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PURPOSE AND SCOPE

The *African Journal of Drug & Alcohol Studies* is an international scientific peer-reviewed journal published by the African Centre for Research and Information on Substance Abuse (CRISA). The Journal publishes original research, evaluation studies, case reports, review articles and book reviews of high scholarly standards. Papers submitted for publication may address any aspect of alcohol and drug use and dependence in Africa and among people of African descent living anywhere in the world.

The term "drug" in the title of the journal refers to all psychoactive substances other than alcohol. These include tobacco, cannabis, inhalants, cocaine, heroin, prescription medicines, and traditional substances used in different parts of Africa (e.g., kola nuts and khat).

EDITORIAL AND MANAGEMENT TEAM

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ASSESSING PERSONALITY RISKS USING THE SURPS FOR ALCOHOL AND OTHER DRUG PROBLEMS IN CAPE TOWN, SOUTH AFRICA

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ABSTRACT

Four personality traits are recognized risk factors for alcohol and drug-related problems: hopelessness, anxiety sensitivity, sensation seeking, and impulsivity. In this cross-sectional study, the Substance Use Risk Profile Scale (SURPS) was applied to measure these traits and assess the questionnaire's reliability from a community sample in Cape Town, South Africa (*n*=1000). Results indicate that hopelessness is significantly associated with high-risk use of mandrax, inhalants, and opioids. However, unlike results from other settings that suggested utility for the SURPS, this study did not demonstrate strong internal reliability or associations between all personality traits and risky substance use. This provides evidence against it being an appropriate assessment tool in a diverse South African population.

Key words: SURPS; personality; substance use disorders (SUD); South Africa

INTRODUCTION

The high-risk use of alcohol and other drugs (AOD) presents a growing public health concern in South Africa, where around 13% of the population will experience a substance use disorder (SUD) (Stein et al., 2008). Additionally, the lifetime prevalence of substance abuse is significantly higher in Cape Town compared to the national average (Peltzer & Ramlagan, 2009). The National Drug Master Plan recognized the escalating use of AOD as promoters of crime, poverty, unemployment, dysfunctional family life, injury, premature death, and the spread of infectious diseases, such as HIV and TB (Drug Advisory Board, 1999). Despite widespread substance-related problems and their significant impact on health and social conditions, the World Mental Health Survey found that only 27% of

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South Africans living with a SUD received treatment during the previous year (Seedat, Van, Jewkes, Suffla, & Ratele, 2009).

Many historical, social, and economic forces have contributed to high rates of AOD use around Cape Town, which is most noticeable in the Cape Flats region. This was a destination for 'coloured' or mixed race people who were forcibly displaced to the outskirts of the city according the Group Areas Act of 1950. The previous apartheid government enforced strict segregation and their racial classifications are still used because of its enduring effects on health and social outcomes. Over time, many areas of the city have developed formidable criminal activity due to social instability, poverty, and general lack of resources and employment opportunities. Drugs have financed gangs that continue to fill protection, employment, and power vacuums in the under-resourced communities (Goga, 2014). Such environments have made drug use a commonplace and the selling of drugs one of the few lucrative occupations.

While marginalized communities generally experience more AOD problems, community members are not at equal risk for initiating or escalating substance use (Peltzer & Ramlagan, 2009). There are appreciable differences that make substance use problematic for some people while many remain resilient, even within the same conditions. 'Addictive personality' traits are commonly attributed to people who generally employ compulsive behaviors to cope with interpersonal conflicts, depression, and other stressors (Loewen, n.d.). These psychological characteristics are not necessary or sufficient causes of substance abuse, but are significant risk factors for individuals from all backgrounds.

Due to its well-documented association with substance use, personality has increasingly been explored as an avenue for intervention (Conrod, Castellanos, & Mackie, 2008; Conrod, Castellanos-Ryan, & Strang, 2010; Conrod, Stewart, Comeau, & Maclean 2006). Personality is the tendency for individuals to think, feel, and behave in consistent ways (Caspi, 1998), which strongly influences various health risk behaviours, including AOD use. Four personality traits (hopelessness, anxiety sensitivity, sensation seeking, and impulsivity) have been identified as risk factors for substance use and the development of SUD (Woicik, Stewart, Pihl, & Conrod, 2009). These traits are related to substance use through distinct motivational pathways and preferences for the effects of specific drugs (Conrod, Pihl, Stewart, & Dongier, 2000). For example, high levels of hopelessness relate to the negative reinforcement properties of alcohol and other depressants, while anxiety sensitivity is associated with substances such as alcohol that reduce inhibition and the avoidance of drugs that increase anxiety. These relationships motivated Woicik and colleagues (2009) to condense previous measures of personality risk into a brief, 23-item questionnaire called the Substance Use Risk Profile Scale (SURPS).

In general, previous studies have reported good internal consistency and generalizability for the SURPS in various settings. The subscales have been discriminate in measuring AOD use, and test-retest analyses indicate that each personality profile is stable over time (Castellanos-Ryan, O'Leary-Barrett, Sully, & Conrod, 2013). It has also demonstrated good psychometric properties in published literature from several countries, improved treatment results when tailoring brief interventions,

and was successfully applied to predict future adolescent AOD use (Conrod et al., 2010; Malmberg et al., 2012). If proven to be reliable and valid, the SURPS could offer a convenient screening tool for identifying high risk individuals before they present with a severe problem, and also help customize treatments to address the primary motivation.

The current study employs the SURPS to measure personality risks within a large Cape Town sample, assess the association between the four personality traits and risky AOD use, and measure the internal reliability of the SURPS and consequently its validity in a diverse South African population. Based on previous research, it is hypothesized that alcohol will be associated with all four personality profiles. Furthermore, compared to the control group, the hopelessness group should demonstrate a higher risk for opioid use while the anxiety sensitive group is likely to have low levels of illicit drug use. Sensation seekers are anticipated to have the highest levels of alcohol consumption and overall poly-substance use. Finally, impulsivity is expected to be associated with high-risk stimulant use including cocaine and methamphetamine (Schlauch, Breiner, Stasiewicz, Christensen, & Lang, 2013; Woicik, Stewart, Pihl, & Conrod, 2009). Results from this study will suggest the utility of the SURPS for interventions in Cape Town and potentially other settings in Sub-Saharan Africa.

METHOD

A convenient cross-sectional sample was obtained from two areas of Cape Town's Northern and Southern suburbs. These locations were selected to broadly represent the diverse demographics of Cape Town and the Western Cape Province. Participants were approached in public areas such as train stations, street junctions, and shopping malls and asked to complete the paper survey. Willing participants aged 18 and older were informed of their confidentiality before written consent was obtained. The three major languages of the area (English, Afrikaans, and Xhosa) were represented by field workers able to address any questions and questionnaires were translated for participants unable to speak English. The University of Cape Town's Health Research Ethics Committee approved all methods and procedures. In addition to standard socio-demographic information (including gender, age, race, education, employment, and marital status), the following measures were included in the survey:

Substance use

The Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) was adapted to question current and previous use of alcohol, tobacco, cannabis (locally known as dagga), cocaine, methamphetamine (locally known as tik), methaqualone (mandrax), inhalants, opioids, and hallucinogens. Each respondent had scores ranging from 0 to 39 for each drug before being allocated to medium-high risk (greater than 10 for alcohol and greater than 3 for other substances) or low risk group (WHO ASSIST Working Group, 2002).

Personality assessment

The Substance Use Risk Profile Scale (SURPS) was used to evaluate the four major personality traits relating to reinforcement-specific patterns of substance

use (Conrod et al., 2010). These traits include hopelessness (i.e. negative thinking and depression proneness), anxiety sensitivity (i.e. fear of physical arousal), sensation seeking (i.e. desire to try new things), and impulsivity (i.e. difficulty controlling behavioural responses) (Malmberg et al. 2010). Respondents were asked to rate their level of agreement for 23 items on a 4 point Likert scale that included strongly disagree, disagree, agree, or strongly agree. Each personality profile corresponded to averaging 4-7 specific items, shown in Table 2. Respondents with low levels for each sub-scale were allocated to the control group.

Depression

Depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CES-D). This 20-item questionnaire assesses the intensity and frequency of depressive symptoms on a 4-point Likert scale including never, sometimes, occasionally, or most of the time. A cut-off score of 16 or greater is considered significantly depressed (Radloff, 1977). Due to anticipated associations between depression, the hopelessness personality subtype, and potentially other maladaptive traits, it was hypothesized that this third variable may be necessary for regression analysis.

Statistical Analysis

The data was analyzed using Stata version 12.1 (StataCorp LP) software. Descriptive statistics were first calculated before personality and AOD variables were categorized. Grouping personality measures above one standard deviation of each sub-scale's mean into corresponding maladaptive personality profiles and ASSIST scores into binary categories (low vs medium/high) enabled concurrent associations to be determined (Conrod et al., 2010). Logistic regression models were built using a forward stepwise process guided by likelihood ratio chi-squared statistics to include relevant third variables and the four personality profiles into models for each substance. This provided adjusted estimates for risky substance use relating to the four personality subtypes compared to the controls. Prevalence ratios rather than odds ratios were reported because high-risk substance use outcomes were greater than 10% (Thompson, Myers, & Kriebel, 1998). SURPS sub-scales were then assessed using Cronbach alpha scores. Acceptable indicators of internal consistency and reliability were supported by alpha scores greater than 0.60 (Loewenthal, 1996).

RESULTS

Demographics

Of the total sample (n = 1000), 90% were aged 18–40 with a mean of 27.2 ± 7.1 years. Racial representation was 55% black, 29% coloured (distinct mixed-race ethnic group), and 16% were white or Asian. There was nearly equal representation between genders (51.1% female) and the majority of the sample (80.5%) was not married or cohabitating. Roughly one quarter of respondents were students, 42.9% were employed in at least part-time work, and nearly half had completed high school. About 28% of the sample met the criteria for being significantly depressed and 7% reported a history of substance-related treatment. Women were less likely to use AODs at risky levels (PR = 0.80, 95% CI 0.73-0.96) while persons who were coloured (PR =

1.20, 95% CI 1.00-1.40) or depressed (PR = 1.42, 95% CI 1.12-1.79) were at elevated risk. The percentage of respondents with ASSIST scores indicating "risky" AOD use (moderate-high risk) was as follows: alcohol 32%, tobacco 24%, cannabis 20.5%, methamphetamine 14.5%, opioids 9.0%, mandrax 8.9%, hallucinogens 8.5%, cocaine 6.9%, and inhalants 6.7%.

SURPS reliability

The internal consistency of the SURPS and its sub-scales were assessed using Cronbach alpha scores and item-rest correlations. The hopelessness scale had a high overall alpha score of 0.73 and no items were unacceptably low. However, other sub-scales showed a low degree of reliability. The sensation seeking scale was especially problematic and no individual item was specifically responsible (Table 1). Low alpha scores were also found when scales were assessed by race and gender, but were highest amongst white/Asians and lowest for coloured respondents.

Table 1. Factor-analysis of SURPS items including item rest correlations and Cronbach alphas. (R) indicates reversed item scoring.

	Item-rest correlation	Alpha
Hopelessness		
1. I am content (R)	0.46	0.69
4. I am happy (R)	0.37	0.72
7. I have faith that my future holds great promise	0.49	0.68
13. I feel proud of my accomplishments (R)	0.38	0.71
17. I feel that I'm a failure	0.43	0.69
20. I feel pleasant (R)	0.49	0.68
23. I am very enthusiastic about my future (R)	0.49	0.68
Cronbach's alpha		*0.73*
Anxiety sensitivity		
8. It's frightening to feel dizzy or faint	0.31	0.48
10. It frightens me when I feel my heart beat change	0.34	0.47
14. I get scared when I'm too nervous	0.31	0.49
18. I get scared when I experience unusual body sensations	0.29	0.49
21. It scares me when I'm unable to focus on a task	0.28	0.50
Cronbach's alpha		*0.54*
Sensation seeking		
3. I would like to skydive	0.26	0.23
6. I enjoy new and exciting experiences even if they are unusual	0.21	0.29
9. I like doing things that frighten me a little		
12. I would like to learn how to drive a motorcycle	0.11	0.39
Cronbach's alpha	0.21	0.29
		0.37
Impulsivity		
2. I often don't think things through before I speak	0.32	0.38
5. I often involve myself in situations that I later regret being involved in	0.26	0.43
11. I usually act without stopping to think		
15. Generally, I am an impulsive person	0.26	0.43
Cronbach's alpha	0.29	0.41
		0.49

Table 2. Prevalence ratios for SURPS traits and risky AOD use, adjusted by depression, race, and age. Estimates significantly above 1 indicate elevated high-risk use and those significantly below 1 indicate a decreased prevalence compared to the control group.

Drugs	Hopelessness	Anxiety sensitivity	Sensation seeking	Impulsivity
Alcohol	1.00	1.21*	1.79**	1.09
Tobacco	0.92	1.18	1.60**	1.02
Cannabis	1.08	0.93	2.61**	0.99
Cocaine	0.71	0.61	3.22**	0.70
Meth	1.06	0.78	0.96	1.02
Mandrax	1.60*	0.53**	0.71	1.36
Inhalants	1.53*	0.66*	0.75	0.80
Opioids	1.64*	1.02	0.79	0.86
Hallucinogens	1.09	0.56**	2.21**	0.89

*$p < 0.05$; **$p < 0.01$

Associations between personality and risky AOD use

A forward selection process modeling high-risk use for each substance found that depression, race, and age significantly influenced the generalized linear models. Including these variables and the four personality traits in logistic regression models found an increased prevalence of high-risk opioid, mandrax, and inhalant use in the hopelessness group (Table 2). The lack of internal reliability of other SURPS sub-scales makes asserting further associative relationships inappropriate.

DISCUSSION

Theories of drug using behaviour acknowledge two major sources of motivation and reinforcement: the pleasure inducing properties of some drugs and the negative reinforcing effects of other substances for relieving negative affective states (Woicik, et al., 2009). As recognized in previous literature, this convenient sample found a high prevalence of AOD use in Cape Town. High-risk use of alcohol was particularly prevalent (32%) while other drugs such as tobacco, cannabis, and methamphetamine were also used at risky levels. These figures also reflect the primary substances prompting treatment in the Western Cape, where alcohol and methamphetamine abuse is especially problematic (Medical Research Council, 2014).

As expected, hopelessness was associated with high-risk use of depressants such as mandrax, inhalants, and opioids. However, low levels of reliability within the other SURPS sub-scales made further analysis inappropriate. This discrepancy with literature from other regions could be influenced by unique cultural norms and the socioeconomic circumstances in Cape Town. However, results showing that being male, depressed, and coloured are significantly associated with risky substance use still provides evidence for where intervention efforts are most needed.

If a significant reduction in the AOD burden is to be made, more evidence-based and cost-effective methods are needed. The local government and global health organizations have demonstrated support for such efforts, as evidenced by

local public awareness campaigns and the inclusion of AOD prevention and treatment in the United Nation's Sustainable Development Goals for 2030. Despite previous evidence for applying the SURPS in other settings, this is the first study to assess the measure in southern Africa and the first to find a lack of generalizability. However, there have been previous studies that reported low levels of reliability within the measure (Robles-Garcia et al., 2014), and some have omitted poor performing items for adequate fit (Schlauch, Breiner, Stasiewicz, Christensen, & Lang, 2013). Other literature also examined the cultural appropriateness of the sensation seeking items, which might be less normative among certain ethnic groups (Krank et al., 2011). These results underscore the importance of evaluating health-related measures, particularly self-reporting scales that are reliant on language and cultural constructs, before assuming adoptability in new settings.

The large and diverse sample recruited was a major strength of this study, though a few limitations also warrant consideration. Firstly, the dependence on self-reporting of sensitive information is prone to information biases. Stigmatization not only impedes users from seeking treatment, but also leads to under-reporting of AOD use and severity of mental health symptoms, resulting in a social desirability bias (Mortel, 2008). Therefore, it is possible that the prevalence of substance use may be underreported in this study. Secondly, the cross-sectional design inhibits the assurance of temporality between personality and substance use and the influence of drugs on personality over time is unclear. Lastly, the convenient sampling method does not guarantee the generalizability of these results to the wider Cape

Town or South African populations, nor does it accurately reflect the population prevalence of personality traits or substance use. Therefore, future studies using probabilistic sampling methods and a follow-up design may further explain this assessment of the SURPS in an African setting.

CONCLUSION

This study demonstrated a high prevalence of substance use but the internal reliability of the SURPS measure was too low to accurately measure all four personality traits. Therefore, despite the need for more intervention methods, this study provides evidence that the SURPS is not an appropriate tool for the diverse population in Cape Town, South Africa.

