



# Demographic Factors, Forensic Profile, Substance Abuse and Crime in Violent Offenders at a Maximum Security Prison in North Central Nigeria

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## Abstract

**Background:** Violent criminal behavior has been linked to multiple factors among which are the abuses of alcohol/drugs, resulting in various prison terms. The relationship between violent criminal behavior and abuse of alcohol/drugs continue to be an area of debate with the two being related through shared risk-factors. The study aimed at exploring whether substance abuse in violent offenders occur frequently with criminal behavior and any specific demographic factors and/or forensic profile using secondary data.

**Method:** The study was archival cross-sectional descriptive in nature. Secondary data of 83 convicted violent-offenders was extracted from the primary database. Data was arranged serially (1- 83) and exported into the statistical package for social science (SPSS) version 21.0 for analysis.

**Result:** Alcohol was the single most abused substance (24.1%), followed by marijuana (7.2%). Alcohol was significantly associated with murder ( $\chi^2$  6.125,  $P= 0.013$ ) while marijuana and cocaine abuse were associated with murder and armed-robbery crimes ( $\chi^2$  11.879,  $P= 0.001$ ;  $\chi^2$  20.512,  $P= 0.001$ ), ( $\chi^2$  58.242,  $P= 0.001$ ;  $\chi^2$  63.674,  $P= 0.001$ ) respectively. Age and educational status were significantly associated with alcohol/drug abuse in subjects studied. However, using logistic regression substance abuse/dependence did not predict any significant-association with all the parameters studied in the subjects.

**Conclusion:** Alcohol/drugs abuse was significantly associated with criminal behaviors, demographic-variable and forensic-profile of subjects studied, however using logistic regression alcohol/drugs abuse didn't predict any significant association with criminal behavior, demographic factors or forensic profile of subjects.

**Keywords:** Violent offenders; Secondary data; Substance abuse; Demographic factors; Forensic profile

**Abbreviations:** CIDI: Composite International Diagnostic Interview; ICD: International Classification of Diseases; DSM: Diagnostic and Statistical Manual; SPSS: Statistical Package for Social Sciences; ILO: International Labour Organization

## Introduction

The link between alcohol/drugs and violent criminal behavior is well documented, with alcohol/drug abusing behaviors connecting to crime in many ways. Crime is not only related to the possession or sell of illegal drugs, but also to drug related behavioral effects such as violence [1]. Alcohol/drug abuse has been implicated with offences directly related to drug abuse [2], or to life style that predisposes the drug abuser to engage in illegal activities [3].

Individuals who abuse alcohol/drugs are more likely to commit crimes including violent crimes, which are committed by such individuals who had abused alcohol/drugs either prior to offence or at the time of committing such offence [1].

The pharmacological properties of alcohol/drugs can be of effect to an individual particularly when taken at a high dose. It might inhibit and lead to impulsivity, aggression, abusiveness, argumentativeness, agitation and grandiosity in the abuser, which ultimately results in the impairment of judgment and violent crimes.

Substance use, abuse and dependence are more common in the criminal justice population than the general population [4-5]. A study conducted at a maximum security prison in Nigeria among awaiting trial and convicted inmates, showed that 60% of the inmates had used alcohol and illegal drugs before their current offense, 37.3% were charged with an offence of armed

robbery, while 28% had a diagnosis of substance use disorder [6]. Similarly, a study of jail detainees demonstrated that two third of their sample had been abusing or were dependent on drugs before they were detained [7]. In Australia alcohol/drug dependency is an important ingredient in robbery offending, particularly for multiple robbery convictions and more recent work continue to support this [8].

A study conducted by Gottfredson et al. [9] revealed that out of the 157 sampled studied subjects, 78% were males with a mean age of 34.4 years. The authors also found cocaine and heroin increasing the generation of crimes with alcohol use increasing violent crime commission. Another study reported that 52.3% of violent offenders on capital punishment did not finish high school and only 12.7% attended grade eight or less [10]. In capital offence, substance use disorder has been implicated in significant proportion of death row inmates [11-13]. These offenders committed their crimes under the influence of alcohol/drugs at the time of their capital offense.

With limited data on violent offenders with substance use disorders in Nigeria, thus the study aims to explore the link between demographic factors, forensic profile (prison sentence after conviction), alcohol/drug abuse and criminal behavior in violent offenders which will go a long way in assisting there rehabilitation. Most researchers study the general population or general prison population. There is a huge difference between criminal behaviours in general population that have been studied [5], and the violent offenders' population at a maximum security prison, which this study is focused on.

