abuse in youth was statistically significant $P < 0.05$.

Table 167

The Effects of School Enrollment Status on Herbal Concoction Abuse in Youth Sample Population

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
School Enrollment Status(1)	-.961	.205	22.024	1	<.001	.382	.256	.571
Constant	.693	.158	19.218	1	<.001	2.000		

Table 12 shows the model summary table for inferential statistics analysis for the effects of SES on non-cocaine stimulants abuse in youths. The model summary table (Table 12) obtained from the logistic regression statistical analysis described the correlational relationship between the independent variable “SES” and the dependent variable “non-cocaine stimulants abuse”. Both the Cox and Snell estimate and the Nagelkerke estimate indicated that non (0.0%) of the youth non-cocaine stimulants abuse could be explained by the independent variable (SES).

The variables in the equation table in Table 18 shows no effect of SES on non-cocaine stimulants abuse in youths aged 18-21 years old. Table 18 shows a no relationship between SES and non-cocaine stimulants abuse in youths. As shown on the table 46, B = 0.000, W(1) = 0.000, p = 1.000, Exp(B) = 1.000, CI 95% = (0.633, 1.579), youths who were enrolled in school were equal likely to abuse non-cocaine stimulants compared to their counterpart who were not enrolled in any school. Also, this relationship between SES and non-cocaine stimulants abuse in youth was not statistically significant P>0.05.

Table 178

The Effect of School Enrollment Status on Non-Cocaine Stimulants' Abuse in Youth Sample Population

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
School Enrollment Status(1)	.000	.233	.000	1	1.000	1.000	.633	1.579
Constant	-1.190	.176	45.567	1	<.001	.304		

Note: Variable(s) entered on step 1: School Enrollment Status.

Like observed on the relationship between School Enrollment Status on Non-Cocaine Stimulants Abuse in Youth, Table 12 shows the model summary table for inferential statistics analysis for the effects of SES on non-cannabis depressants abuse in youths. The model summary table obtained from the logistic regression statistical analysis described the correlational relationship between the independent variable "SES" and the dependent variable "non-cannabis abuse". Both the Cox and Snell estimate and the Nagelkerke estimate indicated that non (0.0%) of the youth non-cannabis depressants abuse could be explained by the independent variable (SES).

The variables in the equation table in Table 19 shows a non-statistically significant effect of SES on non-cannabis depressants abuse in youths aged 18-21 years old. As shown on the table 19, B = -0.054, W(1) = 0.054, p = 0.816, Exp(B) = 0.947, CI 95% = (0.600, 1.495), youths who were enrolled in school were 0.947 times less likely to abuse non-cannabis depressants compared to their counterpart who were not enrolled in any school. However, this observed relationship between SES and non-cannabis depressants abuse in youth was not statistically significant P>0.05.

Table 189

The Effects of School Enrollment Status on Non-Cannabis Depressants Abuse in Youth Sample Population

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
School Enrollment Status(1)	-.054	.233	.054	1	.816	.947	.600	1.495
Constant	-1.159	.175	43.946	1	<.001	.314		

Summary

This chapter focused on answering the three research questions by investigating the association between social factors (health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, parental educational level) and PAS abuse in two categories of youths – students and non-students 18-21 years old in South-East Nigeria. Five group of PASs namely, cannabis, cocaine, local herbal concoctions, non-cocaine stimulants, and non-cannabis depressants were studied. Logistic regression was used to examine these relationships and their significances. The dependent variable was PAS abuse and the independent variables were the social factors and school enrollment status. I collected the required data for the study primarily from the participants using print questionnaire within a period of 74 calendar days starting from October 2022 through January 2023.

Using IBM SPSS software standard version 28.0 and a sample size of 420 (students = 240, non-students = 180), the following results were obtained. For the research question number one, there was a statistically significant relationship between social factors and PAS abuse in non-student's sample. While family/friend abuse of PAS

contributed a statistically significant influence on PAS abuse in non-students $p < 0.001$, the influences of other social factors were not statistically significant $p > 0.05$.

For RQ2, there was also a statistically significant relationship between social factors and PAS abuse in student's sample. Family/friend abuse of PAS, current parental marital status, and mother's education each contributed a statistically significant influence on PAS abuse in students $p < 0.001$, $p = 0.006$, and $p = 0.041$ respectively. the influences of other social factors on PAS abuse in students were not statistically significant $p > 0.05$.

For RQ3, there was a statistically significant difference in the abuse of at least one PAS between the students and non-student sample population $p < 0.001$. Analyses on the individual PAS reveal a statistically significant difference in local herbal concoction abuse in students and non-students $p < 0.001$. The differences observed in cannabis, cocaine, non-cannabis depressants, and non-cocaine stimulants abuses in students and non-students were not statistically significant $p = 0.263$, $p = 0.476$, $p = 1.000$, $p = 0.816$ respectively.