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A STUDY OF DRUG USE PATTERN AMONG INMATES OF JOS PRISON, NIGERIA

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ABSTRACT

This study investigated drug use pattern among inmates of Jos prison between 2010 and 2014. The study used a longitudinal design. Secondary data from the records unit of the Prison was employed for this study. The social disorganization theory was adopted for the understanding of drug abuse among prison inmates. A total of 3134 inmates who were admitted for drug use treatment in the Psychological Services Unit of Jos prison were used for this study, while simple percentage was used for analysis. Permission to use data from the unit for this study was obtained from the appropriate authorities of the Nigerian Prisons Service. Results show that inmates mostly used caffeine, alcohol, cigarettes and marijuana. Results also show that more youths use drugs, and that more inmates were admitted for treatment in 2010. The study recommended that the Nigerian Prisons Service should recruit more psychologists, psychiatrists and social workers to manage the rising cases of psychoactive drug use among prison inmates, and that parents whose children have been identified to abuse drugs should be co-opted into the rehabilitation process.

Key words: Drug use, prison inmates, Nigeria, LONGITUDINAL STUDY

INTRODUCTION

Drug use among prisoners in Nigeria has become a recurrent problem which presents a security concern. Even with the security apparatus on ground in the various prisons nationwide, prohibited substances still find their ways into the prisons. The prevalence of drug use among prisoners is high. Different classes of drugs are consumed by prison inmates and this poses a great security risk to the immediate prison environment. Apart from posing serious security risk, drug use among inmates also degrades their physical and mental health, and defeats the essence of imprisonment which is for reformation and rehabilitation. Most prisoners

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who use illicit substances had learned the habit before imprisonment, and when they come into prison, they tend to continue with the habit (Perlman, 2015).

Nwoli (1975) defined drug as any substance that by its chemical nature affects the structure or function of the organism. Obot (2013) defined drug use as all forms of drug self-administration for the purpose of getting "high", including use of banned and controlled substances. He also posits that drug abuse is used as a technical term to refer to dysfunctional drug use as defined in the WHO International Classification of Diseases (10th Edition).

The use of substance of abuse worldwide has become a major public health concern (Owoaje and Bello, 2010). It is estimated that between 155 and 250 million people or 3.5% to 5.7% of the world's population aged 15-64 have used one or more psychoactive substances at least once in the last one year (UNODC, 2010). In Africa, it is has been discovered that the major drugs of abuse are cannabis, nicotine and alcohol (WHO, 2004). Industrialization, urbanization and increased exposure to western life style have been noted to contribute to the increasing trend of substance use in Africa (Abiodun, Adelekan, Ogunremi, Oni and Obayan, 1994). In Nigeria, the most commonly abused drugs are cannabinoids, depressants, dissociative anesthetics, hallucinogens, stimulants and anabolic steroids (National Drug law Enforcement Agency, 2009).

Substance use among prison inmates has become a problem, and it is increasingly acknowledged on an international level. Many prisoners had used drugs before imprisonment, and continue to do so while in custody. A considerable number of prisoners not only continue drug use in prison but practice high-risk behaviour such as injecting and needle sharing. Although there are limited data on the drug problem in prisons, studies indicate that up to 50-60% of drug users still use drugs in prison with about one third of them injecting drugs (Zurhold, 2004).

Imprisonment has been found to impact on an individual's pattern of drug use. O'Mahony (1997) found that 42% of prison inmates in an Irish prison had used heroin while in prison serving their current sentences. Studies have also found that a significant proportion of the Irish prison population has a history of illicit drug use, and continue to use drugs while in prison (O'Mahony, 1997; Allwright, Barry, Bradley, Long and Thornton, 1999). However, little is known about the nature of this use and how individuals organise it within the prison setting (Dillion, 2001).

Of the 2.3 million inmates in the United States of America, more than half have a history of substance abuse and addiction (Perlman, 2015). Not all those inmates are imprisoned on drug-related charges, although drug arrests have been rising steadily since the early 1990s in the US. In many cases of non-drug related arrests such as burglary and robbery, it was found out that they were committed in the service of feeding their addiction (Perlman, 2015).

In Iran, it has been discovered that a disproportionate number of prison inmates use drugs. It is estimated that a little less than half of the prison population in Iran are convicted of drug-related charges, with the majority of them related to illicit drug use (Zamani, Farnia, Torknejad and Alaei, 2010). Despite attempts to prevent the entry of drugs into Iranian prisons, majority of prisoners who had been convicted of drug-related offenses

continued using illicit drugs inside prison. High levels of drug use among prisoners have also been reported from other countries. In the United Kingdom, it is reported that just less than half of male sentenced prisoners used drugs during their current prison term (Singleton, Farrell and Meltzer, 2003). It is estimated that at least half of the prison population in Europe has a history of drug use, with many of them being affected by severe drug related problems (Griffiths, Nilson, Carpenter and Merino, 2003).

Despite the rigorous security checks on ground in the various prisons nationwide to unravel the trafficking of illicit drugs into the prisons, it has been observed that there has been a consistent increase of drug use among inmates. As there have been no recent reviews of substance use in prisons in Nigeria, the researcher conducted a longitudinal review of the prevalence of substance abuse and dependence among prisoners in Jos prison. This study furthermore highlights the different drugs which inmates use, and exposes the trend of usage. These are the onus of this research.

Theoretical framework

Based on the foregoing this study adopts the social disorganization theory (Shaw and McKay, 1942) as a suitable theoretical underpinning for understanding the use and abuse of psychotropic substances among prison inmates.

The Social Disorganization Theory (SDT) is a widely used social-structural theory of substance abuse. It emphasizes the effects of an individual's position in society and the constraints that the person's status puts on his or her perceptions and behavior. According to this theory, all members of society subscribe to the same moral code but some people – because of their position in society – are more able than others to follow that code. Conversely, the social status of prisoners makes them susceptible to abuse psychoactive drugs. The theory highlights that drug use is an adaptation to the limitations that social position and environment places on individual behavior. Nigerian prisons are faced with challenges such as poor feeding, poor hygiene, congestion and dehumanizing conditions (Ugwuoke and Otodo, 2015) which affect the psyche of the inmates and pose as stress to them. These stressful conditions and unhygienic environment cause them to dwell in psychoactive drugs use.

METHOD

Jos prison is a convict prison in North-Central Nigeria which accommodates all classes of inmates: condemned convicts, lifers, short and long-term convicts, awaiting trial inmates, debtors, lunatics, lodgers and so on. It has a capacity for 1149 inmates. As at 31st December 2014, the inmate population of the prison was 698. The study used secondary data which were gathered from the records of admission into the Psychological Services Unit of Jos prison, spanning a period of five years from January 2010 to December 2014. Inmates who use drugs are usually identified in the admission board. Thereafter, they are admitted for drug detoxification and rehabilitation programmes in the unit. At the point of admission into the psychological services unit, their biodata are taken, and thereafter, they are clerked, in which their drug use, medical, family, educational and social histories are taken.

In the period under study, a total of 3,134 inmates were admitted into the unit and undergone treatment and interventions for drug addiction and dependence. Out of the 3134 inmates that were admitted, 22 were females while 3112 were males. Their ages ranged from 19 to 60 years, with a mean age of 34.4 years. Of the total number of inmates under study, 2027 were imprisoned for drug related offences, while 1107 were imprisoned for non-drug related offence such as conspiracy, stealing, court contempt, housebreaking, rape, armed-robbery, culpable homicide, traffic offences and so on. The data collected were analysed using simple percentages.

RESULTS

The details of the inmates' demographic data are summarized in table 1 below.

Table 1 shows the demographic characteristics of inmates who were used for the study. There were 3112 males and 22 females. About 82 % of the inmates were youth who were between the age range of 18 and 48. In terms of religious affiliation, 1243 of the inmates representing 39.7% are Christians, while 1712 (54.6%) are Muslims. 179 of them (5.7%) are of the African traditional religion.

Table 2 shows that in 2010, 1026 inmates (32.7%) were admitted. This high prevalence may be attributed to the

Table 1. Demographic characteristics of the sample of inmates

Characteristics	Sub-Characteristics	Frequency	Percentage (%)
Gender	Male	3112	99.3
	Female	22	0.7
Age	18-28	1102	35.2
	29-38	523	16.7
	39-48	943	30.1
	49-58	487	15.5
	58-above	79	2.5
Religion	Christianity	1243	39.7
	Islam	1712	54.6
	Others	179	5.7

Source: Jos Prison Records, 2010-2015

Table 2. Frequency distribution of the inmates who reported use of drugs admitted from January 2010 to December 2014

Year	No. of Admissions	Percentage
2010	1026	32.7
2011	534	17.1
2012	655	20.9
2013	673	21.5
2014	246	7.8
Total	3134	100

sectarian crisis that engulfed the city of Jos in 2010. 534 (17.1%), 655 (20.9%), 673 (21.5%) and 246 (7.8%) inmates were admitted in 2011, 2012, 2013 and 2014 respectively.

Table 3 shows that 453 inmates (14.5%) used only one drug, 873 (27.8%) used two drugs only, and 1808 inmates representing 57.7% used more than two drugs.

Table 4 shows the frequency distribution of the various classes of drugs used by the inmates who were admitted in the prison between January 2010 and December 2014. It should be noted that many of the inmates were poly drug users. Hence, some of them reported use of two or more classes of drugs; 2108 inmates (67.3%) used cannabinoids, 1754 inmates (56%) used depressants, while 53 of them (1.7%) used hallucinogens. Again, 2754 representing 87.9% used stimulants, 3 (or 0.1%) used anabolic steroid/

performance enhancers, 2 (0.1%) used dissociative anesthetics, 2643 or 84.3% used opioids, and 43 (1.4%) used solvents and inhalants.

DISCUSSION

Substance use is a major problem among prisoners and it may have serious consequences on their physical, psychological, health and social wellbeing. Not only is drug use detrimental to the personal wellbeing of the inmates, but also to the security of the prison, and by extension, the nation at large. Results from this research have shown a high level of psychoactive substance use among prisoners in Jos prison, Nigeria. This is an indication that drug use is assuming a serious problem, not only in prisons, but in the general society, since the prison is a

Table 3. Frequency distribution of the inmates according to the reported number of drugs used in the years under study

Characteristics	Frequency	Percentage
Inmates who used only one drug	453	14.5
Inmates who used two drugs only	873	27.8
Inmates who used more than two drugs	1808	57.7
Total	3134	100

Table 4. Frequency distribution of the various classes of drugs used by the inmates

Class of Drugs Used by Inmates	Frequency	Percentage
Cannabinoids (Hashish and Marijuana)	2108	67.3
Depressants (Alcohol, Barbiturates, benzodiazepines, Flunitrazepam, GHB, etc)	1754	56.0
Hallucinogens (LSD, Mescaline, Psilocybin etc)	53	1.7
Stimulants (Amphetamine, cocaine, ecstacy, methamphetamine, Ritalin, nicotine, caffeine, etc)	2754	87.9
Anabolic steroids and performance enhancers (Dianabol, Anadrol, Oxandrin etc)	3	0.1
Dissociative Anesthetics (Ketamine and PCP)	2	0.1
Opioids (Tramadol, Codeine, Heroin, Morphine, Opium)	2643	84.3
Solvents and inhalants (Gas, Paint thinner, aerosol, plastic cement, butane, petrol etc)	43	1.4

miniature of the larger society. Therefore, urgent measures need to be put in place to curtail this trend.

Table 1 shows that more males were admitted for drug treatment and rehabilitation than females; 3112 males representing 99.3% were admitted for drug rehabilitation. Only 22 females (0.7%) were admitted. This is in tandem with NIDA (2000) which posits that men are more likely than women to have opportunities to use drugs, but men and women given an opportunity to use drugs for the first time are equally likely to do so and to progress from initial use to addiction. However, women and men appear to differ in their vulnerability to some drugs (NIDA, 2000). This study also confirms the study of Becker and Hu (2008) which found out that the rates of drug abuse are currently lower in women than in men. The study also shows that nevertheless, the number of women using and abusing drugs is on the rise. Adult men are 2 to 3 times more likely than women to have drug abuse/dependence disorder (Becker and Hu, 2008), but this current gender difference may reflect the disparity in the number of males and females that are admitted in prison, than the difference in opportunity and vulnerability of drug use. Table 1 also shows that 98% of the inmates used for this study were in the age range of 18 and 38 years. This supports AlcoholRehab (2015) which posits that illicit drug use rises with age until it peaks at around 18 to 20 years old. After this, it decreases steadily as people get older.

The present result also shows that more Muslims use drugs. Although there has been an increase in the number of studies on the relationship between religion and substance use in recent years, much of the literature that recognizes religion as an important correlate of substance use focuses on the "lack" of religion as a risk factor for increased use (Hawkins, Catalano, and Miller, 1992).

The present study shows that 2010 recorded more admission of inmates that used drugs. In Table 2, a total of 1026 inmates representing 32.7% were admitted in the psychological services unit for drug use. This can be attributed to the sectarian crisis that took place in Jos and environs which claimed lives and property. According to available records, about 1700 people were arrested and imprisoned during the period of the crisis, with many of them suspected to use psychoactive drugs (Records Unit of Jos Prison, 2015). Again, the result may be as the build-up to the 2011 general elections, which had begun in earnest with political campaigns and other electoral activities in 2010. Also, it is obvious from Table 2 that 2014 had the least number of admissions in the period under study. A total of 246 inmates representing 7.8% were admitted who used drugs. This can be attributed to the tranquil nature of that year, with less political activities, and also incidence of political and sectarian crisis.

The present study also shows that majority of the inmates used more than two drugs. In table 3, a total of 1808 inmates (57.7%) reported using more than two drugs, while 873 (27.8%) used only two drugs. This study shows that the majority of polydrug use involves alcohol, tobacco, marijuana and Opioids. This study found out that a significant number of polydrug users used alcohol and tobacco. This is in line with Hogan-Murphy (2014) who found out in a survey that 68% of drug users in Ireland use gateway drugs (alcohol and tobacco). This current result also supports the findings of Afolabi, Ayilara, Akinyemi

and Ola-Olorun (2012) who found out that most students use cigarettes. In the present study, many of the inmates who were reviewed used cigarettes, alcohol, and one other drugs. However, those that use only one drug reported using one of cigarette, alcohol, caffeine or marijuana. While a significant number of those that use two drugs reported using alcohol and cigarette. The bottomline is that most of the participants used cigarette and alcohol.

The study also found out that about 2754 inmates representing 87.9% used stimulants such as caffeine, nicotine and cocaine. According to the result, this is the class of drug that is abused the most. A significant number of the respondents were found to use cigarette and caffeine. Again, 2643 inmates representing 84.3% were found to use Opioids such as codeine, Tramadol, heroine, morphine and opium. A total of 2108 inmates (67%) used cannabinoids such as marijuana and hashish, while 1754 (56%) used depressants such as alcohol and other downers. The present result is in conformity with the findings of Afolabi et al. (2012) who found out that the most widely used drugs are caffeine, alcohol, cigarette and marijuana. This result also supports the findings of Dillion (2001) who found out that opiates, heroine, cannabis and alcohol are the most abused drugs in Irish prisons. Again, the present result supports the findings of Abasiubong, Udobang, Idung, Udoh and Jombo (2014) who found out that the most abused drugs in northern Nigeria are cocaine, heroin and nicotine.

CONCLUSION

This study investigated the pattern of drug use among admitted inmates in Jos prison between 2010 and 2014. It is obvious from the data analysed that the use of psychoactive substances among admitted inmates in prison is on the rise. This translates to the fact that the use of drugs in the larger society is assuming a pandemic dimension. From the result of the study, it is obvious that youths are neck deep into the use of psychoactive substance, and if appropriate measures are not taken to curb this trend, it may lead to dire consequences for the nation. Therefore, it is concluded that the use of psychoactive substances among prison inmates is assuming a dangerous dimension and hence, the need for immediate intervention to produce ex-offenders who will lead responsible lives and contribute to national development.

The study unravels that there is a high rate of drug abuse among prison inmates; hence, it is recommended that the Nigerian Prisons Service should recruit more clinical psychologists, psychiatrists and social workers to manage the rising cases of psychoactive drug use among prison inmates. With the engagement of more of these professionals, inmates who are dependent on drugs will be availed to professional counselling and therapeutic help. This will lead to a better society as the inmates will lead drug free lives after imprisonment, thereby reducing recidivism and the pressure on the prison facilities.

The dangers of psychotropic drug use should be incorporated in our schools curricula so that students can be privy of it from the cradle. The Federal Ministry of Education should introduce subjects in primary and secondary schools curriculum to that effect. At present, there is no provision in our schools curricula on the dangers of drug abuse. This cause our youths to be more vulnerable and easily

enticed to use psychoactive drugs; hence making them susceptible to imprisonment. Also, effective reorientation of the youths should be carried out by the National Orientation Agency (NOA) in collaboration with the NDLEA on the dangers of psychotropic drug use. This can be done through traditional and religious leaders who will in turn sensitize their followers.