## Methods

### Study Design and Location

The study was archival and cross-sectional descriptive in nature, using secondary data. The study was conducted at the maximum security prison, in north central Nigeria.

### Data selection for secondary analysis

The prison population as at the time initial data collection was 701, which included convicts (356) and remand (345) prisoners. Out of the convicted prisoners 181 were convicted for a violent offence (murder, manslaughter and armed robbery) which was the subset used for the current study. Out of the 181 violent offenders, data of all those with substance use disorder was included in the study. Eighty-three (83) of the 181 violent offenders had substance use disorder. Data of the 83 prisoners with history of substance abuse was used for the current study all of whom were male. Participants who screened positive for substance abuse using the screening section of the composite international diagnostic interview (CIDI) were used for the study.

**Sample inclusion criteria:** Cases of male offenders convicted for violent crimes (murder, manslaughter and armed robbery at the time of study), who were 18 years of age with

substance use disorder (as defined by ICD-10) were included in the study.

**Sample exclusion criteria:** Violent offender below 18 years old, non-violent offenders and inmates with disorders not related to substance abuse or dependency were excluded from the study.

### Materials extracted for study

Materials were not administered for the current study as secondary data was used for the study. Instead, case records were reviewed, which contained information from questionnaires.

### Socio Demographic Questionnaire

Socio-demographic data on age, marital status, educational status and occupational status were extracted from the socio-demographic questionnaire, while prison sentence (convicted) and offence charged (murder, manslaughter and armed robbery) were extracted from the case files of the participants. This information served as the socio-demographic factors and forensic profile for participants in this study.

### The Composite International Diagnostic Interview (CIDI)

The substance section of the Composite International Diagnostic Interview was used to collect data on substance use disorder, data on substance use disorder got using Composite International Diagnostic Interview for convicted violent offenders was extracted and used in the research. CIDI is a comprehensive, fully standardized interview that can be used to assess mental disorders and provide diagnosis according to the definition and criteria of the tenth revision of the International Classification of Diseases ICD 10 [14] and the fourth edition of the Diagnostic and Statistical Manual of mental disorder (DSM IV) [15]. Diagnosis of substance use disorder was made using ICD-10 diagnostic criteria as the instruments makes provisions for ICD-10 criteria. The researchers used the ICD-10 criteria to make diagnosis of substance use disorder. The format of the interview was to elicit life time or 12 month period of the presence of a symptom and using a number of probes to establish whether the symptom is of psychiatric importance. Composite International Diagnostic Interview was written for persons with markedly different educational and cultural background and intelligence.

The instrument has been validated and used by several researchers in different countries including Nigeria [14,16-17]. Composite International Diagnostic Interview has an excellent inter-rate reliability (Cronbach alpha 0.95), good test-retest reliability (0.72) and demonstrates a good validity (0.97) [18].

### Procedure

The data for the current study was gathered in two stages, which commenced from 16th to 30th June, 2015. The first stage involved sorting out of all 83 convicted violent offenders

with substance use disorder from the primary database, which was extracted by the researchers. The second stage involved serially arranging (number 1-83) data of the 83 convicted violent offenders with substance use disorder. This was the data researchers used for their final analysis.

### Sample size

Total sample size of 83 convicted violent offenders with substance use disorder was used for the final analysis. This was done so as to improve statistical power.

### Analysis

Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 20. The data were categorical as such non-parametric statistical test was used for the analysis. Descriptive statistics was used to summarize socio-demographic variables using frequency counts and percentages. The chi square test was used to determine the association between drugs/alcohol and criminal behaviour (offence charged i.e. armed robbery, murder and manslaughter), so also demographic factors and forensic profile with alcohol/drugs. A probability of 5% was regarded as

**Table 1:** Demographic factors of subjects.

Demographic factors	Frequency	Percentage (%)
Age group		Mean/SD 38±12.32
15-24	6	7.2
25-34	35	42.2
35-44	26	31.3
45-54	8	9.6
≥55	8	9.6
Marital status		
Married	17	20.5
Separated	21	25.3
Never married	45	54.2
Educational status		
Non formal	18	21.7
Primary	20	24.1
Secondary	28	33.7
Tertiary	17	20.5
Occupational status		
Unemployed	17	20.5
Employed	37	44.6
Student	19	22.9
Apprentice	10	12.0
Total	83	100.0

### Substances abused by subjects

The single most abused substance among subjects was alcohol (24.1%), with a slight higher percentage abusing

statistically significant. Logistic regression was used to identify predictors or factors influencing outcome(s) of the study.

