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The *African Journal of Drug & Alcohol Studies* is an international scientific and 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, tobacco or 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 and over-the-counter medications, and traditional substances used in different parts of Africa (e.g., kola nuts and khat).

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AVAILABILITY OF AND BARRIERS TO THE UTILIZATION OF HARM REDUCTION SERVICES IN ENUGU, SOUTH-EASTERN NIGERIA: SERVICE PROVIDERS' PERSPECTIVE

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ABSTRACT

The study aimed to determine the availability and barriers to the utilization of three Harm Reduction Strategies (HRS) in Nigeria from service providers' perspective. This study was a descriptive survey using questions adapted from the harm reduction questionnaire. Eight institutions involved in the drug treatment services in Enugu, South-Eastern Nigeria participated. Only 25% of the agencies did not practice HRS in any form. The commonest internal and external barriers were lack of funding and community resistance, respectively. The heads of the agencies rated themselves and the community unfavorable to accepting HRS generally. However, with regards to specific HRS, they were more favorable to methadone replacement therapy, controlled drinking and condom sharing. The findings of this study enriched our understanding of the various impediments to the utilization of HRS in Enugu, Nigeria.

Keywords: Availability; barriers; utilization; harm reduction; services; service providers, Nigeria

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INTRODUCTION

There is burgeoning data on the usefulness of Harm Reduction Services (HRS) in the reduction of drug use, disease, crime, unsafe injection behaviors, related deaths and improvement in employment and interpersonal relationships among drug users (Margolin, Avants, Warburton, Hawkins & Shi, 2003; Hawks & Lenton, 1995; Hope et al., 2001). Harm reduction programs and services has been defined "as policies, programs and practices designed to reduce negative physical, social, and economic consequences resulting from substance use without requiring abstinence as a primary treatment goal" (Carlberg-Racich, 2016). The burden of substance use disorders globally, is huge and could be considered together with suicide and depression as an emerging epidemic with myriad consequences in the various domains of the society (Unaogu, Onu, Iteke, Tukur & Oka, 2017; Bates, 2018). Despite its implications for the individuals and their families and the country at large, there is a large unmet need for treatment, as majority of those who have the problem do not access the available services (World Health Organization, 2008). This situation is even made worse by the moral views held by many Africans with respect to drug-related problems.

HRS is generally lacking in most countries in the sub-Saharan Africa (Ogunrombi, 2018). A number of factors such as community resistance, lack of clarity of governmental policies, poor political support and perceived immorality of HRS have been reported in the literature as being responsible for the poor utilization of HRS worldwide (Ghiasi, Farahbakhsh & Hekmatpour, 2013; Bobrova et al., 2008; Ravaghi et al., 2017; Reid & Aiken; Magee & Huriaux, 2008; Kimber, Dolan, Van, Hedrich & Zurhold, 2003).

However, a recent global report from the Harm Reduction International indicates that the sub-region has made some progress in the HRS with about 10 countries in the region having explicit policy documents supporting harm reduction in 2018 (Ogunrombi, 2018). At the continental level, the African Union plan of action on drug control was endorsed at its ministerial conference in 2012 (African Union, 2013). This document sought to implement the United Nations' comprehensive package of nine interventions on harm reduction (African Union, 2013). Nigeria, the most populous nation in the sub-region continues to be resistant to HRS until recently, despite the huge burden of substance use disorder among its population (Ogunrombi, 2018). Over the years, the focus of drug policy in Nigeria centered on drug supply reduction leading to incarceration of offenders without any form of treatment. However, in 2018, the Federal Ministry of Health began a consultation on the development of guidelines on the use of methadone for drug rehabilitation treatment (United Nations Office on Drugs and Crime, 2018). Similarly, the National Drug Control Master Plan (NDCMP) entrenched a paradigm shift from over concentration on the supply reduction centered activities to demand reduction activities (National Drug and Law Enforcement Agency, 2014). This is due to the increasing global outcry that substance use problems should be viewed in the light of public health.

Despite the numerous benefits of HRS and some shift in policies towards the public health approach to drug use, there is paucity of data on the availability and

barriers to the implementation of HRS in Nigeria from the stakeholders. Hence, this study was done to examine the following objectives:

1. To determine the availability of HRS in Enugu, South-Eastern Nigeria.
2. To determine the acceptability of HRS by the service providers.
3. To determine the barriers to the implementation of HRS from the perspectives of the service providers.