There should also be proper funding of the Nigerian Prisons Service for effective reformation, rehabilitation and reintegration of prison inmates. The prisons are faced with poor structures and lack of provision of tools for rehabilitation, reformation and resettlement. This has translated in churning out ex-offenders who are more hardened than they were before imprisonment. The main cause of prisoners' indulgence in drug abuse is that their minds are not occupied. They lazy around with nothing to keep them busy while serving their terms, leading them to find solace in using drugs. With sufficient funding, the prisons will be provided with adequate tools for the reformation of inmates in custody, thereby making them responsible citizens after their release.

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TEMPERAMENT AND THE RISK OF ALCOHOL, TOBACCO, AND CANNABIS USE AMONG UNIVERSITY STUDENTS IN BOTSWANA

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ABSTRACT

Substance use is rising among young people in developing countries, especially in schools and universities. Empirical studies on factors associated with substance abuse are required to identify protective and risk factors and to inform interventions. We report on the extent to which temperament and other demographic and background characteristics predict substance use among young adults pursuing university education in Botswana. Information on demographic characteristics and substance use (alcohol, tobacco, and cannabis) and temperament was obtained by questionnaire in a cross-faculty sample of 211 university students (41% male, n=87) at a university in Botswana. The Tridimensional Personality Questionnaire (Cloninger, 1987) was used to assess temperament with only the subscales on novelty seeking and harm avoidance included. Questionnaires were administered during scheduled lecture hours. Twelve per cent (12%) of the students used tobacco, 19% used cannabis weekly, daily, or almost daily, and 45% reported using alcohol. Cannabis use is more common among male than female participants but there were no sex differences in using alcohol. Compared to those who were brought up in urban areas, students who were raised in rural settings were less likely to use substances. Similarly, students who attended public schools were less likely to use substances compared to their counterparts who attended private schools. The temperamental typology of novelty seeking significantly predicted tobacco (β=.32 (95% CI: .28, .37)), cannabis (β=.35 (95% CI: .28, .42)), and alcohol (β=.22 (95% CI: .16, .28)) use while harm avoidance significantly predicted only alcohol use (β=.18 (95% CI: .12, .24)). Background information and knowledge of temperament are essential for designing interventions to reduce substance use among young adults in tertiary education. Such interventions may include better education on substance use in secondary schools, tertiary institutions, and communities.

Keywords: Alcohol and tobacco, cannabis use, temperament, university studnets, Botswana

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INTRODUCTION

Globally, substance use among young people, especially those in high school or tertiary education, is common and is a public health concern (Adams, Blanken, Ferguson, et al., 1990; Hawkins, Catalano, & Miller, 1992). It has been shown to be associated with high failure rates (Arria, Caldeira, Bugbee, et al., 2013) and adverse health problems (Xie, Rehm, Single, & Robson, 1992). Although students in high school or at tertiary education associate the use of alcohol, tobacco, and cannabis with leisure, (Pearson, Kite, & Henson, 2013; Peltzer, Ramlagan, & Satekge, 2012; Seloilwe, 2005) these behaviours have been linked to risky sexual activities, (Weiser, Leiter, Heisler, et al 2006) drunk driving, (Bingham, Raymond, & Zhu, 2008) crime, (Dawkins, 1997) truancy, and poor academic outcomes (Wicki & Kuntsche, Gmel, 2010). Many factors are associated with initiating substance use such as parental substance use, (Clark & Kirisci, 2008) poor self-regulation and control, (Friese & Hofmann, 2009; Morutwa & Plattner, 2014) pressure from peers, (Slater, 2003) poor social and emotional support, (Dokkin, Civita, Paraherakis, et al., 2002), stressful life events (Moitlakgola & Amone-P'Olak, 2015), and other factors such as access to substances and limited enforcement of social sanctions to limit their use, (Heath, 2001) and temperament (Wills, Sandy, Yaeger, et al., 2001; Walters, 2013).

In order to explain the phenomenon of substance use, Huba and Bentler (1982) developed the *Domain Model* in which they hypothesised that four different domains explain initiating substance use among young people. These domains include: biological, socio-cultural, inter-personal, and intrapersonal influences. The biological influences encompass genetic predisposition and vulnerability to the addictive effects of substances (Huba & Bentler, 1982). For example, parental substance use, emotional distress, inadequate coping skills, all have biological origins (Sher, Bartholow, Wood, 2000) and are risk factors for substance use among young people. The second domain is the socio-cultural influences such as social sanctions, media portrayals, and access to drugs and substances (Heath, 2001). The third domain is the interpersonal characteristics such as the presence or lack of social support and emotional attachment that predispose or act as a buffer against substance use (Dokkin, Civita, Paraherakis, et al., 2002). For example, young people from highly stressful backgrounds with little social support may find solace in using drugs and substances to cope with life stressors (Elliot & Lowman, 2015; Moitlakgola & Amone-P'Olak, 2015). The final domain is the intrapersonal influences that include variables such as beliefs (e.g. happiness derived from using drugs and substances), personal values (e.g. achievement motivation, independence, etc.), and personality characteristics such as novelty seeking, (Cloninger, 1986; Cloninger, 1987) self-efficacy, (Bandura, 1986) and self-control, (Morutwa & Plattner, 2014; Tangney, Baumeister, & Boone, 2004) all of which have been associated with substance use.

The current study focuses on intrapersonal domain, especially temperamental typologies of novelty seeking and harm avoidance. For example, novelty seekers tend to be impulsive and excitable, which leads to a predisposition towards novel and exploratory behaviours, (Cloninger, 1986; Cloninger, 1987; Pfohl, Black,

Noyes, Kelley, Blum, 1990) which, in turn, put them at risk of substance abuse.

"Temperament consists of relatively consistent, basic dispositions inherent in the person that underlie and modulate the expression of activity, reactivity, emotionality, and sociability" (Goldsmith, et al. 1987, p. 524). The current study is based on Cloninger's Tridimensional theory of personality (Cloninger, 1986) which examines three heritable temperamental typologies: novelty seeking, harm avoidance, and reward dependence. For example, novelty seeking is postulated to be an innate disposition towards frequent exploration of external environmental stimuli while harm avoidance is intensely responding to aversive stimuli to avoid punishment or novelty. On the other hand, reward dependence is a tendency to respond intensely to reward and maintain rewarded behaviour. Individual differences based on these typologies are a result of the interaction of environmental

and genetic influences (Cloninger, 1986). Furthermore, characteristics such as being impulsive, excitable, extravagant, and disorderly, which initially predispose to substance abuse, may further increase the use of alcohol, tobacco, and cannabis use as the ability to control oneself is diminished (Morutwa & Plattner, 2014; Tangney, Baumeister, & Boone, 2004). Novelty seekers are also more susceptible to peer influence (Slater, 2003) consequently making them easily swayed by peers who abuse substances (Slater, 2003). Harm avoiders, on the other hand, are characterized by anticipatory worry, fear of uncertainty, and shyness, (Cloninger, 1986; Cloninger, 1987; Pfohl, Black, Noyes, Kelley, Blum, 1990) which put harm avoiders at reduced risk of substance abuse. Due to fear and worry in anticipation of the likely negative consequences of indulging in substance use, harm avoiders are more likely to escape the undesirable effects of substance use. Temperament influences
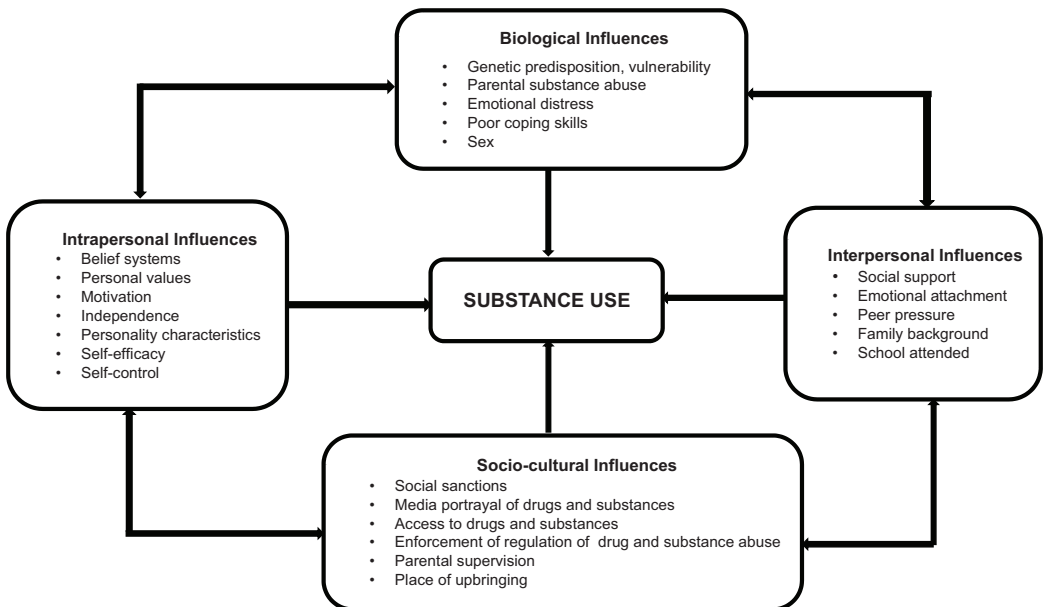

Figure 1. Conceptual framework of factors associated with substance use

early conduct and predisposes an individual to the risks of various problematic behaviours such as alcohol, tobacco, and cannabis use that can ultimately lead to later abuse (Wills, Sandy, Yaeger, et al., 2001; Rothbart, 2007; Wennberg & Bohman, 2002). Studying temperament can inform intervention to prevent substance use by identifying those most at risk.

Previous studies have indicated that different temperamental typologies may be associated with different risky behaviours. For example, Pokhrel and colleagues (Pokhrel, Sussman, & Stacy, 2014) found that novelty-seeking was closely associated with sensation-seeking, which, in turn, was a predictor of future tobacco use. Other studies among young adults pursuing tertiary education suggest that they are particularly vulnerable to substance abuse (Weiser, Leiter, Heisler, et al 2006; Dawkins, 1997; O'Connor, Colder. 2005). In addition, both sensation seeking and impulsiveness, closely associated with the temperamental typology of novelty seeking were strongly related to tobacco use. Thus, impulsivity has been shown to be a predictor of problem behaviours. Regarding alcohol, Cloninger's longitudinal study showed that high novelty seeking and low harm avoidance lead to "early onset alcohol misuse" (Cloninger, Sigvardsson, & Bohman, 1988).

Nevertheless, past studies have been limited in a number of ways. First, many studies were conducted among clinical samples (e.g. drug addicts) and rarely with population samples (Evren, Evren, Yancar, et al., 2007). Second, most previous studies used samples of early adolescents, when studying the influence of temperament on substance use, thus neglecting young adults in which the

problem of substance abuse may be more serious as they are more exposed to numerous life stressors such as choosing life partners, making decisions that will affect their future careers, heavy demands of academic work, etc. (Pokhrel, Sussman, & Stacy. 2014; Agolla & Ongori. 2009). Furthermore, substance abuse may lower academic performance, thus limiting upward social mobility, crime, and later burden of disease (Wicki, Kuntsche, & Gmel, 2010; Dave & Saffer, 2008). Third, the majority of the studies on temperament and substance use have been conducted in Western countries, yet the problem of substance abuse is now known to be common and rising in developing countries such as Botswana (Wicki, Kuntsche, & Gmel, 2010; Pokhrel, Sussman, & Stacy, 2014; Dawe, Gullo, &, Loxton, 2004).

The current study aims to explore the associations between novelty seeking and harms avoidance on the one hand and the use of three common substances among young adults pursuing tertiary education in a university in Botswana: alcohol, tobacco, and cannabis. Our aim in this study was threefold: a) investigate the use of alcohol, tobacco, and cannabis use among young adults pursuing university education, b) investigate whether the use of alcohol, tobacco, and cannabis among young adults pursuing university education was independent of place of upbringing or types of secondary school previously attended, and c) assess the extent to which novelty seeking and harm avoidance predicted the use of alcohol, tobacco, and cannabis among university students. We hypothesised that higher scores on novelty seeking would be associated with increased use of alcohol, tobacco, and cannabis and that the reverse would be true for harm avoidance.

Additionally, sex differences in the use of drugs and substance use have been suggested in previous studies with male participants suggested using more alcohol, tobacco, and cannabis than their female counterparts (Weiser, Leiter, Heisler, et al 2006; Tangney, Baumeister, & Boone, 2004). For this reason, we studied sex differences in our sample.

METHOD

Design and sample

The current study employed a cross-sectional design using convenient sampling method to collect data. The students were selected from various departments within the University of Botswana to achieve a more representative sample within the convenient sampling strategy. In total, 211 students (59% female, n=124) mean age of 21.62 (SD= 3.37, range=18-25) enrolled in various undergraduate degree programmes at the University of Botswana participated in the study.

Procedure and data collection

Lecturers from the following faculties: Social Sciences, Engineering and Technology, Humanities, Business, Health Sciences, Medicine, and Education were approached for permission to use some of their lecture time to collect data from students in the courses they teach. This study was approved by the Institutional Review Board (IRB) of the University of Botswana. Before distributing the questionnaires to students in the various lecture rooms, the purpose of the study was explained and informed consent sought. Only participants who consented and were willing to take part in the study were handed a questionnaire to complete. Similarly, the students were requested not to put any identifying information about themselves on the questionnaire to guarantee anonymity and were also informed that the information obtained would be treated with utmost confidentiality. The students took between 15 – 20 minutes to fill in the questionnaire as the research assistant was always on standby to help the students to clarify any item on the questionnaire. Immediately after all the students had completed filling in the questionnaire, they were debriefed on available support or counselling services at or outside the university if they needed any.

In total, 230 students participated in the study. Nine students were excluded from the study because they were over the age of 25 and were deemed unrepresentative of the average age of the students (mean age of 21.62, SD= 3.37, range=18-25). Similarly, 10 participants were removed from the analysis for failure to complete the questionnaire adequately. In the end, 211 students, representing a 92 per cent response rate, participated in the study.

Measures

The instrument for this study comprised three parts: an inventory of demographic characteristics, two scales of temperamental typologies (novelty seeking and harm avoidance), and substance use (alcohol, tobacco, and cannabis).

Socio-demographic variables: Participants were asked to report their sex, year of study, family setting, place of upbringing, type of secondary school attended, and age.

Temperament: The Tridimensional Personality Questionnaire was used to assess temperament (Cloninger, 1987). For the current study, only the subscales on

novelty seeking or harm avoidance (both consisting of 59 items) were used. The items were binary coded as '0' for 'false' and '1' for 'true'. The harm avoidance scale of the current study yielded a Kuder-Richardson 20 (KR-20) coefficient of .87 and the novelty seeking scale a KR-20 coefficient of .73, both satisfactory. The Tridimensional Personality Questionnaire is a universal questionnaire with consistently high psychometric properties. Previous studies with British samples (Stewart, Ebmeier, & Deary, 2004) and with Taiwanese samples yielded a reliability of between .90 and .72 respectively (Chen, Chen, Chen, et al., 2002).

Substance use: participants were asked to report on their use of alcohol, tobacco, and cannabis. The section of the questionnaire on substance use specifically designed for this study. Examples of the questions asked were: Do you smoke cigarettes? Have you ever tried smoking cannabis? Do you know anyone who uses cannabis? Do you drink alcohol? For these questions, the participants responded "yes" coded as "1" and "no" coded as "0". For frequency of use of these substances, the following questions were asked: How often have you smoked cigarettes in the past month? How often have you smoked cannabis in the past month? How often have you consumed alcoholic drinks in the past month? Responses for these questions were categorized as "never" = 0, "once or twice" =1, "weekly"= 2, and "daily or almost daily"=3.

Data analysis

Descriptive statistics (mean, standard deviation, and range) were run on the variables age, sex, year of study, type of school attended, and place of up-bringing and the results tabulated. Relations among variables in the study such as age, sex, alcohol, tobacco, and cannabis use were computed using bivariate correlation analysis. To assess whether there were sex differences regarding substance use and differences based on rural and urban upbringing and on private and public school attendance, a Chi-square test of independence was used and the results tabulated. T-tests were used to study the difference between those who reported the use of various drugs and substances and those who did not. Finally, multiple linear regression models were fitted to quantify the extent to which the different temperamental typologies predicted the use of the drugs and substances. The temperamental typologies of novelty seeking and harm avoidance were adjusted for each other to assess their unique effects on drug and substance use. In addition, the analyses were adjusted for age and sex. All statistical analyses were carried out using IBM SPSS statistical software, version 23.0 (IBM Corp. Released 2015). Associations with a *p* value less than 0.05 were considered statistically significant.