### Ethical issues

The researchers were granted permission by the Nigeria Prison Service to use secondary data for the current research and ethical clearance was also granted by the University of Liverpool for this particular research because of the vulnerability of the research group.

### Results

#### Socio-demographic characteristics of subjects

**Age, marital status, educational status and employment status:** Subjects were aged between 18 and 85 years with a mean age of 38±12.31 years. More than two-third (73.5%) of the subjects were young between the ages of 25-44 years. More than half of the subjects 45 (54.2%) were never married, with twenty-eight (33.7%) having secondary school education. More than a quarter (44.6%) of the subjects was employed before incarceration (Table 1).

multiple substances (alcohol, cigarette and marijuana) (30.1%) (Table 2).

**Table 2:** Substances abused.

Substance used	Frequency	Percentage (%)
Alcohol	20	24.1
Marijuana	6	7.2
Cigarette	7	8.4
Cocaine	3	3.6
Solvent	1	1.2
Sedative/Hypnotics	2	2.4
Alcohol/Marijuana	1	1.2
Alcohol/Cigarette	6	7.2
Marijuana/Cigarette	6	7.2
Marijuana/Cocaine	1	1.2
Alcohol/Marijuana/Cigarette	25	30.1
Alcohol/Cocaine/Heroin	1	1.2
Marijuana/Cigarette/Cocaine	1	1.2
Marijuana/Cocaine/Heroin	1	1.2
Alcohol/Marijuana/Cigarette/Solvent	1	1.2
Marijuana/Cigarette/Cocaine/Solvent	1	1.2
Total	83	100.0

**Association between violent criminal behavior and alcohol abuse among subjects:** Murder crime was significantly related to alcohol abuse ( $\chi^2$  6.125,  $P= 0.013$ ) (Table 3a). The odds ratio for a convicted violent offender who abused substance is 1.64 times more likely to commit the crime of manslaughter

compared to murder or armed robbery with a 95% CI (0.158, 6.83) (Table 3b). However, alcohol abuse/dependence did not significantly predict the crime of manslaughter Wald  $\chi^2$  (1) = 0.001,  $P= 0.970$  ( $>0.05$ ), therefore the model is not a significant fit for the data (Table 3b).

**Table 3a:** Association between convicted violent offenders who abuse alcohol and individual criminal behaviours.

Criminal behaviour	Alcohol		$\chi^2$	P
	YES	NO		
Murder	23(71.9)	9(28.1)	6.125	0.013
Manslaughter	3(60.0)	2(40.0)	0.200	0.655
Armed robbery	28(60.9)	18(39.1)	2.174	0.140
Total	54(65.1)	29(34.9)	-	

**Table 3b:** Logistic Regression for alcohol/drug abuse and criminal behavior.

Substance abuse <sup>a</sup>	B	SE	Wald	df	Sig	Exp(B)	95% CI Exp(B)	
Intercept	.442	.302	2.139	1	.144	-	-	-
Murder	.496	.496	1.002	1	.317	.609	.230	1.609
Manslaughter	.036	.964	.001	1	.970	1.637	.158	6.828
Armed Robbery	0 <sup>b</sup>	-	-	0	-	1.000	-	-

a: The reference category is: Alcohol.

b: This parameter is set to zero because it is redundant.

LB: Lower Bound; UB: Upper Bound

**Association between violent criminal behavior and drug abuse among subjects:** Significant differences were found with the crimes of murder and armed robbery in subjects who abused marijuana ( $\chi^2$  11.879,  $P= 0.001$ ;  $\chi^2$  20.512,  $P= 0.001$ ), cigarette ( $\chi^2$  11.879,  $P= 0.001$ ;  $\chi^2$  16.791,  $P= 0.001$ ), cocaine ( $\chi^2$  58.242,  $P= 0.001$ ;  $\chi^2$  63.674,  $P= 0.001$ ) and heroin ( $\chi^2$  62.06,  $P= 0.001$ ;  $\chi^2$  82.047,  $P= 0.001$ ) (Table 3c). Hypnotic was significantly related to murder ( $\chi^2$  58.242,  $P= 0.001$ ) while sedative and solvents abuse were related to armed robbery ( $\chi^2$  78.186,  $P= 0.001$ ;  $\chi^2$  74.419,  $P= 0.001$ ) respectively (Table 3c).