Based on these results, the null hypothesis was rejected for all research questions, and in chapter five the interpretation of findings, limitations to the study, recommendations, and implications of the study are discussed.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to investigate the predictors of psychoactive substance (PAS) abuse in student and in non-student samples, as well as to determine whether there is a difference in PAS abuse between the student and the non-student populations aged 18-21 years in Southeast Nigeria. I adopted a quantitative research approach for this study, and I used primary data collected from the sample population for the statistical analyses. This study was the first comprehensive study on PAS abuse in youths 18-21 years that covers both school enrolled and unenrolled youths. Other studies on PAS abuse had focused on older people and on college students. The variables I studied were the social factors (health literacy level, gender, family status, friend/family abuse of PAS, current parental marital status, and parental educational level), school enrollment status, and PAS abuse. The PAS abuse was grouped into five categories: (a) cannabis abuse, (b) cocaine abuse, (c) non-cannabis depressants abuse, (d) non-cocaine stimulants abuse, and (e) local herbal concoction abuse. The results showed a statistically significant relationship between social factors and PAS abuse in non-students, a statistically significant relationship between social factors and PAS abuse in students, and a statistically relationship between school enrollment and PAS abuse in youth.

Interpretation of the Findings

The findings from this study were consistent with other studies. The proportion of school enrolled to unenrolled youth and males to females in this study was similar to other studies and consistent with that of Southeast Nigeria and the entirety of Southern

Nigeria. The percentage of school enrolled to unenrolled youth in this study was 57.1% school enrolled to 42.9% unenrolled. The proportion of males to female was 50% males to 50% females for the school enrolled sample population, and 66.7% males to 33.3% females for the school unenrolled population. Lack of literature on PAS abuse in school unenrolled youth was what gave impetus to this study.

RQ1 was as follows: What is the relationship between social factors and PAS abuse in youths aged 18-21 years old and not enrolled in school? In general, a statistically significant relationship was observed between social factors and PAS abuse in non-student population. For the individual social factors (gender, health literacy level, family status, parental educational level) they all related to PAS abuse in non-students, but their relationship was not statistically significant. Only the social factor of family and friend abuse of PAS had a statistically significant relationship with PAS abuse in the non-student population. PAS abuse prevalence in non-students was as follows: cannabis abuse 22.8%, cocaine abuse 9.4%, herbal concoction 66.7%, non-cannabis depressants 23.9%, non-cocaine stimulants 23.3%, and abuse of at least one PAS 70%.

RQ2 was as follows: What is the relationship between social factors and PAS abuse in youths aged 18-21 years old and enrolled in school? Like observed in the non-students' population, a statistically significant relationship was observed between social factors and PAS abuse in the student population. Again, the individual social factors of family/friend abuse of PAS, current parental marital status, and mothers' education level were individually and statistically significantly related to PAS abuse in the student population. Gender, health literacy level, and family status contribution to PAS abuse in

the students' population were not statistically significant. Johnson et al. (2017) and Omotoso et al. (2021) also reported statistically significant associations between family/friend abuse of PAS and PAS abuse in students. Mokwena and Setshego (2021) and Chkwujekwu (2017) reported a statistically significant association between gender and PAS abuse. Mokwena and Setshego (2021) and Chkwujekwu (2017) observed that males were more likely to abuse PAS than females; however, Johnson et al. (2027) observed prevalence of PAS abuse in females to be 37.7% and males 18.2%, which is an observation suggesting that females were more likely to abuse PAS than males. My study did not observe a statistically significant relationship between gender and PAS abuse in the students' population.

PAS abuse prevalence in the student population from this study was as follows: cannabis abuse 18.3%, cocaine abuse 7.5%, herbal concoction 43.3%, non-cannabis depressants 22.9%, non-cocaine stimulants 23.3%, and abuse of at least one PAS 49.6%. Similar observations for the abuse of at least one PAS were reported by several other authors. Mokwena and Setshego (2021) reported 47% prevalence, Tesema et al. (2020) reported 66.5% prevalence, Omotoso et al. (2021) reported 62.4% prevalence, and Akibote and Omigbodun (2018) reported 57.2% prevalence of PAS abuse in students, respectively.

This study also showed that herbal concoction was the most abused PAS among the students, with a prevalence rate of 43.3%. This was followed by non-cocaine stimulants 23.3%, non-cannabis depressants 22.9%, cannabis abuse 18.3%, and cocaine abuse 7.5%. UNODC (2018) reported prevalence of cannabis abuse in Nigeria as 18.8%

for males and 2.6% for females. The observed high prevalence rate of herbal concoction abuse was due to its relatively easy access and low financial burden on the abusers (UNODC, 2018).