RESULTS

Descriptive statistics

The descriptive statistics of the variables in the study were computed and presented in Table 1. Information was obtained from 211 participants, 124 (59%) of whom were females. Participants were mostly in their first, second, and third years of study with only 34 students (16%) in their fourth and fifth years of study (Table 1). Chi-square test of independence yielded statistically significant sex differences for all types of drugs and substances except tobacco and alcohol

(Table 1). Overall, male participants used alcohol, tobacco and cannabis more than their female counterparts (Table 1). Similarly, male participants scored higher on novelty seeking but lower on harm avoidance than female participants. Male participants were generally older than female participants (Table 1). For participants who reported using cannabis, 19%

used cannabis weekly, daily, or almost daily. Similarly, of those who reported using alcohol (*n*=95, 45%), 36% (n=34) of whom were regular users (those who use alcohol weekly, daily or almost daily).

Correlations

In general, substance use in the study (alcohol, tobacco, and cannabis)

Table 1. Descriptive characteristics and sex differences of the variables in the study

Variable name	Total	Male	Female	
	M (SD)	**M (SD)**	**M (SD)**	χ^2 **(df, N) value,** *p* **value**
Age	21.62 (3.37)	20.11 (1.64)	19.93 (1.42)	
Novelty seeking	16.09 (6.54)	12.61 (4.33)	11.04 (4.22)	
Harm avoidance	11.52 (4.26)	14.90 (6.36)	16.79 (6.78)	
	N (%)	**N (%)**	**N (%)**	
Participants	191 (100)	87 (41)	124 (59)	
Year 1	77 (37)	32 (37)	45 (36)	
Year 2	49 (23)	18 (21)	31 (25)	
Year 3	51 (24)	14 (16)	37 (30)	
Year 4	19 (9)	15 17)	4 (30)	
Year 5	15 (7)	8 (9)	7 (6)	
Tobacco use				
No	185 (88)	73 (84)	112 (90)	χ^2 (1, *N*=210) = .83, *ns*
Yes	26 (12)	14 (16)	12 (10)	
Knowledge - cannabis use				χ^2 (1, *N*=210) = 4.01, *p* < .04
No	159 (74)	59 (66)	100 (81)	
Yes	54 (26)	30 (34)	24 (19)	
Tried using cannabis				χ^2 (1, *N*=210) = 1.20, ns
No	173 (82)	73 (84)	100 (81)	
Yes	38 (18)	24 (19)	14 (16)	
Used cannabis				χ^2 (1, *N*=210) = 3.98, *p* < .05
Never	159 (75)	59 (68)	100 (81)	
Once or twice	33 (16)	13 (15)	20 (16)	
Weekly	8 (4)	4 (5)	4 (3)	
Daily or almost daily	11 (5)	11 (12)	0 (0)	
Used alcohol				χ^2 (1, *N*=210) = 2.15, *ns*
Never	116 (55)	42 (48)	74 (60)	
Once or twice	61 (29)	25 (29)	36 (29)	
Weekly	31 (15)	18 (21)	13 (10)	
Daily or almost daily	3 (1)	2 (2)	1 (10)	

Key: M=mean, SD=Standard deviation, min=minimum score, max=maximum score

correlated significantly between themselves and with novelty seeking (Table 2). On the contrary, the correlations between harm avoidance and substance use measures were not significant and harm avoidance correlated negatively with the use of all substances although the correlations did not reach significant levels (Table 2).

Subpopulation differences

For substance use, sex differences were only significant for cannabis use (Table 1). There were also statistically significant differences in scores on novelty seeking between those who use tobacco (t (209) = -4.79, $p < 0.001$), knew someone who use cannabis (t (209) = -2.16, $p < 0.03$), tried using cannabis (t (209) = -4.29, $p < 0.001$), actually used cannabis (t (209) = -5.36, $p < 0.001$), and used alcohol (t (209) = -3.29, $p < 0.001$) from those who did not.

Substance use: place of upbringing and school attended

A chi-square test of independence was performed to compare the frequency of substance use in students who were brought up in rural and urban areas and in students were attended private and public schools. Significant differences were found between rural and urban backgrounds in using all drugs and substances except for tobacco use (Table 3). Students who were brought up in rural settings were less likely to use substances than students who indicated that they were brought up in urban areas. Likewise, significant differences were found between students who attended urban and rural schools for all types of substances except tobacco. Students who attended private secondary schools used substances more frequently than their counterparts who attended public secondary schools (Table 3).

The results of multiple linear regression analyses to assess the extent to which novelty seeking and harm avoidance predict substance use are presented in table 3. Novelty seeking, controlled for age, sex, and harm avoidance, significantly predicted the use of all types of drugs and substances in the study (Table 4). Novelty seeking explained about 32% of the variance in tobacco use, 17% of the variance in knowledge of cannabis users, 35% of the variance in actually using cannabis, and 27% of the variance in using alcohol (Table 4). On the contrary, harm avoidance, adjusted for age, sex, and novelty seeking, significantly predicted only alcohol use (Table 4).

Table 2. Bivariate correlations between variables in the study

Variables	1	2	3	4	5	6	7
1. Tobacco use	-	0.12	**.42****	**.63****	**.52****	-0.01	**.33****
2. Knowledge of cannabis users		-	**.36****	**.21****	**.28****	-0.11	**.16****
3. Tried cannabis			-	**.59****	**.55****	-0.03	**.30****
4. Used cannabis				-	**.46****	-0.09	**.27****
5. Alcohol use					-	-0.11	**.45****
6. Harm avoidance						-	-0.11
7. Novelty seeking							-

Key: Significant correlations are in **bold**; ** Significant at $p < .05$

Table 3. Differences in substance use based on place of upbringing and schools attended (N=211)

Substance use	Differences by school attended (private/public)	Differences by place of upbringing (rural/urban)
	χ^2 (*df*, N) value, *p* value	χ^2 (*df*, N) value, *p* value
Tobacco use	χ^2 (1, *N*=210) = 0.67, ns	χ^2 (1, *N*=210) = 3.20, ns
Knowledge of cannabis use	χ^2 (1, *N*=210) = 9.65, p < .05	χ^2 (1, *N*=210) = 5.80, p < .02
Tried using cannabis	χ^2 (1, *N*=210) = 15.51, p < .05	χ^2 (1, *N*=210) = 4.55, p < .03
Used cannabis	χ^2 (1, *N*=210) = 7.37, p < .05	χ^2 (1, *N*=210) = 6.16, p < .01
Alcohol use	χ^2 (1, *N*=210) =5.56, p < .05	χ^2 (1, *N*=210) = 3.46, ns

Key: χ^2 = Chi-square, N=sample size, df= degrees of freedom

Table 4. Multiple regression analyses with temperament typologies as predictors and different drugs and substances as outcomes adjusted for sex and age (*N*=211)

Predictors	R-Square	Adjusted R-Square	β (95% CI)	F	df	p value
Tobacco use	0.32	0.31		21.82	2, 209	0.05
Novelty seeking			0.32 (95% CI: 0.28, 0.37)			0.05
Harm avoidance			0.03 (95% CI: -0.01, 0.08)			ns
Knowledge of cannabis users	0.17	0.17		21.82	2, 209	0.05
Novelty seeking			0.14 (95% CI: 0.08, 0.19)			0.05
Harm avoidance			-0.09 (95% CI: -0.04, -0.14)			ns
Tried using cannabis	0.29	0.28		15.72	2, 209	0.05
Novelty seeking			0.28 (95% CI: 0.22, 0.35)			0.05
Harm avoidance			0.07 (95% CI: 0.00, 0.14)			ns
Cannabis use	0.35	0.34		26.37	2, 209	0.05
Novelty seeking			0.35 (95% CI: 0.28, 0.42)			0.05
Harm avoidance			0.01 (95% CI: -0.06, 0.07)			ns
Alcohol use	0.27	0.26		8.74	2, 209	0.05
Novelty seeking			0.22 (95% CI: 0.16, 0.28)			0.05
Harm avoidance			0.18 (95% CI: 0.12, 0.24)			0.05

Key: CI=Confidence Intervals, F= F-ratio, df = degrees of freedom

DISCUSSION

Recap of main findings

The current study aimed to assess the extent to which temperamental typologies of novelty seeking and harm avoidance and other demographic characteristics predicted substance use among young adult undergraduate students at the University of Botswana. Specifically, the aim of this study was threefold: a) investigate the use of alcohol, tobacco, and cannabis among young adults pursuing university education, b) investigate whether the use of alcohol, tobacco, and cannabis among young adults pursuing university education is independent of place of upbringing or types of secondary school previously attended, and c) assess the extent to which novelty seeking and harm avoidance predicted the use of alcohol, tobacco, and cannabis among university students.

The findings showed that there were sex differences with respect to knowledge of cannabis users, having tried using cannabis, and actually using cannabis with male participants using cannabis more than their female counterparts. Substance use were more common among those who attended private secondary schools than public schools and more among those who were brought up in urban than rural settings. Finally, novelty seeking significantly predicted use of all types of drugs and substances. Similarly, there were significant differences in scores on novelty seeking between those who did and did not report using drugs and substances. There were no sex differences in using alcohol and tobacco. Harm avoidance on the other hand, did not significantly predict all the other substances in the study except alcohol (Table 4). However, harm avoidance negatively correlated with all the substances but the correlations did not reach significance.

Agreement with previous studies

The finding in this study that females in general use less drugs and substances than men is in consonance with previous studies (Moitlakgola & Amone-P'Olak, 2015; Morutwa &Plattner, 2014; Nolen-Hoeksema, 2004; Becker & Hu, 2008; Brady & Randall, 1999). However, there were no significant sex differences in alcohol use in this study. Although substance use rates are generally different in both sexes, the number of women abusing drugs and substances is on the increase with the current sex differences being attributed to opportunity rather than vulnerability (Etten & Anthony, 2001; Etten, Neumark, & Anthony, 1999). Similarly, drug and substance use was more common among students who went through

private than public secondary schools and among those with an urban than rural upbringing. These findings corroborate previous findings in neighbouring Zimbabwe (Acuda & Eide, 1994; Eide & Acuda, 1995). It is possible that drugs and substances are more readily available in urban than in rural areas due to high socio-economic status and more disposable incomes in urban than in rural areas. In the same way, more private schools are boarding schools where there is no supervision by parents and teachers are overwhelmed by the number of students in the schools (Acuda &, Eide, 1994). A possible explanation could also be that most private secondary schools are in urban areas and those who attend private schools are from higher socio-economic background (Unicef, 2013) or the information on substance use is not adequately captured in rural areas in countries such as Botswana (WHO, 2011). Similarly, most public schools are located in rural areas where students who attend such schools live with their parents. Moreover, previous studies also indicate that parental supervision prevents or delays drug and substance use (Velleman, Templeton, & Copello, 2005). The finding that drug and substance use is more prevalent among those raised in urban than rural settings is interesting as studies in other countries such as Australia suggest high levels of substance use in rural areas instead (Miller, Coomber, Staiger, et al., 2010).

Finally, the finding that the temperamental typology of novelty seeking significantly predicted all types of drug and substances in the current study agrees with previous studies (Evren, Evren, Yancar, et al., 2007; Wills, Windle, & Cleary, 1998). For example, a previous study found that sensation seeking and impulsiveness,

both associated with novelty seeking was associated with tobacco use (Pokhrel, Sussman, & Stacy, 2014). It is possible that novelty seeking, indeed, predicts substance use because it is a characteristic of people who seek out new and thrilling experiences (Wills, Windle, & Cleary, 1998). In addition, the socio-cultural factors such as lack of or poorly enforced sanctions against underage drinking; easy access to drugs and substances, all contribute to increased risk for substance use among young adults. Similarly, previous studies also suggest that harm avoidance is associated more with alcohol consumption than other drugs and substances (Evren, Evren, Yancar, et al., 2007). Therefore, young adults with the temperamental typology of novelty seeking characteristics such as beliefs in deriving happiness and pleasure from using drugs and substances to stimulate them (Wills, Windle, & Cleary, 1998), poor self-control, (Morutwa & Plattner, 2014; Tangney, Baumeister, & Boone, 2004), and experience of more life stressors (Moitlakgola & Amone-P'Olak, 2015), are more vulnerable to drug and substance use. Other previous studies have also indicated that peer pressure and perceived peer cannabis use greatly influences sensation seekers. (Slater, 2003) All this goes to confirm and reiterate the *Domain Model* in which a confluence of biological, interpersonal, intrapersonal, and socio-cultural factors contribute to substance use (Huba & Bentler, 1982).

In this study, sex differences were found for knowledge of and actually using cannabis but not alcohol use. This is in agreement with previous studies with the same population (Morutwa & Plattner, 2014; Moitlakgola & Amone-P'Olak, 2015). Although other previous studies suggested sex differences (Weiser, Leiter, Heisler, et al. 2006; Tangney, Baumeister, & Boone, 2004), the findings in this study is an indication that, given an opportunity and the right environment such as those available to girls in a university, girls are just as likely to drink like their male counterparts, therefore confirming the notion of opportunity rather than vulnerability (Etten & Anthony, 2001; Etten, Neumark, & Anthony, 1999). Nevertheless, men are still known to consume larger quantities of alcohol than females (Moitlakgola & Amone-P'Olak, 2015; Morutwa & Plattner, 2014; Larsen, Engels, Wiers, et al., 2012; Teesson, Hall, Slade, et al. 2010).

Limitations

A number of limitations need to be considered when interpreting the findings of the current study. First, the self-report measure used in the current study might have led to under-reporting of substance use. However, there were statistically significant differences between those who reported using all categories of drugs and substances in this study with respect to novelty seeking temperament. Consequently, those who used and do not use drugs and substances were significantly different. Second, the use of a convenient sample drawn from only one setting, that is, the University of Botswana, limits generalisability of the findings beyond the University of Botswana. Nevertheless, the findings generally agree with previous studies, thus indicating a general trend of substance use among young adults pursuing tertiary or college education. Further studies are required to confirm the results. Third, the cross-sectional design limited causal inference. Future studies should focus on longitudinal design from which causality can be inferred.

In spite of the limitations outlined above, this study helps to lay a foundation for research on the confluence of different factors, especially intrapersonal factors coming together to influence the use of drugs and substances among young adults.

CONCLUSION

Novelty seeking remains a strong predictor of substance use. Differences with respect to sex, place of upbringing, and types of previous schools attended may provide the context in which novelty seeking thrives to influence substance use. Information on temperament, place of upbringing, and types of previous schools attended is important for designing effective interventions to reduce substance use not only among university students but also students in high school. Such interventions may include better education on substance use.

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Authors' contributions
WKL and KAP designed the study and WKL implemented the survey. WKL had the original idea for the manuscript, conducted the analyses, and wrote the manuscript. All authors provide input into interpreting results, critically revised the manuscript for important intellectual content and approved the final version of the manuscript.

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SELF-ESTEEM AND ALCOHOL DEPENDENCE AS PREDICTORS OF CONTEMPLATION TO USE DRUGS AMONG UNIVERSITY STUDENTS IN BOTSWANA

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ABSTRACT

This exploratory study aimed to draw attention to the plight of young people who contemplate to use drugs in order to cope with emotional distress. The study was entrenched within the Theory of Reasoned Action/Planned Behaviour, based on which it was assumed that contemplation to use drugs could lead to actual drug use.

Data were collected from a sample of 249 undergraduate students (65.4% female; *mean* age = 20.12 years, SD = 2.02). Contemplation to use drugs was measured through a single-item scale. Self-esteem was measured by Rosenberg's self-esteem scale, and alcohol dependence was measured with a four-item scale. We hypothesised that self-esteem and alcohol dependence would predict contemplation of drug use. Among participants who reported contemplation of drug use, 56.6 percent reported repeated use of illicit drugs while 43.4 percent had not taken illicit drugs. Low self-esteem was not associated with drug use or alcohol dependence but was associated with contemplation of drug use (p = 0.000). Binary logistic regression analysis revealed that an increase in self-esteem decreased the probability of contemplating drug use (p = 0.016), while higher alcohol dependence increased the probability of contemplating drug use (p = 0.019). The results are discussed with regard to substance abuse prevention programmes in tertiary education.

Key words: alcohol dependence, avoidance behaviour, Botswana, coping, drug use, emotional distress, self-esteem

Worldwide, drug use is a potential risk for the youth and their families (Degenhardt et al., 2008; Degenhardt et al., 2013; Obot, 2001; Odejide, 2006; UNODC, 2014). Repeated drug use has adverse consequences on young people's physical, cognitive and emotional development (Hall & Degenhardt, 2009) and can result in behavioural problems such as low academic performance, risky sexual behaviours, and involvement in criminal activities (Lynskey & Hall, 2000; Macleod et al., 2004).

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There are various social and psychological factors that contribute to young people's motivation to start using drugs. The most prominent influence on drug use is peer pressure (Lee, Neighbors, & Woods, 2007), which is often combined with young people's tendency to overestimate how many of the youth actually take drugs, which may result in the use of drugs to fit the perceived norm (Botvin, 2000). Another reason that motivates young people to start using drugs is curiosity to experiment with drugs (Lee et al., 2007). Young people also take drugs for recreational purposes in order to have fun, to relax or to escape boredom (Lee et al., 2007). Some young people take drugs to forget about their fears and anxieties and to cope with emotional distress (Bonn-Miller, Zvolensky, & Bernstein, 2007; Bruckner, Bonn-Miller, Zvolensky, & Schmidt, 2007; Simons, Correia, Carey, & Borsari, 1998).