METHOD

The study was carried out among eight heads of agencies involved in the treatment and rehabilitation of drug abusers in Enugu. There were a total of 11 institutions identified with some services for drug treatment and rehabilitation. Of the 11, two were Teaching Hospitals of Tertiary Institutions. One is a standalone Psychiatric Hospital, whereas the remaining eight were owned by either the Government or Non-governmental organizations. A total population sampling technique was used to recruit all consenting heads of agencies involved in the treatment and rehabilitation of drug abusers. Two heads of agencies declined consent to participate and the remaining one was not available during the period of the study. Enugu State is the capital of the defunct Eastern region of Nigeria. It is a mainland state with an area of 7,161 square kilometers, located in the South East Nigeria, with a population of over 3 million. All the interviews were conducted from June 2018 to June, 2019. The ethical approval for the study was obtained from the Ethics and Research Committee of the major psychiatric facility in Enugu.

This was a descriptive survey using the harm reduction questionnaire (Hobden & Cunninghan, 2006). The harm reduction questionnaire was designed by Hobden & Cunninghan (2006) from a qualitative study of service providers. It is a 55-item questionnaire which assesses the availability, acceptability and barriers to four harm reduction services namely: needle exchange program, free condom sharing, methadone replacement, and moderate drinking. In addition, the survey also assesses general understanding of harm reduction. The questionnaire was pretested for suitability among specialist in substance use disorder treatment unit of the Federal Neuropsychiatric Hospital, Enugu. After considering all the questions and options of the original survey; some modifications were made. The team of specialist expunged the section on methadone replacement as the policy on its implementation is yet to be issued by the Federal Government and as such it is not practiced yet anywhere in the country. However, the section on rating of the respondent's disposition for future use was left to assess for possible acceptability. Also expunged was the option "negative reaction from the Alcohol Anonymous (AA) community". This is because there were no such organizations in the study setting.

Each respondent assessed the availability of three harm reduction services in their centers, reasons for its availability, internal and external barriers to its implementation. The respondents were asked to rate themselves, their colleagues and the community on an 11-point scale (0-very unfavorable, 10-very favorable) how they felt about non-abstinence as a treatment goal in some drug users. In addition, they were asked to proffer solutions

on how HRS can be made more available and acceptable. For each question asked despite having options, the participants were allowed to provide other answers not available in the outlined options in the section of others. All the agencies were contacted and eight of them indicated interest to participate (two hospitals, three other non-hospital based governmental agencies and two non-governmental organization). The questionnaire was given to them in their various offices to fill, and all returned their completed questionnaire. Data were entered into the Statistical Package of Social Sciences (IBM-SPSS) version 20. Categorical questions were described using frequency tables while the 11-point rating was summarized using the mean and median.

RESULTS

All the agencies that responded had heard of HRS. Controlled drinking and free condom sharing were known by all the respondents while opioid substitution therapy was the least known as shown in Table 1. The proportion of the agencies that practiced needle and syringe exchange, moderate drinking and condom sharing were 25%, 50%, and 25%, respectively (Tables 1 and 2).

Respondents rated themselves unfavorable to non-abstinence-based treatment goal with a mean score of 2.7. Similarly, respondents rated the community unfavorable to accepting non-abstinence-based treatment goal. With regards to specific HRS, most respondents rated themselves and the community unfavorable to accepting needle and syringe exchange programs. However, respondents rated themselves and the community more favorable to methadone replacement, controlled drinking and free condom sharing as shown in Table 3. The definition of harm reduction by respondents varied with half of them agreeing that reducing the harm from substance use by the individual without necessarily reducing the use of the substance is the best definition. A majority (62.5%) of the respondents agree that reducing the negative consequences associated with drug/alcohol use was the most important component whereas providing the gateway/bridge into treatment was the most appealing as shown in Table 4.

All the participants agree that clear government policies/legal framework is needed for effective implementation of HRS. Similarly, 75% of the respondents advocated improved community and staff educational awareness on the usefulness of HRS and improved funding. (Table 4).

DISCUSSION

The main aim of this study was to describe the HRS available in Enugu, South-Eastern, Nigeria, and highlight the barriers to the utilization of HRS from the perspective of the service providers.