RQ3 was as follows: What is the relationship between school attendance status and PAS abuse among youths aged 18-21 years old? The relationship between school enrollment status and PAS abuse in youths was statistically significant in this study. As were observed, youths enrolled in schools were less likely to abuse PAS when compared to those who were not enrolled in any school. A similar observation was reported by Henderson et al. (2017), who noted that youths 12-24 years of age who were not employed, in education, or in training (NEET) were more likely to engage in PAS abuse. The difference in PAS abuse among school enrolled youths and those not enrolled in school was well observed in the abuse of local herbal concoction.

The prevalence rates of PAS abuse for the school enrolled to unenrolled youths were cannabis abuse 18.3% to 22.8%, cocaine abuse 7.5% to 9.4%, herbal concoction 43.3% to 66.7%, non-cannabis depressants 22.9% to 23.9%, non-cocaine stimulants 23.3% to 23.3%, and abuse of at least one PAS 49.6% to 70.0%. This result was like that obtained from the UNODC (2018) survey. UNODC (2018) reported an 18.8% prevalence rate for cannabis abuse in Nigeria. This rate was like that observed in student participants but lower than that reported for non-students. The high prevalence rate of herbal concoction abuse was due to easy access and low cost, as reported by more than 80% of the participants.

Interpretation in the Context of Theoretical Framework

Due to the complexities and interactions of the risk factors of substance abuse, there is no single theory or model that fully explains the etiology, patterns, and ecology of substance abuse (Bogg & Finn, 2009; Fishbein & Ajzen, 2010; Madden et al., 1992). Therefore, the social ecological model (SEM) and the theory of reasoned action (TRA) were adopted for this study. The SEM was chosen because it explains the various levels of factors that influence behavior, and the TRA is an individual level theory that provides a valid framework for explaining the antecedents of PAS abuse at individual levels (Fishbein & Ajzen, 2010; Madden et al., 1992; Lorenzo-Blancoa et al., 2016; Stoddard & Pierce, 2018; Willmott et al., 2019; Zhanga et al., 2018). The combination of the SEM and the TRA in this study provides a better understanding of PAS abuse in youths when considering the multifaceted nature of PAS abuse behavior.

Individual factors fall under the first level of influence and consist of age, gender, knowledge, behavior, skills, and personal values (Fishbein & Ajzen, 2010; Madden et al., 1992; Lorenzo-Blancoa et al., 2016; Stoddard & Pierce, 2018; Willmott et al., 2019; Zhanga et al., 2018). Influences of age, gender, literacy level, and involvement in PAS abuse were all tested at the individual level of influence. The relationship or interpersonal level is the second level of influence. This includes influences from a person's family members, partners, closest social circle-peers or network and support systems (Glanz et al., 2008; Jacobs et al., 2016; McLeroy et al., 1988). Family status, parental marital status, and family/friend abuse of PAS were all tested at the interpersonal level of influence. The third level of SEM referencfes the community level factors. The

community level of the SEM explains how that person's social and physical environment settings may influence the person's attitudes, beliefs, and behaviors. Here, school enrollment status was tested at the community level of influence. The null hypotheses for the RQ1, RQ2, and RQ3 were all rejected. This implies that intervention programs aimed at ameliorating PAS abuse in youths should pay apt attention to the various factors relating to individual, interpersonal, and community levels of influences.

Limitations

The results of this study increased the knowledge of PAS abuse in youth; however, several limitations have been identified from this dissertation study. Data used for this study were collected through a cross-sectional design approach, and as such, this study fails to certainly conclude if the predator variables (social factors and school enrollment status) were the actual cause of the observed response (PAS abuse) in youth. This dissertation involved collection of primary data from the study participants using a self-administered questionnaire print. Therefore, this study was susceptible to various limitations of primary data collection that involved the use of self-administered questionnaire. One of the most important limitations was receiving false answers from participants especially on sensitive questions like substance abuse. The false answers may be as a result of recall bias or on purpose, therefore, this study has no certainty that all answers received from the study participants were correct. Finally, a convenient sampling approach was adopted in this study, indicating that data may not be a true representation of all the youths 18-21 years old living in South East Nigeria.