**Table 3c:** Association between specific drugs abused and individual criminal behaviours among convicted violent offenders.

Crime/Substance abused	Yes	No	$\chi^2$	P
Marijuana				
Murder	19(28.8)	47(71.2)	11.879	0.001
Manslaughter	3(30.0)	7(70.0)	1.600	0.206
Armed robbery	22(25.6)	64(74.4)	20.512	0.001
Cigarette				
Murder	19(28.8)	47(71.2)	11.879	0.001
Manslaughter	4(40.0)	6(60.0)	0.400	0.527
Armed robbery	24(27.9)	62(72.1)	16.791	0.001
Cocaine				
Murder	2(3.0)	64(97.0)	58.242	0.001
Manslaughter	0(0.0)	10(100.0)	-	-
Armed robbery	6(7.0)	80(93.0)	63.674	0.001
Solvent				
Murder	0(0.0)	66(100.0)	-	-
Manslaughter	0(0.0)	10(100.0)	-	-
Armed robbery	3(3.5)	83(96.5)	74.419	0.001
Sedative				
Murder	0(0.0)	66(100.0)	-	-
Manslaughter	0(0.0)	10(100.0)	-	-
Armed robbery	2(2.3)	84(97.7)	78.186	0.001
Hypnotics				
Murder	2(3.0)	64(97.0)	58.242	0.001
Manslaughter	0(0.0)	10(100.0)	-	-
Armed robbery	0(0.0)	86(100.0)	-	-
Heroin				
Murder	1(1.5)	65(98.5)	62.061	0.001
Manslaughter	0(0.0)	10(100.0)	-	-
Armed robbery	1(1.2)	85(98.8)	82.047	0.001

**Note:** Because the comparison is between individual drugs and violent crimes, column chi-square was used. Fisher exact test is indicated where you have a 2x2 contingency table (two variables each with two options).

**Association between demographic factors and alcohol/drugs abused among subjects:** The study found age and educational status to be significantly related to substance abuse as majority of the productive age group (25-44 years) abused alcohol compared to drugs ( $\chi^2$  15.536,  $P= 0.004$ ), with most of the primary and tertiary school students abusing alcohol ( $\chi^2$  9.285,  $P= 0.026$ ) (Table 4a)

**Table 4a:** Association between demographic factors and alcohol/drugs abused among subjects.

Demographic factors	Substance abused		$\chi^2$	P
	Alcohol	Drugs		
Age group				
15-24	1(16.7)	5(83.3)	15.536	0.004
25-34	18(51.4)	17(48.6)		
35-44	22(84.6)	4(15.4)		
45-54	6(75.0)	2(25.0)		
≥55	7(87.5)	1(12.5)		
Marital status				
Married	13(76.5)	4(23.5)	1.504	0.471
Separated	14(66.7)	7(33.3)		
Never married	27(60.0)	18(40.0)		
Educational status				
Non formal	11(61.1)	7(38.9)	9.285	0.026
Primary	15(75.0)	5(25.0)		
Secondary	13(46.4)	15(53.6)		
Tertiary	15(88.2)	2(11.8)		
Occupational status				
Unemployed	10(58.8)	7(41.2)	2.521	0.472
Employed	22(59.5)	15(40.5)		
Student	15(78.9)	4(21.1)		
Apprentice	7(70.0)	3(30.0)		

The odds of substance abuse in convicted violent offenders between the ages of 15-24 years, who had secondary school education and are unemployed were 35 times, 8.65 times and 1.633 times more than other ages groups, educational status and employment statuses with a 95% confidence intervals of (1.743, 70.299; 1.659, 45.141; and .310, 8.607) respectively (Table 4b). However the overall model is not significant for any (Wald  $\chi^2$  (1) = 5.40,  $P= 0.020$ ; Wald  $\chi^2$  (1) = 6.58,  $P= 0.010$ ; Wald  $\chi^2$  (1) = 0.34,  $P= 0.56$  respectively because the P values are all more than 0.05 (Table 4b).