The finding that all heads of agencies were aware of the HRS is consistent with a previous observation in Ontario, Canada (Hobden & Cunninghan, 2006), who reported that service providers in Ontario Canada are fully aware of HRS. The increase in awareness among service providers in the South-Eastern Nigeria may be related to the robust campaign by many non-governmental organization and other stakeholders to decriminalize drug abuse and the increasing perception of drug use problems as a public health

Table 1. Availability of HRS, needle exchange program and barriers to its implementation

Variables	Frequency (%)
Ever heard of harm reduction strategies	
Yes	8(100.0)
No	0(0.0)
Which harm reduction strategy do you know?	
Needle exchange	6(75.0)
Methadone replacement	5(62.5)
Controlled drinking	8(100.0)
Free condom	8(100.0)
Does your institution practice it in any form?	
Yes	7(87.5)
No	1(12.5)
Would you like to practice it?	
Yes	8(100.0)
No	0(25.0)
Does your institution practice needle exchange program? (n=8)	
Yes	2(25.0)
No	6(75.0)
Have your agency considered needle exchange program? (n=6)	
Yes	1(16.7)
No	5(83.3)
Reasons for not considering needle exchange (n=5)	
Little or no perceived need or demand	2(40.0)
Services available locally	1(20.0)
Staff resistance	1(20.0)
Anticipated community opposition	2(40.0)
Negative client opposition	0(0.0)
Lack of funding	2(40.0)
No legal framework/clear government policies	3(60.0)
Internal barriers to setting up needle exchange services (n=8)	
No perceived need	2(25.0)
Lack of medical staff	1(12.5)
Lack of funding	4(50.0)
Services already provided locally	1(12.5)
Staff resistance	0(0.0)
Contravenes agency policy	0(0.0)
Outside agency mandate	0(0.0)
No clear legal framework	2(25.0)
External barriers to setting up needle exchange services (n=8)	
Community resistance/culturally inappropriate	1(12.5)
Lack of political support	2(25.0)
Funding	3(37.5)
Seen as promoting drug use	6(75.0)

issue. Before now, drug use control activities in Nigeria was hinged on supply reduction. However, with the recent shift to improve demand reduction, international partners (e.g., United Nations Office on Drug and Crime) have increased their sensitization of the service providers through seminars and workshops with regards to the various treatment options including HRS. These activities with concurrent improvement in the awareness of mental health issues in Nigeria may

Table 2. Availability of moderate drinking and condom sharing programs and barriers to its implementation

Variables	Frequency (%)
Does your institution allow for moderate drinking goal? (n=8)	
Yes	4(50.0)
No	4(50.0)
Have your agency considered moderate drinking as a therapeutic goal? (n=4)	
Yes	4(100.0)
No	0(0.0)
Internal barriers to moderate drinking as a treatment goal (n=8)	
Not appropriate for their clientele	4(50.0)
Staff resistance	1(12.5)
Contravenes agency policy/philosophy	2(25.0)
External barriers to setting up needle exchange services (n=8)	
Community resistance/culturally inappropriate	1(12.5)
No clear government policies	7(87.5)
Does your institution offer free condom to clients? (n=8)	
Yes	2(25.0)
No	6(75.0)
Have your agency considered offering free condom? (n=6)	
Yes	0(0.0)
No	8(100.0)
Internal barriers to offering free condom services (n=8)	
Resistance from staff	4(50.0)
Resistance from board	4(50.0)
Fear of negative community reaction	8(100.0)
Lack of funding	8(100.0)
External barriers to offering free condom services (n=8)	
Community resistance/culturally inappropriate	8(100.0)
Services locally available	4(50.0)
Benefits of offering free condom services (n=8)	
Reduction of HIV/STDs	6(75.0)
Reduction of unwanted pregnancy	4(50.0)
Opportunity to provide information	3(37.5)

explain the magnitude of knowledge of HRS as demonstrated in this study.

Of the HRS programs (i.e., moderate drinking, needle exchange program and condom sharing) available in the South-Eastern Nigeria, moderate drinking as a treatment option is the most widely practiced. This is consistent with a previous report which found high availability of moderate drinking and condom sharing and less of needle exchange and methadone replacement programs (Hobden & Cunninghan, 2006). This finding is understandable in the line of the following considerations: First, drinking in the traditional South-Eastern society is culturally appropriate whereas other substances of abuse are abhorred. The participants of this study are members of this culture and acceptance of moderate drinking as a treatment option and its implementation may just be a reflection of their cultural bias. Second, the implementation of moderate drinking does not necessarily require additional funding. Since, funding is a major internal barrier to other HRS, it

Table 3. Rating of the various harm reduction programs by the heads of the agencies