Recommendations

Based on the findings from this dissertation, a number of recommendations have been identified. There is the need for a routine public health data collection and establishment of health database in the South East Nigeria and in Nigeria as a whole. The establishment of routine health data collection and health database will enable easy access to research data for public health researchers as well as, enabling studies on PAS abuse in Nigeria using a bigger population. This study also identified disparity in PAS abuse between individuals that were enrolled in school and those not enrolled in school therefore, further study is required to clearly determine the factors responsible for the gap, the isolation of the responsible factors will enable the design of a suitable health promotion program that will ameliorate the existing gap. The abuse of local herbal concoction among young people in Nigeria is on the increase. Herbal concoctions had been linked to many health problems including liver and kidney damages (Omotoso et al., 2021; UNODC, 2018). The public health consequences of the abuse of herbal concoction in Nigeria are understudied, there is a need for a rigorous study on local herbal concoctions which will enable evidence-based policies and program that will regulate its production, distribution, and consumption across the country.

Implications

The most important implication of the results of this study was the demonstration of the gap between school enrolled and unenrolled youth in PAS abuse. There is no available PAS abuse prevention program tailored at youths who are not enrolled in schools, most available health promotion programs and PAS abuse prevention program

available are school based programs only. Secondly, the results of this dissertation show a very clear statistically significant association between social factors and PAS abuse in youths with the effect size of 33.9% (in non-students - RQ1) and 30.6% (in students-RQ2). PAS abuse has many negative health effects (UNODC, 2018; Ven Gastel, 2013) in individuals. Individuals who abuse PAS have higher risk of being ill, require more health care attention, suffer a greater level of social discrimination, and have a higher risk of premature death (Joseph et al., 2020; Tesema et al., 2020; UNODC, 2018). In youths, the consequences of PAS abuse are more pronounced and affect their entire wellbeing (UNODC, 2018).

Therefore, information gained from this dissertation will create awareness on the influence of the social factors on PAS abuse in youth, existence of gap between school enrolled and unrolled youth in terms of PAS abuse, and will help in the authorities in developing evidence-based policies and programs tailored at individual, interpersonal, community, and societal levels towards ameliorating incidents of PAS abuse in youths (Calhoun et al., 2015; UNODC, 2018). If the proposed evidence-based health intervention and promotion programs are developed and widely implemented, it will result to a reduction in the incident of PAS abuse in youths and in turn lead to a positive social change. It is a known fact that, positive social change is a significant beneficial shift of social structure and cultural patterns over time (Calhoun et al., 2015). This may be brought about by collective change in attitudes, beliefs, and behaviors (Calhoun et al., 2015). Evidence-based health programs are known to be very effective in bringing a positive social change (Calhoun et al., 2015).

Finally, this dissertation is the first comprehensive research on PAS abuse in youth in Nigeria and West Africa at large that studied both school enrolled and unenrolled youths together therefore, this study has the potential to contribute to scientific literature and will be used as reference in the future studies of PAS abuse (Akinbote & Omibgodun, 2018; Chukwujekwu, 2017, UNODC, 2018).

Conclusion

Through this dissertation, I attempted to identify and fill the gap of predictors (social factors, and school enrollment status) of PAS abuse among youths in Southeast Nigeria. Several studies have been conducted on PAS abuse in youths in Africa and all the past studies have focused only on students in campuses and elderly people. None of the past studies of PAS abuse in youth have studied out-of-school youths and youths who were not enrolled in schools. Also, past studies on PAS abuse in youth have primarily focused on prevalence rates without considering any risk factors that could influence PAS abuse behavior such as the social factors as well as the influence of school enrollment. Three research questions were asked to guide this dissertation and the null hypotheses were rejected for all the research questions at a significance level of $p<0.05$.

In examining the factors that influences PAS abuse for this sample population, health intervention and promotion programs can be effectively and efficiently implemented, as well as applied to similar populations. The factors influencing PAS abuse in youth and the health consequences of PAS abuse could be better explained to the individual youth both school enrolled and unenrolled youths, so that they can understand their susceptibility and apply strategies to prevent exposure and its consequences. More

attention needs to be given to school unenrolled youth to close the disparities of PAS abuse between the school enrolled and unenrolled youths. This empirical study adds to the existing knowledge of PAS abuse in youths and could be of advantage to policy makers when dealing with issues of PAS abuse in youths. Hence, help the concerned authorities in developing evidence-based policies and programs tailored at individual, interpersonal, community, and societal levels towards ameliorating incidents of PAS abuse in youths.

Finally, as shown throughout this study, the prevalence of PAS abuse in youths is high, there is also a statistically significant difference between PAS abuse in school enrolled and unenrolled youths. The PAS abuse in both populations of youths were significantly influenced by social factors. Therefore, understanding these influencing factors of PAS abuse is important in enabling targeted health intervention and promotions. By so doing, these targeted health interventions and health promotions might be effective, and the prevalence of PAS abuse and its adverse health effects may be deescalated.

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