**Table 4b:** Logistic Regression for substance abuse and demographic factors.

Substance abusea	B	SE	Wald	df	Sig	Exp(B)	95% CI Exp(B)	
							LB	UB
Age Group								
Intercept	1.946	1.069	3.313	1	.069	-	-	-
15 - 24	3.555	1.531	5.395	1	.020	35.000	1.743	70.299
25 - 34	1.889	1.121	2.837	1	.092	6.611	.734	59.525
35 - 44	.241	1.199	.040	1	.841	1.273	.121	13.353
45 - 54	.847	1.345	.397	1	.529	2.333	.167	32.584
≥55	0 <sup>b</sup>	-	-	0	-	1.000	-	-
Marital Status								
Intercept	.405	.304	1.776	1	.183	-	-	-
Married	.773	.648	1.425	1	.233	.462	.130	1.643
Separated	.288	.554	.270	1	.604	.750	.253	2.221
Never married	0 <sup>b</sup>	-	-	0	-	1.000	-	-
Educational Status								
Intercept	2.015	.753	7.164	1	.007	-	-	-
Non-formal	1.562	.895	3.052	1	.081	4.773	.826	27.562
Primary	.916	.913	1.008	1	.316	2.500	.418	14.962
Secondary	2.158	.843	6.557	1	.010	8.654	1.659	45.141
Tertiary	0 <sup>b</sup>	-	-	0	-	1.000	-	-
Employment Status								
Intercept	.847	.690	1.508	1	.220	-	-	-
Unemployed	.491	.848	.335	1	.563	1.633	.310	8.607
Employed	.464	.767	.366	1	.545	1.591	.354	7.154
Student	.474	.890	.284	1	.594	.622	.109	3.564
Apprentice	0 <sup>b</sup>	-	-	0	-	1	-	-

a. The reference category is: Alcohol.

b. This parameter is set to zero because it is redundant.

LB: Lower Bound; UB: Upper Bound

**Association between forensic profile and alcohol/drugs among subjects:** A significant difference was found between forensic profile and substance abuse, as most of the subjects abusing alcohol were on death penalty ( $\chi^2$  9.600, P= 0.002) (Table 5a).

**Table 5a:** Association between forensic profile and alcohol/drugs abused by subjects.

Forensic profile	Substance abused		$\chi^2$	P
	Alcohol	Drugs		
			<b>0.059</b>	<b>0.808</b>
Prison sentence	8(47.1)	9(52.9)		
Life imprisonment	4(66.7)	2(33.3)	0.667	0.414
Death penalty	42(70.0)	18(30.0)	9.600	0.002
Total	54(65.1)	29(34.9)	-	-



The odds ratio for convicted violent offenders who abuse substance to serve prison sentence was 2.63 times more likely than have a life sentence or death penalty with a 95% confidence

interval of (0.873, 7.893), although no significant prediction (Wald  $\chi^2(1) = 2.95, P = 0.09$ ) was found with the overall model used (Table 5b).

**Table 5b:** Logistic Regression for substance abuse and forensic profile.

Substance abuse <sup>a</sup>	B	SE	Wald	df	Sig	Exp(B)	95% CI Exp(B)	
							LB	UB
Intercept	.847	.282	9.046	1	.003	-	-	-
Prison Sentence	.965	.562	2.952	1	.086	2.625	.873	7.893
Life Imprisonment	.154	.911	.029	1	.866	1.167	.196	6.952
Death Penalty	0 <sup>b</sup>	-	-	0	-	1.000	-	-

## Discussion

At the time of the study the prison consisted of only male violent offenders with 83 participating in this study, as such no gender comparison was possible for the study. Almost half of the subjects were within the productive age bracket of 18-34 years (mean age of 38years). Studies conducted in Nigeria show substance abuse to be a problem of the youth [19-20]. Another study conducted by the Organization of American States (2012) across four Caribbean countries found age range of violent offenders to be between 16-35 years with percentage ranging between 66% at Saint Vincent and Grenadine, 76% in Saint Kitts and Nevis, 53% in Dominica and 66% in Saint Lucia [21]. According to Schuckit [22], peak age of substance abuse, are highest between mid-teens and mid-twenties. Factors responsible for this includes, modeling, ignorance, rebellious acting out against the authority, which may all play an important role. Majority of the subjects in the study were youngsters who prefer to have an autonomous and independent life free from adult control, thereby engaging in various delinquent acts (drug abuse, violent behavior, robbery and vandalism) which is dangerous to the community, home and the nation at large. This results in violent criminal behaviors which lead to imprisonment.