Taking drugs to forget about one's distress is a form of avoidance behaviour (Lazarus & Folkman, 1984). One of the psychological factors that contribute to avoidance behaviour is self-esteem. Self-esteem refers to how individuals feel about themselves, the worth they attribute to themselves as a person, and how they evaluate themselves in comparison to other people (Leary & Guadagno, 2011; Rosenberg, 1965). Self-esteem contributes to the way in which a person copes with stressful events. While high self-esteem encourages problem-focused coping, low self-esteem is associated with avoidance behaviour (Connor, Poyrazli, Ferrer-Wreder, & Grahame, 2004). In the context of drug use, high self-esteem can protect against drug and other substance abuse (Zamboanga, Schwartz, Jarvis, & Van Tyne, 2009), while low self-esteem

has been found to be a predictor of drug use (Brook, Rubenstone, Zhang, Morojele, & Brook, 2011; Odejide, 2006; Wild, Flisher, Bhana, & Lombard, 2004;).

The relationship between self-esteem and drug use is likely to be cyclical. People with low self-esteem are often not confident enough to employ proactive and problem-focused coping strategies in the face of emotional distress. Instead, they are likely to surrender to their problems by, for example, using drugs. People with low self-esteem might believe that drugs would bring them some relief from their problems. At the same time, continuous drug use can also lower people's self-esteem once they experience feelings of failure and loss of control owing to their inability to quit the drug. This way, low self-esteem can be a cause but also a result of drug use and addiction (Greenberg, Lewis, & Dodd, 1999).

The present study aimed to examine self-esteem in the context of drug use as an attempt of coping with emotional distress. The study targeted undergraduate university students in Botswana. Our review of literature did not find epidemiological studies that assessed the prevalence of drug addiction in Botswana. Data were only available from the First Botswana Youth Risk Behavioural Surveillance Survey (2012) which found that among 10 to 19 year old students from primary and secondary schools, 14.9 percent reported having used marijuana at least once while smaller proportions reported having ever used cocaine (5.6%), ecstasy (3.7%) and sextacy (5.7%). Few, if any, empirical studies investigated psychological variables in the Botswana context of drug use. The present study asked (1) whether university students contemplated to use drugs in order to forget about distressing events

and if so, (2) whether such contemplation was associated with low self-esteem, and (3) whether contemplating drug use was associated with actual drug use.

The study was entrenched within the Theory of Reasoned Action/Planned Behaviour (Ajzen, 1985; Fishbein & Ajzen, 1975). According to this theory, people's intentions are a strong predictor of whether or not they engage in a specific behaviour. While this theory is often used to explain why people change their behaviour (e.g. give up smoking; Sanderson, 2004), this theory can also explain why some people may purposefully engage in drugs. For example, a person may contemplate to use drugs in order to feel "better" and once drugs are accessible, he or she might actually start taking drugs. According to the Theory of Reasoned Action/Planned Behaviour, people's intentions are influenced by their subjective norms and their attitudes towards certain behaviours, as well as whether they believe that they can actually carry out such behaviours (referred to as perceived behavioural control; Ajzen, 1985). In the process of contemplating drug use and imagining how "good" it could be to forget about one's problems, a person may develop a positive attitude towards drugs, which could encourage him or her to actually take drugs.

Considering that drug use is often preceded by alcohol use (Hall & Degenhardt, 2009; Odejide, 2006), the study also asked whether alcohol dependence played a role in contemplation of drug use and actual drug use. Considering that the abuse of licit drugs, i.e., prescription drugs, is also a drug problem (UNODC, 2014), the study further asked whether or not participants had overdosed with prescription drugs. Earlier research suggests that males and younger cohorts were more likely to use and abuse substances than females and older cohorts respectively (Degenhardt et al., 2008). This study also asked whether gender and age made a difference in contemplation of drug use as well as actual drug use and alcohol dependence.

The study hypothesized that (1) contemplation of drug use would be associated with actual drug use, (2) both contemplating drug use and actual drug use would be associated with low self-esteem, and (3) alcohol dependence would be associated with both contemplating drug use and actual drug use. The study should contribute to a better understanding of the psychological complexity of drug use among young people in Botswana. The results could inform prevention and intervention programmes offered by universities to support students who are vulnerable to drug use.

METHODS

Procedure and participants

A self-administered questionnaire was distributed in four undergraduate classes attended by students from various academic programmes at the University of Botswana. Participation in the study was voluntary and students were informed about the purpose of the study, their right to withdraw from participation, and the anonymous and confidential treatment of their responses. Students also received debriefing information about counselling services offered by the University. The response rate was 96.8%. Thirty-one questionnaires were excluded from data analysis because they were in large part incomplete or because the respondents were below the age of 18 or above the age of 30 years.

The final sample remained with 249 participants of whom 161 (65.4%) were female and 85 (34.6%) were male. Their *mean* age was 20.12 years (*SD* = 2.02) ranging from 18 to 27 years. About 60.4 percent had grown up in an urban area and 39.6 percent in a rural area. While 28.6 percent of the participants did not know their father's highest level of education, 42.7 percent had a father who had completed tertiary education and 55.4 percent had a mother who had completed tertiary education. Participants were enrolled in the Faculties of Business (36.9%), Social Sciences (34.9%), Humanities (12.1%), Sciences (6.0%), Engineering and Technology (5.2%), and Education (4.8%). At the time of the study, 44.6 percent of the participants resided on campus, while 55.4 percent lived outside campus (Table 1).

Measures

Self-esteem was measured with Rosenberg's (1965) self-esteem scale, which is a widely used instrument with strong validity and reliability (Robinson, Shaver, & Wrightsman, 1991). This measure contains ten items (five of them reverse coded) with response categories at a 4-point Likert scale (1 = strongly disagree, 4= strongly agree). High total self-esteem scores indicate high self-esteem. In this study, the self-esteem measure had a strong internal consistency reliability (Cronbach's *alpha* = 0.84).

Substance use was measured with three questions that explored whether or not participants (1) used illicit drugs repeatedly, (2) had overdosed with prescription drugs, and (3) drank alcohol. *Contemplation of drug use to cope with emotional distress* was measured with a single-item

Table 1. Demographic and academic background of the participants

		N	*%*
Age	*Mean* = 20.12 years *SD* = 2.02 Range 18 to 27 years		
Gender (3 missing)	Female Male	161 85	65.4 34.6
Place of upbringing (4 missing)	Urban area Rural area	148 97	60.4 39.6
Highest level of education, Father	Tertiary education Non-tertiary education "Don't know"	106 72 71	42.7 28.7 28.6
Highest level of education, Mother	Tertiary education Non-tertiary education "Don't know"	138 90 21	55.4 36.2 8.4
Faculty enrolment	Business Social Sciences Humanities Sciences Engineering and Technology Education	92 87 30 15 13 12	36.9 34.9 12.1 6.0 5.2 4.8
Residence	On campus Outside campus	111 138	44.6 55.4

phrased as "Most of the time I feel that I should just get intoxicated to forget about the things that hurt me" and with two response categories (0 = No, 1 = Yes).

Alcohol dependence was measured with four items developed for this study: (1) "If I were to go for a long time without alcohol, most of my days would definitely be boring", (2) "I do not like anything to stand between me and my drink", (3) "I would do anything I have to, just to get alcohol", and (4) "Alcohol is really good to me". Response categories were presented at a 5-point Likert scale ranging from strongly disagree (= 1) to strongly agree (= 5). High total scores indicated alcohol dependence. For these four items, a strong internal consistency reliability was obtained (Cronbach's *alpha* = 0.88).

Demographic and academic background variables measured gender, age, rural vs. urban place of upbringing, parents' level of education as an indicator of socio-economic background, the Faculty in which the participants were enrolled, and whether or not participants resided on campus or outside campus.

Data analysis

Data were analysed with IBM SPSS Statistics 23. Descriptive statistics were employed to describe participants' drug and alcohol use and their level of self-esteem. Bivariate correlation analysis was performed to determine the relationship between self-esteem, alcohol dependence, drug and alcohol use, and contemplation of drug use (utilising Pearson's *R*). Chi-square tests (including continuity correction for 2x2 tables) were employed to measure differences in drug and alcohol use with regard to contemplation of drug use and demographic and academic background variables. Once it was established

that self-esteem was not associated with alcohol dependence, binary logistic regression analysis was applied to determine whether or not self-esteem and alcohol dependence (for participants who reported drinking alcohol) were predictors of contemplating drug use. The 5 percent significance level ($p \leq 0.05$) and the 95 percent confidence interval were applied.

RESULTS

Drug use and drinking alcohol

In total, 84 (34.0%) participants reported that they used drugs repeatedly, 42 (17.5%) participants reported that they had at some point overdosed with prescription drugs, and 101 (40.6%) participants reported that they drank alcohol (Table 2). Participants who took drugs repeatedly were more likely to also have overdosed with prescription drugs ($\chi^2(1) = 4.05$, $p = 0.044$). Participants who drank alcohol were more likely to use drugs repeatedly ($\chi^2(1) = 48.65$ $p = 0.000$) but they were not more likely to have overdosed with prescription drugs ($\chi^2(1) = 0.13$, $p = 0.715$).

Male participants were more likely to have taken drugs repeatedly ($\chi^2(1) = 19.54$, $p = 0.000$) and they were also more likely to drink alcohol ($\chi^2(1) = 10.64$, $p = 0.001$) than females. Age was not associated with repeated drug use, with overdosing with prescription drugs or with drinking alcohol.

Contemplating drug use as an attempt to cope with emotional distress

In total, 54 (22.1%) participants reported that they had contemplated to use drugs in order to forget about the "things" that hurt them. As expected, they were

more likely to take drugs repeatedly ($\chi^2(1)$ = 14.36, p = 0.000) and to drink alcohol ($\chi^2(1)$ = 21.00, p = 0.000), but they were less likely to have overdosed with prescription drugs ($\chi^2(1)$ = 15.18, p = 0.000; cf. Table 2). Participants who contemplated drug use to forget about hurtful events did not differ significantly in terms of gender and age.

Self-esteem

With regard to the participants' self-esteem, a *mean* score of 30.09 (*SD* = 5.20) was obtained with total scores ranging from 14 to 40 (out of a possible score range from 10 to 40) indicating that on average participants scored towards a higher level of self-esteem. Contrary to what was expected, self-esteem was not associated with repeated drug use (r = -0.03, p = 0.653). However, participants who had overdosed with prescription drugs had significantly lower self-esteem scores than participants who had not overdosed (r = 0.13, p = 0.038). The hypothesis that participants who had contemplated drug use to forget about hurtful events would have lower self-esteem scores than their counterparts was supported (r = 0.22, p = 0.000). Self-esteem was not associated with drinking alcohol. There were no significant differences in self-esteem scores by gender. However, there was a significant positive association between self-esteem and age (r = 0.18, p = 0.006).

Alcohol dependence

Among participants who drank alcohol, a relatively low *mean* alcohol dependence score of 8.33 (SD = 4.02) was obtained with total scores ranging from 4 to 20 (which was also the possible score range). Alcohol dependence was associated with taking drugs repeatedly (r = 0.24, p = 0.018), but it was not associated with overdosing with prescription drugs (r = 0.17, p = 0.107). In line with our hypothesis, participants who contemplated drug use to forget about hurtful events had higher alcohol dependence scores (r = 0.24, p = 0.020). Male participants were more likely to have higher alcohol dependence scores than females (r = 0.23, p = 0.021). There was no association between self-esteem and alcohol dependence. There was also no association between age and alcohol dependence.

Self-esteem and alcohol dependence as predictors of contemplating drug use

Considering that self-esteem and alcohol dependence were not associated, a model was formulated which assumed that both self-esteem and alcohol

Table 2. Consumption of drugs and alcohol and contemplation to use drugs

		Total		Contemplated drug use to cope with emotional stress (N = 54)	
		N	%	%	χ^2(df)
Repeated use of illicit drugs (2 missing)	No	163	66.0	43.4	14.36(1)*
	Yes	84	34.0	56.6	
Overdosed with prescription drugs (9 missing)	No	198	82.5	62.7	15.18(1)*
	Yes	42	17.5	37.3	
Drinks alcohol	No	148	59.4	31.5	21.00(1)*
	Yes	101	40.6	68.5	

* $p < 0.001$

dependence could predict whether or not participants had contemplated drug use to cope with hurtful events. Applying binary logistic regression analysis and considering only participants who reported drinking alcohol (N = 98), the results showed that both self-esteem and alcohol dependence contributed significantly to predicting contemplation to use drugs, with self-esteem having a slightly stronger predictive ability than alcohol dependence (Table 3). The results indicate that an increase in self-esteem will decrease the probability of contemplating drug use to forget about hurtful events (B = -0.12), while higher alcohol dependence will increase the probability of contemplating drug use (B = 0.14). Although the predictive model was supported, the two variables, self-esteem and alcohol dependence, explained only between 11.2 percent (Cox & Snell R Square) and 15.3 percent (Nagelkerke R Square) of the variability.

DISCUSSION

This study aimed to draw attention to contemplation of drug use as one of the ways that young people attempt to cope with emotional distress. About a fifth of the participants reported contemplating drug use to forget about hurtful events.

These young people were more likely to have taken drugs. While there was a positive relationship between contemplating drug use and actual drug use, a sizeable proportion (more than 40%) of those who had contemplated drug use had not (yet) taken drugs. This group requires particular attention as they could start using drugs once they are accessible to them. In line with the Theory of Reasoned Action/Planned Behaviour (Ajzen, 1985; Fishbein & Ajzen, 1975), contemplation of drug use could lead to intentions to use drugs and once people intend to use drugs they are likely to engage in drug use. This would mean that young people who contemplate drug use are at risk of actually taking drugs.

The question arises as to why young people would contemplate drug use in order to cope with their emotional distress. While many young people know about the adverse effects and the dangers of using drugs, such knowledge does not necessarily prevent them from using drugs (Botvin, 2000). Prevention efforts that aim to educate young people about the dangers of drugs and that seek to enhance their competences in resisting drugs seem to lack long-term effectiveness (Botvin, 2000). The present study hypothesised that a low self-esteem would be associated with the contemplation of drug use as well as with actual drug use.

Table 3. Binary logistic regression predicting the likelihood of contemplation to use drugs based on self-esteem and alcohol dependence (for participants who reported drinking alcohol, N = 98)

	Contemplating drug use to forget hurtful events				
	B	*(SE)*	Wald	OR (95% *CI*)	*p*-Value
Self-esteem	-0.12	0.05	5.76	0.89 (0.80,0.98)	0.016
Alcohol dependence	0.14	0.06	5.52	1.15 (1.02, 1.28)	0.019

The first part of the hypothesis was supported as participants who contemplated drug use to cope with hurtful events had significantly lower levels of self-esteem. Contrary to expectation and to what is reported in the literature (Brook et al., 2011; Wild et al., 2004; Zamboanga et al., 2009), the second part of the hypothesis was not supported as actual drug use was not associated with low self-esteem. These results suggest that low self-esteem per se is not directly associated with drug use. However, low self-esteem can be a contributing factor to drug use once a person perceives taking drugs as a way to cope with emotional distress. When a person uses drugs to have fun or out of curiosity, low self-esteem is not likely to contribute to drug use. However, once a person contemplates drug use to forget about hurtful events, low self-esteem is likely to encourage drug use as a form of avoidance of hurtful memories.

People with low self-esteem have little regard for themselves (Rosenberg, 1965) and, therefore, they may not feel confident enough to protect themselves from further hurt and may instead give in to the hurt. As a result of their low self-worth, they may also perceive drugs as, at least temporarily, an escape and/or relief from unpleasant and harsh experiences of the present or the past; they may even subscribe to drugs and their adverse consequences as a form of self-punishment (Klonsky, 2007). It is also likely that the hurtful events had negatively affected their self-esteem, which in turn contributed to their avoidant behaviour (Greenberg et al., 1999).

In addition to being associated with self-esteem, both contemplating drug use in an attempt to cope with hurtful events and actual drug use were also associated with alcohol dependence. However, self-esteem and alcohol dependence were not associated. To a certain extent, this result is in accordance with the literature, which reports some studies that found a relationship between low self-esteem and problematic drinking while others did not (Coleman, Hendry, & Kloep, 2007).

In this study, both self-esteem and alcohol dependence had the ability to predict contemplation of drug use in an attempt to cope with hurtful events; with self-esteem having a slightly stronger predictive ability than alcohol dependence. The results suggests that an increase in self-esteem scores will significantly decrease the probability of contemplating drug use to forget about hurtful events while an increase in alcohol dependence scores will less significantly increase the probability of contemplating drug use. However, the predictive power of both self-esteem and alcohol dependence was low, which indicates that other variables that the study did not control for must have contributed to participants' contemplation of drug use in an attempt to cope with emotional distress.