The study examined educational status of the subjects and found 3 in 10 of the subjects had secondary school education, and likely dropped out of school from that level. This likely coincided with their commencement of substance abuse [19]. Performance in school is inversely linked with adolescent substance abuse [22]. The use of alcohol/drugs erodes school performance among large segments of a given population and it is a major unresolved problem.

More than a quarter of the studied subjects were employed before incarceration. This is similar to a Nigerian study that found a third of their studied sample employed before incarceration, while a quarter were students [19]. A higher percentage of studied subjects employed before incarceration was found in the Caribbean with 52% at Saint Vincent and Grenadines, while 54% was reported at Saint Kitts and Nevis, although lower finding was reported at Saint Lucia 36% and Dominica 25% [21]. The finding was in contrast to study in Mumbai which found a quarter of their

sample to be unemployed [23]. This implied that across several regions offenders employed before incarceration likely use the monies they get from their jobs to fund their substance abusing behaviors, which will subsequently result in criminal behaviors.

Using the International Labour Organization Classification of Occupation (ILO), most of the employed subjects in the study were peasant farmers and therefore belong to Major Group 4. The low social class subjects may be more prone to being caught and persecuted following their offences it is also likely that the society is unnecessarily biased in favor of the economically and educationally advantaged group. The lower social class is likely more prone to violent criminal offenses which results in their arrest, while the economically and educationally advantaged group are able to plea bargain and appeal their cases.

The single most abused substance by the subjects was alcohol, while the most abuse drug was marijuana. This is similar to what was found by Fazel et al. [24] they found 18 to 30% of alcohol abuse and dependence in male inmates in their systematic review. Kinyanjui & Atwoli [25], found alcohol abuse/dependence as the commonest substance use disorder in their studied population at higher rates of 65.1% at a prison in Western Kenya. The high rates of alcohol abuse and dependence in the study could be attributed to the social permissiveness of alcohol use. It is a licit substance with important social roles and therefore acceptable [26]. Consequently in Nigeria there are few laws governing its usage and restriction within the population. Beside, brewing companies go to length to produce and advertise specific alcoholic beverages aimed at wooing the youth into alcohol use [26]. Cannabis being the most abused drug in the study is primarily not associated with aggression or violence, but its side effects might promote the risk for violence that is drug-induced and cognitive deficit [22-28]. According to Hoaken and Stewart [28,29] withdrawal or smaller doses of cannabis promote the risk for aggressive behavior, with an increased risk for interpersonal violence thus contributing to violent criminal behaviors.

After tobacco, cocaine was the next drug of abuse among the subjects studied. Cocaine intensifies the release of dopamine, while at the same time it blocks its degradation. This results in

intense well-being; it might also trigger fear and paranoia which leads to aggressive behaviour [30]. Heavy abuse of cocaine also results in drug induced psychosis [31], which could in violent crimes and prison sentence.

The study found significant association between violent offenders that committed the crimes of murder and armed robbery with alcohol, marijuana, tobacco, cocaine, and heroin, murder crime alone was found to be associated with hypnotic, while the crime of armed robbery alone was associated with subjects who were dependent or abused sedatives and solvent. Alcohol dependence/abuse is associated with an elevated risk of interpersonal violent behaviour; thus predispose an individual to aggressive behaviour which enhances the risk for an individual being aggressive when under the influence of alcohol [32]. Several studies revealed that alcohol was more than twice likely to contribute to violent crimes including manslaughter than non-violent crimes, which is similar to what obtains from current study, and for the studies that measured the alcohol level, heavy drinking was associated with violence [9,28].

A Norwegian study found that doubling the use of cannabis increases the risk of violence by 4% [33]. Tobacco was significantly related to murder and armed-robbery crimes in the study. This is not surprising as more than a quarter of the subjects abused a combination of marijuana, alcohol and tobacco. It is likely that even those abusing or dependent on tobacco alone sometimes combine it with other substances especially when committing a violent criminal behaviour. Violent behaviors associated with cocaine abuse or dependence is based on the cocaine effects on neurotransmitter dysfunction. Apart from increasing levels of neurotransmitters in the pleasure center of the brain, it causes a dramatic change in the levels of serotonin and nor epinephrine in parts of the brain which possibly provokes hyperactivity, aggression, impaired judgment and paranoia [34]. Heroin is an opiate with an effect of analgesia, pleasure and sedation, but withdrawal and drug seeking behaviour may elevate the risk of violence in individual abusing or dependent on it [28,35]. The study also showed a relationship between hypnotic abuse/dependence and murder crime and also sedative abuse/dependence and the crime of armed robbery. Hypnotic/sedative intoxication easily leads to aggression which ultimately leads to committing serious violent crimes such as murder, and armed robbery with no memory of such action [36].

The study found significant relationship between age of the subjects, educational status, and the abuse of alcohol/drugs. It found young age (18-24 years), secondary school education, being single and unemployment to increase the odds of abusing alcohol/drugs which will ultimately result in violent criminal behaviour especially while withdrawing or intoxicated with the substance of abuse. However the overall model was not significant for the data. A similar finding was reported in the United States of America where 3 in 10 users of methamphetamine aged 18-25 years were found to have committed violent crimes while under

the influence of drugs [37]. Among youths in Germany, Spain and Britain, the use of cannabis by holiday makers doubled the odds of involvement in violent crimes, while cocaine use tripled the odds [38].

Though the study reported didn't find any significant relationship between drugs/alcohol and employment, violence is often linked to poverty and social inequalities [39]. Lack of employment and money could result in young people becoming involved in drugs and alcohol which will subsequently increase the risk of perpetration of violent-crimes [40]. By implication unemployment is a driver to social vices, with resultant social deprivation and poverty as such individuals likely to reside in neighborhoods that lack basic social amenities such as lack of lightening on the street.

The study found significant relationship between educational level of subjects and abuse of alcohol/drugs. Subjects who had secondary school education were about nine times more likely to be abusing alcohol, even though the overall model was not significant. Several studies have reported that alcohol abuse during adolescence affects educational attainment by reducing the number of years schooling and the possibility of completing school [41-43]. Some behavioral researchers also reported educational performance to highly correlate with substance abuse [44]. Low educational achievement as reported in the study, maybe as a result of alcohol/drug abuse because substance abuse in adolescence increases the potential of grades decline, school absence and drop out of schools.

The study found significant association between forensic-profile (death row) and alcohol/drugs. Subjects on prison terms were found to be 2.63 times more likely to abuse substances than other prison sentences with the odds reducing as the sentence gets tougher although the overall model was not significant. The implication of the current study to other literatures is that, the current study didn't support the findings of other literatures, that is substance abuse/dependence doesn't not necessary predict the prison sentence for a violent offender. The finding from the current study is consistent with research on substances abuse among incarcerated homicide offenders [12,13,45]. A sizeable percentage of death-row inmates self-reported histories of substance abuse and/or dependence at the time of their capital offenses [46]. Mandatory death sentencing law vary from country to country, but in Nigeria the mandatory death sentence exist for offenses of murder and robbery/armed-robbery [47,48].

### Strengths and Limitations

The sample consisted of 83 convicted violent offenders with SUD the sample size is small, which is not necessarily the representative of convicted violent offenders in general thus limiting the study. The study was cross-sectional and single sited, limited to just one prison which limits the generalizability of the result to the rest of Nigerian prisons. The self-reporting



of substance use without any objective urine toxicology was also a limitation of the study. Notwithstanding these limitations, the study adds to the knowledge concerning the association between substance abuse and crime by comparing the effects of substance abuse on demographic factors and forensic profile.

### Conclusion

In conclusion the study has shown that, the prevalence of alcohol/drugs abuse are major factors that contributes to impulsivity, aggression, agitation and ultimate violence in the criminal justice population, with specific reference to violent offenders. The fact that this category of offenders has substance use disorder is pointer to the link that exists between alcohol/drug abuse and violent criminal behaviour as evident in the forensic profile of subjects examined in the study. Hence, access to, use and dependence on these substances will continue to be key drivers of violent criminal behaviour in both the general and prison population.

### Recommendation

Authors recommend that for prevention of recidivism, alcohol/drug dependence/abuse should be addressed (i.e. interventions). Findings show support for existing research in the area that has indicated drug/alcohol abuse/dependence is a risk factor for criminal behaviour. In this case, violent criminal behaviour.

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