This study found that male students were more likely than females to have taken drugs, to have drank alcohol, and to have had higher scores in alcohol dependence. These results are similar to what was reported in other studies (Degenhardt et al., 2008; Moitlakgola & Amone-P'Olak, 2015). However, there were no gender differences in contemplating drug use. There were also no gender differences in self-esteem. Therefore, the results of this study suggest that both male and female university students may be equally at risk of using drugs once confronted with hurtful events and once they contemplate finding relief through drugs.

The study did not find any gender differences with regard to overdosing with

prescription drugs, which contradicts findings from other studies that suggest that men are more likely to abuse illicit drugs while women are more likely to abuse prescription drugs (Greenberg et al., 1999). Interestingly, while participants who had taken drugs repeatedly were more likely to also have overdosed with prescription drugs, those who contemplated drug use as a coping attempt were less likely to have overdosed with prescription drugs. This result suggests that when young people contemplate drug use to forget about hurtful events they are likely to have drugs in mind that produce a so-called "high". Hall & Degenhardt (2009) reported that one of the reasons why young people get attracted to illicit drugs is the "high" that these drugs produce while most prescription drugs have a rather calming effect. Contrary to age differences in drug use that have been reported in the literature (Degenhardt et al., 2008), in this study, age did not result in significant differences in contemplation of drug use, in the use of drugs, in overdosing with prescription drugs, and in alcohol dependence. An explanation for these results could be that the sample was a relatively homogenous age group of university students.

Limitations

This exploratory study had limitations. Firstly, the study did not explore the different types of hurtful events that the participants had in mind when contemplating drug use and the kind of drugs they were taking or contemplating to take. Secondly, the sample was not representative and the participants, being university students, were a rather homogeneous group (Peterson, 2001). As a result, the external validity of the study is limited.

Thirdly, the various associations do not take into account possible interaction effects between the different variables. More research is needed to address these limitations and to control for intervening, mediating or moderating variables in order to determine predictors of drug use ideation in the Botswana context.

CONCLUSION

In spite of the need for more research, the results of the study suggest that prevention and intervention programmes should pay particular attention to those young people who contemplate drug use in order to cope with emotional distress. The results imply that self-esteem plays a role in contemplation of drug use. Since contemplation of drug use may be the initiator of actual drug use, there is a need for intensified psychological health services in tertiary education institutions in Botswana that include self-esteem enhancement. Low self-esteem and contemplation of drug use are not only exposing university students to the risk of addiction, they are also likely to prevent students from performing well in their academic endeavours. Programmes to enhance students' self-esteem as part of drug use prevention and intervention strategies are recommended for tertiary education institutions in Botswana to reduce the risks and negative consequences of drug use and to assist students in successfully overcoming hurtful memories, experiences, and events.

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OF DUTCH COURAGE AND MOBILE CHIMNEYS: PATTERN AND PREDICTORS OF ALCOHOL AND TOBACCO USE AMONG UNIVERSITY STUDENTS IN NIGERIA

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ABSTRACT

Previous studies in Nigeria have associated alcohol and tobacco use among students with certain socioeconomic and educational achievement variables, albeit its determinants among university students remain largely unknown. This study examined current patterns and predictors of alcohol and tobacco use with a model involving socio-demographic factors among 708 undergraduate students. Participants included 280 males and 428 females; mean age was 21.4±4.4. The students were assessed with a questionnaire including living arrangement, satisfaction with course of study, current alcohol and tobacco use and parental educational levels. Overall, the prevalence of alcohol and tobacco use was 24.0% and 5.5% respectively. Inter-correlation of discrete variables with Cramer's V showed: gender (ϕ_c =.23, p<.000); level of study (ϕ_c =.16 p<.01); father education ϕ_c =.11, p<.02); satisfaction with course of study (ϕ_c =.11, p<.01); having sex in the last three months (Cramer, =.26, p<.000) were associated with alcohol use. Gender (ϕ_c =.20, p<.000); polygamous family structure (ϕ_c =-.074, p<.06); satisfaction with course of study (ϕ_c =.09 p<.04); having sex in the last three months (ϕ =.11, p<.005 and mothers higher education (ϕ_c =.12, p<.004) were associated with tobacco use. Binary logistic regression analysis revealed two variables: male gender (OR= 2.93; 95% CI = 1.95 – 4.42), level of study (OR= 0.82; 95% CI = 0.67-0.98), ethnicity (OR= 0.76; 95% CI = 0.62-0.92) satisfaction with course of study (OR= 0.65; 95% CI = 0.43-0.97), father education (OR= 1.5; 95% CI = 1.10.-2.06) and having sex 3 months prior survey (OR= 2.96; 95% CI = 1.93 – 4.54) significantly predicted alcohol use. Similarly male gender (OR= 7.71; 95% CI = 3.27 – 18.1), polygamous family structure (OR= 0.40; 95% CI = 0.97 – 0.92), satisfaction with course of study (OR= 0.54; 95% CI = 0.29 – 0.99) and increased mother education (OR= 3.33; 95% CI = 1.76 – 5.92) significantly predicted tobacco use. These data underscore the role of gender, sexual activity and mother's educational level in drug use among Nigerian students. It also highlights the need for continuous drug education.

Key words: Alcohol use, tobacco use, university students, Nigeria

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INTRODUCTION

Alcohol use continues to top the most recreational drug of choice and abuse in Nigeria as indicated in a national survey, where 58% prevalence rate was found (Gureje, Degenhardt, Olley, Uwakwe, Udofia, et al, 2007). Confirming this, the National Drug Law Enforcement Agency recently reported that almost one quarter of Nigerian adults use alcohol (NDLEA, 2014). Tobacco use, like alcohol, has also witnessed a steady increase from 8.9% to 16.8% (Degenhardt, Chiu, Sampson, Kessler et al, 2008). Gureje et. al. (2007) found a prevalence rate of 17% in a national survey and 22.6% was found among adult heads of household in the north central communities of Nigeria (Obot, 1990). Higher rates of about 32% have been reported more recently in the north eastern region of the country (Desalu, Olokoba, Danburam, Salawu & Issa, 2008).

Adolescents and young adults continue to represent a greater statistic in drug use involvement worldwide (WHO, 2004; Odejide, 2006; Degenhardt et al, 2008; Olley, 2008b). The magnitude and the health impact of this problem have made most countries to put in place measures towards education and outright legislation prohibiting illicit use. For example, in Nigeria, there are laws banning smoking in public places and sale of alcohol to underage (NDLEA, 2008). In spite of these stringent access barriers, alcohol and tobacco are still commonly used, especially among students of tertiary institutions in Nigeria (Babalola et al 2014; Onifade et al, 2014; Adekeye et al, 2015). For example, documenting pattern of drug use among medical students, Babalola et al (2014) found 64.4% alcohol and 15% tobacco use prevalence respectively. Similarly,

Onifade et al (2014), found 34.8% and 11.9% prevalence of alcohol and tobacco use respectively in a study among students of three Universities in Nigeria. A recent report of students in some selected private universities in Nigeria (Adekeye et al, 2015) showed that a very high rate of 72% and 81% use alcohol and tobacco respectively. A low rate of 1.2% of current tobacco use was reported among medical students in Lagos. (Dania, Ozoh & Bandele 2015), and Babatunde et al (2012) reported 13.7% prevalence of current tobacco among university students in Ado Ekiti. Elsewhere, Eticha & Kidane (2014) in a study conducted among college of health sciences students in Mekelle University in Northern Ethiopia found 29.5% prevalence of current tobacco use. Another survey among undergraduate medical students at Addis Ababa University reported a lifetime smoking prevalence of 9% and the current smoking prevalence of 1.8% (Kebede, 2002).

University studentship is a time of independence and separation from parents and therefore, a time that affords exposure to a wide array of new experiences and choices, during which unhealthy behaviors are often initiated and developed. . Aside the recreational value of alcohol and tobacco to some students, many indulge in it to suppress academic stress (Peltzer & Malaka, 2001; Mphele, Gralewski & Balogun, 2013. Some use it due to peer-group pressure or to cope against dwindling academic performance, drugs accessibility, and violence or to enhance risky sexual behaviors (Gureje & Olley, 1992; Obot, 2000; Makanjuola, 2007; Onifade et al 2014).

Psychosocial predictors of alcohol and tobacco use among university students varies, and include being male (Adelekan

et al; 1992; Makanjuola,2007; Yisa et al, 2009; Fawibe & Shittu, 2011; Babatunde et al, 2012; Babalola et al 2014; Adekeye et al 2015), age/year of study (Makanjuola, 2007; Yisa et al 2009; Adekeye, et al 2015; Eticha & Kidane; 2014) physical and mental health problems (Onifade et al 2014), frequency of religious activities (Babalola et al, 2014), sexual activeness and unsafe sex (Bamidele et al 2007; Olley, 2008a; Imaledo, Peter-Kio & Asuquo, 2012; Onifade et al 2014), living away from campus and/or living with parents, (Makanjuola, 2007) and having better health and health awareness/ having no prior education on the dangers of smoking (Babatunde et al, 2012).

There is a worrisome upward trend in the use of alcohol and tobacco among students in Nigeria, despite enlightment and educational programs by both government and non-governmental organizations.

Studies regarding prevalence of alcohol and tobacco use are replete in Nigeria, there are however variability in the associated factors, which has made it imperative for behavioral scientist to continue to examine. For example, most studies lack information on the association of parental drug use and students use. Also, little is known about the relationship of sexual risk behavior and course of study of university students and drug use. The objective of this study was therefore to investigate the prevalence of self-reported alcohol and tobacco use and association to certain socioeconomic and educational achievement variables among undergraduate students of the University of Ibadan, Nigeria. Such effort could provide crucial information aimed at scaling up preventive programs in the control of drug use and other associated vices.

METHOD

Design

This study was a descriptive cross-sectional survey, utilizing a correlation design method, to investigate the relative contributions of certain socio-demographic factors (age, sex, levels of study, parental educational status, living arrangement, satisfaction with course of study, and parental factors (educational level, being alive, parent use of drugs) to current tobacco and alcohol use among a sample of undergraduate students in four faculties at the University of Ibadan, Nigeria.

Setting

The University of Ibadan was founded in 1948 as the premier tertiary institution in Nigeria. With a campus covering over 1032 hectares of land and a student population of approximately 29,000, the University of Ibadan is one of the largest universities in the country. There are 12 faculties and 57 departments in the University. Each faculty runs a variety of undergraduate and postgraduate courses leading to the award of diplomas and degrees.

Participants

Seven hundred and eight, full time academic students with mean age of 20.4 years (SD 1.33), who had an authentic matriculation and attended lectures at the time of the administration of questionnaire for the study, were recruited as participants. They were 280 (39%) males and 428 (62%) females, who registered for the 2014/15 academic session. Substantial majority (93.5%) was single; 43.5% and 23% were in their second and third years of study respectively. About ten and three per cent of the students respectively did

not like or were indifferent to their course of study, while 42.4% stayed off-campus. Forty per cent of mothers and 30% of fathers of the students did not have university education respectively.

Instruments

Socio-demographic variables

The following variables were recorded: age, sex, family type, religious affiliation, level of study, accommodation arrangement, if both parents are alive, parents educational level and sexual activity in three months prior to study. Most of these variables have been implicated as determining factors for substance use among students. Alcohol and tobacco use were elicited by questions about whether students currently use any of the drugs. Responses were on a Yes or No format.

Procedure

The data collection was part of a larger project on student's mental health (SMH). It started after a clear instruction about the research and its purposes and after the distribution of the questionnaire. Participation was voluntary and participants were guaranteed confidentiality of responses they gave. Students who agreed to participate filled out questionnaire anonymously in the premises of the respective classrooms under the supervision of the researcher, before the start of a lecture. They were encouraged to fill the questionnaire independently and without any interference from the person sitting next to them. Instructions for filling in the questionnaire were inscribed on the questionnaire. Two graduate students of psychology assisted in retrieving completed questionnaires. No student refused completion of the questionnaire.

The exercise lasted approximately 45 minutes. The data were first coded based on scoring format, entered, and analyzed using Statistical Package for the Social Sciences version 18 software (SPSS Inc., Chicago, IL, USA). Inferential statistics were used for analysis of frequency, mean and standard deviation of continuous variables. Differences in categorical variables were compared for significance using the Cramer's V at $p < 0.05$ significance level. Multinomial regression analysis was used to assess the magnitude of associations between categories of socio-demographic factors and substance use.

RESULTS

Prevalence and Pattern of Alcohol and Tobacco Use

A prevalence rate of 24% of alcohol use and 5.5% tobacco use was found respectively among students. Bivariate analysis with Cramer's V (tables 1 and 2) showed that gender (.19; p<05), satisfaction with course of study (.09; p<04), sexual intercourse three months prior to study (.10; p<05) and mother educational level (.12; p<04) were statistically associated with tobacco use. Similarly gender (.23; p<000), level of study (.16; p<001), satisfaction with course of study (.11; p<.01), sexual intercourse three months prior to study (.26; p<0001) and father higher educational level (.12; p<.02) were statistically associated with alcohol use.

Predictors of Alcohol and Tobacco Use

Tables 3 and 4 present the logistic regression analysis of the predictors of alcohol and tobacco use. Alcohol use predictors include: being a male (AOR = 29.3; 95% CI 1.95-4.42), higher level (second

Table1. Association of Alcohol Use and Socio-Demographic Factors (N=708)

Socio-demographic	Category	Alcohol Use		Cramer v	Sig
		YES	NO		
Age	15 - 17 YEARS	7(1.0%)	61(8.6%)		
	18 - 30 YEARS	155(21.9%)	460(65.0%)	.119	.018
	31 - 40 YEARS	7(1.0%)	11(1.6%)		
	41 - 49 YEARS	1(0.1%)	6(0.8%)		
Gender	MALE	102(14.4%)	178(25.1%)	.235	.000
	FEMALE	68(9.6%)	360(50.8%)		
Marital Status	MARRIED	15(2.1%)	31(4.4%)	.053	.158
	SINGLE	155(21.9%)	507(71.6%)		
Level of Study	100L	20(2.8%)	48(6.8%)		
	200L	54(7.6%)	254(35.9%)		
	300L	39(5.5%)	124(17.5%)	.164	.001
	400L	43(6.1%)	94(13.3%)		
	500L	14(2.0%)	18(2.5%)		
Religion	CHRISTIAN	146(20.6%)	462(65.3%)		
	ISLAM	15(2.1%)	60(8.5%)		
	TRADITIONAL	6(0.8%)	8(1.1%)	.070	.327
	NONE	3(0.4%)	8(1.1%)		
Birth Order	FIRST BORN	59(8.3%)	162(22.9%)		
	MIDDLE BORN	57(8.1%)	233(32.9%)	.085	.077
	LAST BORN	54(7.6%)	143(20.2%)		
Family Structure	MONOGAMY	133(18.8%)	438(61.9%)	.034	.361
	POLYGAMY	37(5.2%)	100(14.1%)		
Ethnicity	YORUBA	114(16.1%)	407(57.5%)		
	IGBO	31(4.4%)	81(11.4%)	.092	.110
	HAUSA	2(0.3%)	6(0.8%)		
	OTHERS	23(3.2%)	44(6.2%)		
Satisfaction with course of study	YES	138(19.5%)	479(67.7%)		
	NO	22(3.1%)	47(6.6%)	.112	.012
	NOT SURE	10(1.4%)	12(1.7%)		
Residence	ON CAMPUS	96(13.6%)	312(44.1%)	.013	.726
	OFF CAMPUS	74(10.5%)	226(31.9%)		
Sexual intercourse	YES	76(10.7%)	98(13.8%)	.263	.000
	NO	94(13.3%)	440(62.1%)		
Two parent alive	YES	129(18.2%)	396(55.9%)	.022	.555
	NO	41(5.8%)	142(20.1%)		
Mother educational level	POSTGRADUATE	39(5.5%)	98(13.8%)		
	GRADUATE	66(9.3%)	221(31.2%)	.051	.397
	NON GRADUATE	65(9.2%)	219(30.9%)		
Father educational level	POSTGRADUATE	61()8.6%	134(18.9%)		
	GRADUATE	63(8.9%)	238(33.6%)	.105	.020
	NON GRADUATE	46(6.5%)	166(23.4%)		

Table 2. Association of cigarettes/tobacco smoking with Socio-Demographic Factors (N=708)

Socio-demographic	Category	cigarettes/tobacco smoking		Cramer v	Sig
		YES	NO		
Age	15 - 17 YEARS	2(0.3%)	66(9.3%)	.058	.495
	18 - 30 YEARS	3(54.9%)	58(081.9%)		
	31 - 40 YEARS	2(0.3)%	16(2.3%)		
	41 - 49 YEARS	0(0.0)%	7(1.0%)		
Gender	MALE	31(4.4%)	249(35.2%)	.197	.000
	FEMALE	8(1.1%)	420(59.3%)		
Marital status	MARRIED	4(0.6%)	42(5.9%)	.037	.327
	SINGLE	35(4.9%)	627(88.6%)		
Level of study	100L	7(1.0%)	61(8.6%)		
	200L	15(2.1%)	293(41.4%)		
	300L	6(0.8%)	157(22.2%)	.081	.330
	400L	9(1.3%)	128(18.1%)		
	500L	2(0.3%)	30(4.2%)		
Religion	CHRISTIAN	32(4.5%)	576(81.4%)		
	ISLAM	5(0.7%)	70(9.9%)	.065	.395
	TRADITIONAL	2(0.3%)	12(1.7%)		
	NONE	0(0.0%)	11(1.6%)		
Birth order	FIRST BORN	16(2.3%)	205(29.0%)		
	MIDDLE BORN	14(2.0%)	276(39.0%)	.051	.393
	LAST BORN	9(1.3%)	188(26.6%)		
Family structure	MONOGAMY	27(3.8%)	544(76.8%)	.070	.063
	POLYGAMY	12(1.7%)	125(17.7%)		
Ethnicity	YORUBA	28(4.0%)	493(69.6%)		
	IGBO	7(1.0%)	105(14.8%)		
	HAUSA	1(0.1%)	7(1.0%)	.038	.795
	OTHERS	3(0.4%)	64(9.0%)		
Satisfaction with course of study	YES	29(4.1%)	588(83.1%)		
	NO	8(1.1%)	61(8.6%)	.094	.044
	NOT SURE	2(0.3%)	20(2.8%)		
Residence	ON CAMPUS	26(3.7%)	382(54.0%)	.044	.240
	OFF CAMPUS	13(1.8%)	287(40.5%)		
Sexual intercourse	YES	17(2.4%)	157(22.2%)	.107	.005
	NO	22(3.1%)	512(72.3%)		
Two parent alive	YES	26(3.7%)	499(70.5%)	.041	.272
	NO	13(1.8%)	170(24.0%)		
Mother educational level	POSTGRADUATE	15(2.1%)	122(17.2%)		
	GRADUATE	15(2.1%)	272(38.4%	.124	.004
	NON GRADUATE	9(1.3%)	275(38.8%)		
Father educational level	POSTGRADUATE	12(1.7%)	183(25.8%)		
	GRADUATE	16(2.3%)	285(40.3%)	.018	.896
	NON GRADUATE	11(1.6%)	201(28.4%)		

Table 3. Logistic Regression Analysis showing Socio-Demographic Predictors Of Smoking Behavior N=708

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age	.016	.043	.136	1	.712	1.016	.934	1.106
Gender	1.967	.443	19.740	1	.000	7.148	3.002	17.021
Martsta	.672	.655	1.052	1	.305	1.959	.542	7.077
Level	.034	.177	.037	1	.848	1.034	.732	1.462
Religion	.009	.305	.001	1	.976	1.009	.555	1.834
Birthord	.304	.236	1.648	1	.199	1.355	.852	2.153
Famstru	-.919	.423	4.715	1	.030	.399	.174	.914
Ethic	-.044	.199	.049	1	.825	.957	.648	1.414
Satcour	-.541	.317	2.900	1	.089	.582	.313	1.085
Accom	.269	.407	.436	1	.509	1.309	.589	2.908
Sex	.587	.387	2.297	1	.130	1.799	.842	3.843
Paretog	-.237	.391	.368	1	.544	.789	.367	1.697
Motedu	1.165	.308	14.347	1	.000	3.206	1.754	5.858
Fatedu	-.322	.292	1.214	1	.270	.725	.409	1.285
Constant	-3.124	2.173	2.066	1	.151	.044		

Nagelkerke R Square **.226** Cox & Snell R Square **.079** Chi-square **244.001ª** df **14, p<.001**

Table 4. Logistic Regression Analysis showing Socio-Demographic Predictors Of Alcohol Use. N=708

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age	-.014	.026	.310	1	.578	.986	.937	1.037
Gender	1.076	.209	26.643	1	.000	2.934	1.950	4.416
Martsta	.255	.394	.417	1	.518	1.290	.596	2.793
Level	-.206	.096	4.581	1	.032	.814	.674	.983
Religion	-.036	.179	.040	1	.842	.965	.679	1.371
Birthord	-.094	.129	.528	1	.467	.911	.708	1.172
Famstru	-.248	.254	.952	1	.329	.781	.475	1.284
Ethic	-.270	.100	7.271	1	.007	.764	.628	.929
Satcour	-.426	.205	4.313	1	.038	.653	.437	.976
Accom	-.099	.211	.221	1	.638	.906	.599	1.369
Sex	1.086	.218	24.817	1	.000	2.963	1.933	4.544
Paretog	.420	.233	3.237	1	.072	1.521	.963	2.403
Motedu	.173	.165	1.105	1	.293	1.189	.861	1.643
Fatedu	.414	.158	6.839	1	.009	1.513	1.109	2.063
Constant	-2.121	1.315	2.600	1	.107	.120		

Nagelkerke R Square = **.207,** Cox & Snell R Square = **.138,** Chi-square **= 675.200ᵗ** df = **14, p<.001**

year to penultimate year) (AOR = .81; 95% CI .64-.98), ethnicity (AOR = .76; 95% CI .62-.92), non satisfaction with course being studied (AOR = .65; 95% CI .43 - .97), sexual activity (AOR = .2.96; 95% CI .1.933 – 4.5) and father's higher education (AOR = 1.5; 95% CI 1.10-2.06). For Tobacco use, predictors include: being a male (AOR = 7.1; 95% CI 3.00–1.11), polygamy family structure (AOR = .39; 95% CI .17-.91)) and mother's higher education (AOR = 3.2; 95% CI 1.75-5.85).

DISCUSSION

In an effort to upscale existing knowledge of alcohol and tobacco use among university students in Nigeria, this study sought to examine patterns and predictors of alcohol and tobacco use among students in Ibadan, Nigeria. Significant findings were that: (1) 24% and 5.5% of the students reported alcohol and tobacco use respectively; (2) being male, lower level of study, father's higher level of education, satisfaction with course of study, having sex three months prior to the study were associated with alcohol use; (3) being male, polygamous family structure, satisfaction with course of study, having sex three months prior to the study and mother's higher education were associated with tobacco use; (4) predictors for alcohol use are male gender, level of study, satisfaction with course of study, father's education and having sex 3 months prior to the survey; (5) predictors of tobacco use are male gender, polygamous family structure, satisfaction with course of study, and mother's higher level of education.

The prevalence of alcohol and tobacco use as identified in this study confirmed existing rate among Nigerian university students. Our reported prevalence of alcohol use is lower than that reported by other studies (Adelekan, 1992; Yisa et al 2009 Babalola et al, 2014; Onifade et al, 2014; Adekeye et al, 2015,) but higher than the rate reported among medical students (Makanjuola, et al 2007; Dania et al 2015). Tobacco use rate in our study is comparable to the 5.7% found among university students in Ilorin (Fawibe & Shittu, 2011), higher than 3.2% among medical students (Makanjuola et al, 2007), but quite lower than other studies among students (Adelekan, 1992; Yisa et al 2009 Babalola et al, 2014; Onifade et al, 2014; Adekeye et al, 2015). Differences in methodology or contextual factors could explain the differences.

Being a male predicts alcohol and tobacco use in this study. This confirms existing the finding that more male than female use substances (Makanjuola et al, 2007; Babalola et al 2014; Yisa et al 2014; Adekeye et al 2015). Our finding of the association of sexual activity three months prior to study and alcohol and tobacco use is consistent with previous studies among students where sexual activity and unsafe sex was associated with alcohol use (Bamidele et al 2007; Olley 2008a; Imaledo et al 2012; Onifade et al 2014). Studies from other African settings (Kebede, 2002; Eticha & Kidane 2014) also confirm the association between substance use and increased sexual activity among students.

Additional major finding emerging from this study is that parental factors such as father's higher education is predictive of alcohol use, while mothers' higher education and polygamy predicts tobacco use among the students. Studies have revealed that the parental attitudes

of children's smoking or alcohol use were important risk factors as well as parental smoking or drinking behaviors. For example, Eticha & Kidane, 2013, document that, lack of University education of mothers of Mekelle university students in Ethiopia was associated with both alcohol and tobacco use among the students. We suggest further exploration of these factors in future studies. Meanwhile, the finding of the link between polygamous family structure and alcohol use confirms the findings of Makanjuola et al (2007).

The finding that student's satisfaction with their course of study, predicts alcohol and tobacco use among them was surprising. The reverse of the case would have been expected. Perhaps some other intervening variables that were not considered in this study could have played some roles in this present pattern. These are issues for further research considerations.

LIMITATIONS

Some limitations were observed in this study. First, data collection occurred in a classroom environment. Privacy to responses by the participants may have been compromised in this regard. Again, we also relied entirely on self-reported data within the constraints of a brief and anonymous survey. Thirdly, the study is limited to the university of Ibadan students only, making generalization to other campus of higher learning difficult.

CONCLUSION

In conclusion, our findings provide evidence that alcohol and tobacco use are still prevalent among Nigerian tertiary students and that certain factors such as gender, sexual activity and mother's educational level are related to it. We also provide evidence that satisfaction with course of study and sexual activity are related to alcohol and tobacco use. These supported earlier documentations about the preponderance of male and sexual activity in drug use among university students. It further brings to the fore, why parental factors such as educational level and the level of satisfactory of course of study be closely considered among variables of study of drug use. As a result, our study has implication for continuous drug education, firstly as a means of prevention to those non users but vulnerable and secondly to users, who lack knowledge about the harmful effect of drugs to both their academics and health. Our findings underscore the need to incorporate mental health specialist, with substantial experience in drug studies in counseling or help centers around campuses of higher learning in Nigeria. In doing this, early detection of complicated or vulnerable cases can be identified and treated. Periodic drug screening can be undertaken by such help centers to ascertain the magnitude of the problem for a more policy focused intervention.

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PRIOR SUBSTANCE USE, DEPRESSION AND GENDER AS DETERMINANTS OF SELF-HARM URGES IN PRISON INMATES: A STUDY OF UYO PRISON

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ABSTRACT

This study examined prior substance use, depression and gender as determinants of self-harm urges in prison inmates. It was a survey utilizing ex-post facto design. A total of 183 male and 29 female inmates from Uyo prison participated in the study. Their mean age was 34.4years. Multi-stage sampling method was used. The t-test results {t (210)=2.89, p<.01} showed that inmates who used psychoactive substances before imprisonment reported higher self-harm urges than those who did not use. Also, inmates with high depressive symptoms reported higher self-harm urges than those with low depressive symptoms {t (210)= 4.21, p<.01}. The interaction of prior substance use and depression was significant, Wilks Lambda = .72, F (1, 210) = 19.02, p = <.01, partial eta squared = .17. A post-hoc test was conducted using LSD to show multiple comparison effect. Furthermore, the t-test results {t (210)= 2.60, p<.01} showed that female inmates reported higher self-harm urges than their male counterparts. The findings of this study have implications on the involvement of psychologists and other mental experts in the management of the prison system.

Key words: Self-harm urges, prior substance use, depression, gender, prison inmates.

INTRODUCTION

Self-harm has been described as a major public health problem in many countries (Green, Wood, Kerfoot, Trainor, Roberts, Rothwell, Woodham, Ayodeji, Barrett, Byford & Harrington, 2011), accounting for high attendances at hospitals with increasing incidences (National Collaborating Centre for Mental Health, 2004). It is associated with recurrent psychosocial problems (Hawton, Houston & Shepperd, 1999), and poor long term outcome (Fergusson & Lynskey, 1995), and may be

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sign of an emerging personality disorder (Brent, Johnson, Bartle, Bridge, Rather & Matha, 1993a).

Self-harm is seen as a physical expression of emotional distress; some time when people feel overwhelmed with unhappy emotions, they may find that the physical act of hurting themselves makes them feel better (National Health Services, 2015). Self-harm, sometime described as self-mutilation, is defined as intentional and acute physical self-injury without intent to die, which includes various methods such as cutting and burning. It has however, been found that only a minority of individuals attempt suicide by cutting or burning (Wexler, Weissman & Kasl, 1978), and suicide attempts are much more likely to be medically severe (Brown & Linehan, 1996). The differences between self-harm and suicide attempts not withstanding, empirical evidences show that about half of individuals who self-harm also attempt suicide or wish to die (Hillbrand, 1995).

Self-harming comes in different forms including cutting or severely scratching one's skin (Smith & Segal, 2015) and thoughts about injuring oneself without actually doing so (Connor, 2010); but it has been argued that if such a behaviour is primarily for sexual pleasure, body decoration, or spiritual enlightenment, it should not be considered self-harm (Burnett, 2007).

It is an impulsive, repetitive behaviour and does not usually occur just once; it known to be pleasurable and can make one less sensitive to pain (Mental Health Foundation, 2012), thus making the individual to want to repeat it. In self-harming, any part of the body could be the target but the arms, legs and front of the torso are the most frequent targets, be-

cause these areas can be easily reached and easily hidden under clothing (Timberline knolls Residential Treatment Centre, 2015). The genitalia and other parts could also be targets of self-harm (Ajapa, Issa, Buhari, Adeoye, Babata & Abiola, 2010; Stunell, Power, Floyd & Quinlan, 2006).

Generally, imprisonment has been to cause a number of physical/health problems (Joukamaa, 1997; Sammsons, 2005) and psychological disturbances leading to self-harming behaviours, among other things (Casey, 2005; Sammons, 2005; Adepegba, 2013). Studies have found that the use of illicit drugs (Paykel, 1987; Van-Damme, Clauwers, Van-Hal & Peters, 1991) and drug misuse (Linehan's, 1993a) increase the chances to self-harm. Reports from various studies across the globe and Nigeria have revealed increasing trend in psychoactive substance use and abuse in prisons (Obot 1992; Oshodi, 1972; United Nations Office of Drug Control and Crime Prevention, 2000). William & Adamson (2005) found that drug use/ abuse within the prison system is presently a problem in Nigeria and beyond, compounded by the influx of drug using offenders. It has also been found that the number of prison inmates incarcerated for drug related and drug influenced crimes has significantly increased over the last two decades and drug use within the confines of prison is a scary reality (The Hill Treatment Centre, 2014). Such use may not all have started in prison; they must have been using them before imprisonment.

Also, among the known psychological disturbances or disorders affecting prison inmates is depression, which is known as a mental disorder characterized by an all-encompassing low mood accompanied by low self-esteem, and by loss of interest

or pleasure in normally enjoyable activities (Barlow & Durand, 2005), or a medical illness that causes a constant feeling of sadness, and lack of interest, affecting how the person feels, thinks, and behaves (Nordqvist, 2013). Depression has been known to underlie self-harm urges and prison inmates in Nigeria are also known to have shown clear symptoms of depression such as low mood, sadness, crying spell, insomnia, reduced appetite, suicidal ideation, and self-harming behaviours (Adepegba, 2013).

Gender differences in self-harming have also been reported; researchers have found that females are more prone to self-harming than males and attributed it to socialization process in many societies which often forbids females from speaking out in most cases and so they express their emotions through self-mutilation; men act out while women act out by acting in thus venting on themselves (Linehan, 1993; Miller, 1994; Whitlock, 2010).

Linehan (1993) theorized that self-harm results in part from chronic self invalidation, from always being told that one's feelings are bad, wrong, or inappropriate. This study also hinged on the Bio-psycho-social model of drug use developed the World Health Organization (WHO, 1981) which holds that substance use/abuse is a function of the interaction of biological/genetic factors (Madden & Heath, 2002; Shuckit, 1999; Volkow, Wang & Doria, 1995), psychological factors as personality traits, psychodynamic processes, and learned cognitions and behaviours (Kandel & Yamaguchi, 1985; Stein, Newcomb & Bentler, 1987; Shedler & Block, 1990; Ogborne, 2004; Tarter, Alterman, & Edwards, 1988; Cohen & Baum, 1995), and social/environmental factors (Godfrey & Maynard, 1988; Single, 1988).

Beck's (1983) Cognitive Theory of Depression and Self-punishment Hypothesis by Nock & Prinstein (2004) provided further theoretical bases for the study. According to Beck (1983) negative thoughts, generated by dysfunctional beliefs are typically the primary cause of depressive symptoms. By this theory, prison inmates are likely to get depressed if they hold onto negative thoughts characterized by guilt, feeling of worthlessness, hopelessness, etc. These negative cognitive triads would further deepen the depression, making it difficult for individuals to come out and seek remedy (Nemade, Reiss & Dombeck, 2007), with possible attendant maladaptive behavioural manifestations which may include self-harming. The Self-punishment Hypothesis by Nock & Prinstein (2004) explains that self-harm has a regulating effect upon feelings and thoughts because it provides the means of atoning for some perceived wrongdoing, or is a response to strong feelings of self-criticism or self-dislike (Nock & Prinstein, 2004). The opinion here is that self-punishment is necessary since punishment is a reasonable expectation following a transgression (Konoske, Staple & Graf, 2010).

Generally, the problem necessitating this study lies in the fact that the incidence of self-harm (and even completed suicide – the ultimate self-harm) is on the increase among prison inmates globally (Howard League for Penal Reform, 2012; Staff, 2012; Timms (2012), attributable it to despair (Lehnert, 2011). Self-harming has also been reported in Nigerians in both general and prison population (Adepegba, 2013; Odejide, Williams, Ohaeri & Ikuesan, 1986; Oguntola, 2012). Also, focus group discussions (FGD) held with 32 inmates in Agodi Prison in the course

of the study revealed that 6 (18.75%) of the participants reported that they *never* had self-harm urges, while 26 (81.25%) reported having *experienced* self-harm urges at different frequencies-some-times, often, and very often. In addition, psychoactive substance use, depression, and gender which have been implicated in self-harming behaviour (Adepegba, 2013; Linehan, 1993a; Paykel, 1987; Van-Damme, Clauwers, Van-Hal & Peters, 1991) and warrant investigations among Nigerians. There is also paucity of indigenous literature, yet the problem exists. There is therefore a need to empirically investigate the roles of these variables (substance use, depression, and gender in self-harm urges among Nigerian prison inmates. We hypothesize that inmates who used psychoactive substances before imprisonment, those with depressive symptoms and female inmates will report higher self-harm urges than non-drug users, non depressed and male inmates.

METHOD

Design: The study was a cross-sectional survey utilizing ex-post facto design.

Setting: The setting for the study was Uyo prison. Uyo prison was established in 1954 and is the number one prison in Akwa Ibom State, a medium security prison accommodating an average of 928 inmates as at the time of this study.

Participants: Participants for this study were 212 inmates. Their ages ranged between 19 and 59 years, with average of age of 34.4 years. They were 183 males and 29 females; 128 were singles while 84 were married.

Sampling Techniques: A multi-stage sampling method was used in this study.

The 28 cells of the prison formed the clusters. Randomization (balloting) was used to select the 15 cells from where the participants were drawn; also the actual participants for the study were selected from the 15 cells by randomization (balloting).

Instruments

The instrument used to collect data for the study was a structured questionnaire which had 3 sections:

Section A: Section A contained the demographic variables; information on gender and use or non-use of psychoactive substances before imprisonment were obtained.

Section B: Section B was the Depression sub-scale of Hospital Anxiety and Depression Scale (HADS) by Zigmond & Snaith (1983). The scores for the sub-scale (depression) range from 0-21, with scores categorized as follows: normal (0-7), mild (8-10), moderate (11-14), severe (15-21). HADS has been found to be useful in assessment of anxiety disorder and depression in somatic, psychiatric, and primary care patients and in the general population (Bjelland, Dahl, Haug & Neckelmann, 2002; Herrmann, 1997; Whelan-Goodinson, Ponsford & Schonberger, 2009). For the purpose of this study, it was revalidated among Nigerian samples (87 prison inmates in Agodi Prison) and a Cronbach's co-efficient of 0.67 was reported**.** A new norm of 13 was established at 2 standard deviations above the mean. Scores below the norm indicated low depression while scores above the mean indicated high depression.

Section C: Section C was the 19-item Inmates' Self-harm Urges Scale (IS-HUS) developed by Ineme & Osinowo (2015). It was used to measure inmates' urges to

self-harm. It has three sub-scales: Sub-scale 1 (items 1 to 11) measures urges for physical harm with Cronbach's coefficient of .93, Sub-scale 2 (items 12 to 15) measures urges for verbal harm with Cronbach's coefficient of .84, and Sub-scale 3 (items 16 to 18) measures urges to transfer harms to others with Cronbach's coefficient of .76. The general Cronbach's coefficient of the scale is .93. The norm of the scale is 37; norm was established at 2 standard deviations above the mean; scores below the norm indicated low self-harm urges while scores above the norm indicated high self-harm urges.

Procedure: The study was conducted in two phases – the pilot study which aimed at validating the instruments and the main study during which the hypotheses were tested. A letter of introduction was obtained from the Department of Psychology, University of Ibadan for both phases. But for the pilot study, ethical clearance was obtained from the Oyo State Research Ethical Review Committee and a written permission from the Controller of Prisons, Oyo State Command. Permission was granted to access the inmates. Two prison staff (a male and a female) from the Welfare Department served as research assistants. The administration of the instruments took place in the prison psychologist's office; the inmates were called out to the psychologist's office on cell basis, the purpose of the study was explained to them. Volunteers were then assigned into 2 groups – A and B by balloting and the instruments were administered to those in Group A. The administration of the instrument lasted for 10 days during which 95 copies of the instruments were administered but 87 were correctly responded to. Data were collected and analyzed for reliability

using SPSS Version 20.0.

For the main study, ethical clearance was obtained from the Akwa Ibom State Research Ethical Review Committee and a written permission from the Controller of Prisons, Akwa Ibom State Command. Again two members of staff of the Welfare Department (a male and a female) were assigned as research assistants on request. They assisted in selecting the cells, randomizing the inmates (by balloting), and administration of the instruments. In this phase of the study, the selection of the participants and the administration of the instruments took place in the Prison Chapel; the inmates were called out to the Chapel on cell basis, the purpose of the study was explained to them, volunteers were requested to stay back. They (volunteers) were then assigned into 2 groups – A and B by balloting and the instruments were administered to those in Group A. The administration of the instrument lasted for 22 days during which 220 copies of the instruments were administered but 212 were correctly filled. Data were collected and analyzed based on the hypotheses, using SPSS Version 20.0. The major ethical considerations in both phases of the study were confidentiality, voluntariness, beneficence, and absence of pains, and the right to withdraw at any point in the course of the study without penalty.

Statistics: Hypotheses 1, 2 and 4 tested using t-test for independent groups while hypothesis 3 was tested using 2-Analysis of Variance; LSD was also applied as a post hoc test.

RESULTS

The hypothesis that inmates who used psychoactive substances before

imprisonment will report higher self-harm urges than those who did not use was tested using t-test for independent samples and summary of result is presented on Table 1.

The results in Table 1 show that there was a significant difference in the level of self-harm urges reported by inmates who used psychoactive substances before imprisonment and those who did not use {t (210)= 2.89, p<.01}. Inmates who used psychoactive substances before imprisonment (M=34.12, S.D= 13.78) reported significantly higher level of self-harm urges than those who were non-users of any psychoactive substance (M=26.44, S.D =10.40). This result means that the use of psychoactive substances before imprisonment significantly predicted self-harm urges among inmates sampled.

The second hypothesis that inmates with high depressive symptoms will report higher self-harm urges than those with low depressive symptoms was tested using t-test for independent samples and a summary of results is presented on Table 2.

The results in Table 2 show that there was a significant difference in the level of self-harm urges reported by inmates who with high depressive symptoms and those with low depressive symptoms {t(210)= 4.21, p<.01}. Inmates with high depressive symptoms ($\bar{X}$=37.20, S.D= 15.88) reported significantly higher level of self-harm urges than those with low depressive symptoms ($\bar{X}$=29.57, S.D =11.10). This result means that the high depressive symptoms significantly predicted self-harm urges among inmates sampled. The hypothesis was thus accepted.

We tested for significant interaction effect of prior substance use and depression on self-harm urges among prison inmates using a 2–Way Analysis of Variance (ANOVA) and the summary of the results is presented in Table 3.

As shown on Table 3, Mauchly's test indicated that the assumption of sphericity had been violated, χ 2(2) = 62.56, p = <.05,

Table 1. t-test summary table showing differences between inmates who used psychoactive substances before imprisonment and those who did not use on self-harm urges

	Psychoactive Sub.*	N	$\bar{X}$	SD	df	t	p
Self-Harm Urges	Use	140	34.12	13.78	210	2.89	<0.01
	Non-Use	72	26.44	10.40			

*Psychoactive substances

Table 2. t-test summary table showing differences between inmates with high depressive symptoms and those with low depressive symptoms on self-harm urges

	Depression	N	$\bar{X}$	SD	df	t	p
Self-Harm Urges	High	121	37.20	15.88	210	4.21	<0.01
	Low	91	29.57	11.10			

therefore degrees of freedom were corrected using Greenhouse − Geisser estimates of sphericity (ε=.70). There was a significant main effect of prior substance use, Wilks Lambda = .67, F (1, 210) = 19.82, p < 01, partial eta squared = .17, where those who used psychoactive substances before imprisonment showed higher self-harm urges than those who did not use. The main effect of depression was significant, Wilks Lambda = .81, F (1, 210) = 22.55, p = <.01, partial eta squared = .17, where those with higher depressive symptoms reported higher self-harm urges than those with low depressive symptoms. The interaction effect of prior substance use and depression was significant, Wilks Lambda = .72, F (1, 210) = 19.02, p = <.01, partial eta squared = .17. With this result, the presence of an interaction effect was confirmed.

However, a post hoc test using LSD was further conducted to show the multiple comparison effect of prior substance use and depression on self-harm urges. Summary of the results is presented in Table 4.

The results of further statistical analysis using a post-hoc test (LSD) as shown on Table 4 reveal that inmates who were prior users of psychoactive substances with low depressive symptoms reported lower self-harm urges ($\bar{X}$=19.11) than those who were users with high depressive symptoms ($\bar{X}$=22.58), with a mean difference -3.47. Inmates who were prior users of psychoactive substances with low depressive symptoms reported higher self-harm urges ($\bar{X}$=19.11) than those who were non-users with low depressive symptoms ($\bar{X}$=15.33), with a mean difference of 3.78. Inmates who were prior non-users of psychoactive substances with high depressive symptoms reported higher self-harm urges ($\bar{X}$= 17.43) than those who were prior users with low depressive symptoms ($\bar{X}$= 15.33), with

Table 3. Summary of Two-Way ANOVA showing main and interaction effect of prio substance use and depression on self-harm urges among prison inmates.

IVs	Sum of squares	df	Mean square	F	Sig.	Wilks' Lambda	η^2
Prior Sub. Use	4015.21	1	4015.21	19.82	.000	0.67	.17
Depression	5007.35	1	5007.35	22.55	.000	0.81	.17
Sub. Use*Dep.	3969.32	1	3969.32	19.02	.000	0.72	.17
Error	8480.23	212	75.72				

Table 4. LSD table showing multiple comparison effect of prior psychoactive substance use and depression on self-harm urges among prison inmates

Sub. Use	Depression	N	$\bar{X}$	SD	Mean Difference			
					1	2	3	4
Use	Low	78	19.11	2.28	-			
	High	164	22.58	3.23	-3.47*	-		
Non-use	Low	46	15.33	1.65	3.78*	7.25*	-	
	High	64	17.43	2.85	2.01*	1.68*	5.15*	-

*The mean difference is significant at the .05 level.

a mean difference of 2.1. Inmates who were prior users with of users of psychoactive substances with high depressive symptoms reported higher self-harm urges ($\bar{X}$ = 22.58) than those were non-users with low depressive symptoms ($\bar{X}$ = 15.33), with a mean difference of 7.25. Inmates who were users of psychoactive substances with low depressive symptoms reported higher self-harm harm urges ($\bar{X}$ =19.11) than those who were non-users with high depressive symptoms ($\bar{X}$ = 17.43), with a mean difference of 1.68. Inmates who were prior users of psychoactive substances with high depressive symptoms reported higher self-harm urges ($\bar{X}$ = 22.58) than those who were non-users with high depressive symptoms ($\bar{X}$ =17.43), with a mean difference of 5.15.

We further tested the influence of gender using t-test for independent sample and summary of results is presented in Table 5.

The t-test results (t (210)= 2.60, p<.01) as presented on Table 5 show that there was a significant difference in the level of self-harm urges reported by male inmates and female inmates. Male inmates ($\bar{X}$ =28.32, S.D= 11.60) reported significantly lower level of self-harm urges than female inmates ($\bar{X}$ =31.19, S.D =6.40). This result means that female inmates reported significantly higher level of self-harm urges than their male counterparts. Thus, the hypothesis was accepted.

DISCUSSION

The results of this study indicated that majority of the inmates were persons who had used at least one psychoactive substance (alcohol, cigarette, cannabis, or cocaine) continuously for at least one month prior to imprisonment. This tended to show a correlation between the use of psychoactive substances and crime commission (since majority,of prison inmates were likely to have been involved in crimes). The results of this study further showed that the use of psychoactive substances before imprisonment was associated with self-harm urges among prison inmates; inmates who used at least one psychoactive substance before imprisonment were more prone to experiencing self-harm urges than those who did not use any one. This result supported earlier findings which implicated the use of psychoactive substances in self-harm urges (Darke, Torok, Kave & Ross, 2010; Haney, 2004; Paykel, 1987; Van-Damme, Clauwers, Van-Hal & Peters, 1991; Linehan, 1993). Suggestively, this is due the fact that while in prison, the inmates are deprived of their usual intake of the substance while the craving was still on, and so, self-harm could be a reaction (or adaptation) to the unsatisfied craving for the substance or a way of managing withdrawal symptoms. Apparently, when inmates are admitted into the prison, there are no records that anything is done to

Table 5. t-test summary table showing differences between male and female inmates on self-harm urges

Gender	N	$\bar{X}$	SD	df	t	p
Male	183	28.32	11.60			
				210	2.60	<0.01
Female	29	31.19	13.13			

screen for, or assess their drug intake, consequently nothing is done to treat for possible withdrawal symptoms which may arise due to sudden stoppage of the drug following arrest and detention. It is possible that some of them may actually suffer such effect (unknown to anyone), especially within the first few days of detention and self-harming (acts or urges) may be a possible reaction, since self-harming has been known to provide relieving experiences from emotional distress (National Health Services, 2015). This finding is also in line with the Bio-psychosocial model (WHO, 1981), which implicates physical dependence and craving in alcohol and drug use; it is possible that the presence of such craving and the absence of the substance (while in prison) would lead to certain behavioural manifestations, including self-regulatory behaviours (Ogborne, 2004).

Also, that inmates who were high on depression reported higher self-harm urges is a is supportive of earlier findings that Nigerian prison inmates presented with depressive symptoms such as low mood, crying spell, and self-harming (Adepegba, 2013; Oguntola, 2012). It is plausible that while in prison, the inmates had developed negative cognitive thought and triads characteristic of depressive individuals, thus confirming the Beck's (1983) Cognitive Theory of Depression which holds that dysfunctional beliefs are typically the primary cause of depression, showing a direct relationship between the amount and severity of someone's negative thoughts and the severity of their depressive symptoms. That, a high number of the inmates reported high depressive symptoms is indicative of the fact that one's stay in prison is capable of triggering and maintaining depression; this is

further complicated if the individual develops negative cognitive triads (Nemade, Reiss, & Dombeck, 2007).

The results further showed that female inmates reported higher self-harm urges than males. This was in line with earlier findings by that females are more prone to self-harming than males and attributed it to socialization process in many societies which often forbids females from speaking out in most cases and so they express their emotions through self-mutilation (Linehan, 1993; Miller, 1994; Whitlock, 2010). Miller (1994) specifically reported that men act out while women act out by acting in, and attributed the higher tendency of women to self-harm to the fact that women are not socialized to express violence externally; women therefore tend to vent on themselves. The urges or acts of self-harming are a way of acting in. Already men are socialized in a way that makes repressing feelings a norm (Miller, 1994) and the distressing prison experiences may be repressed (bottled); expressing them may be seen as cowardice for males, women may not be able to accommodate some feelings and lacking appropriate avenue to express their feelings, women may resort to self-harming. More over, the family and the society place higher moral expectations on women than on men because of which the females may end up with certain complexes which they may find difficult to resolve and self-harming become the easiest way to vent and/or be distracted (Linehan, 1993). The behaviuoral implication of this is that, any fall below that expectations (to the extent of being in prison), the women are more likely to feel more guilty and ashamed; guilt is a known cause of self-harm globally (Krestev, Prokipidis & Sycamnias, 2005).

Self-harming may also provide relief and make them feel they have received adequate punishment for their wrong doing supporting the Self-Punishment Hypothesis (Nock & Prinstein, 2004).

In conclusion, these results have implications on management of the prison system and the criminal justice system generally. Those who had been use psychoactive substances before imprisonment, those with depressive symptoms/tendencies, and the females constitute a risk class. Special attention should be paid to them at the point of admission into the prison and on daily management of the prison system – they should be allowed to stay alone in solitary places or have access to any sharp object. Psychologists and other mental health experts should necessarily and urgently be employed to provide assessment and intervention for the risk class to prevent cases of full-blown self-harm act in the Nigerian prisons.

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