N=8

Variables	Mean (median) score
How do you feel about non-abstinence as a treatment goal for some drug users?	2.7(0.0)
How do other therapist in your institution feel about non-abstinence as a therapeutic goal for drug users?	2.5(1.0)
How do you think non-abstinence for drug users would be viewed by your community?	1.7(0.0)
How do you feel about providing clean needles to drug users?	3.8(2.5)
How do you think other colleagues in your facility feel about providing clean needles to drug users?	3.8(2.5)
How do you think needle exchange for drug users would be viewed by your community?	2.5(2.0)
How do you feel about offering methadone replacement as a treatment option to drug users?	8.0(10.0)
How do other therapist in your institution feel about methadone replacement?	6.7(9.0)
How do you think methadone replacement for drug users would be viewed by your community?	5.5(6.5)
How do you feel about providing free condom to drug users?	7.7(9.0)
How do you think your colleagues in your facility feel about providing free condoms to drug users?	7.3(9.0)
How do you think providing free condoms to drug users would be viewed by your community?	5.2(6.5)

Rating is a scale of: 0=not at all favorable to 10=extremely favorable

is possible that the non-capital intensive nature of moderate drinking would have made it more practical for implementation across agencies.

The commonly identified internal barriers to the implementation of HRS in South-Eastern Nigeria were those related to the fear of promoting drug use, funding, staff resistance, poorly trained/ inadequate staff and no perceived need. Whereas, the commonly reported external barriers were community resistance, lack of clarity of government policies and poor political support. These findings are consistent with previous reports (Ghiasi et al., 2013; Bobrova et al., 2008; Ravaghi et al., 2017; Reid & Aitken, 2009; Magee & Huriaux, 2008). For example, Ravaghi et al., (2017) reported that in Iran, the main barriers to the implementation of HRS were the misunderstanding and misperception that HRS is encouraging or condoning substance abuse, lack of policy clarity and transparency in political position regarding HRS and community resistance. The similarities between the findings of the present study and that of Ravaghi and colleagues may be explained by the conservative and largely religious nature of these two societies.

The heads agencies rated themselves and the community unfavorable to accepting HRS generally. However, with regards to specific HRS, they were more favorably disposed to accepting methadone replacement therapy, controlled drinking and condom sharing. The finding of general non-acceptance of HRS as reported by the participants may be explained by negative opinions expressed by some persons towards the program. Kimber et al., (2003) reported that the predominant negative opinions in their survey was perceived immoral-

Table 4. Service providers' knowledge of harm reduction strategies

Variables	N=8 Frequency (%)
Definition of harm reduction	
Reducing harm from substance use incurred by the individual by reducing or eliminating the use of that substance	1(12.5)
Reducing the harm from substance use incurred by the individual and reducing their use of that substance	1(12.5)
Reducing the harm from substance use incurred by the individual without necessarily reducing their use of that substance	4(50.0)
Reducing the harm associated with substance use to the community or society as a whole	1(12.5)
Don't know	0(0.0)
Most important elements of harm reduction	
Disease reduction	3(37.5)
Empowering clients	3(37.5)
Improving the quality of life of clients	4(50.0)
Reducing negative consequences associated with drug/alcohol use	5(62.5)
Flexibility	1(12.5)
Education/awareness on the part of client	2(25.0)
Education/awareness on the part of the community	1(12.5)
Client choice	2(25.0)
Empathy	2(25.0)
Accurate assessment	1(12.5)
Don't know	0(0.0)
Most appealing aspects of harm reduction	
Disease reduction	2(25.0)
Reduced health costs	0(0.0)
May provide a gateway/bridge into treatment	4(50.0)
It's more palatable to clients than abstinence	2(25.0)
Clients choice	1(12.5)
It's non-judgmental	2(25.0)
It's client centered	1(12.5)
It's appropriate for some clients	2(25.0)
It's pragmatic/practical	2(25.0)
It provides flexibility/options	1(12.5)
It empowers clients	1(12.5)
Don't know	1(12.5
Proffering Solutions	
Government should be clear in their policies and legal framework	8(100.0)
Community education	6(75.0%)
Improved Funding	6(75.0%)

ity of providing HRS. Common arguments among their participants were that HRS promotes drug use, attract many people to use drugs and destroy the community. These opinions were similarly expressed by our participants. The people of South-Eastern Nigeria just like most Africans have strong traditional values. Substance use problems are commonly perceived as originating from moral weakness of the individual involved. Therefore, many people judge them harshly such that many family members in clinical practice are non-receptive to any other treatment options other than abstinence. This perception by family members may have informed the above ratings. Contrary to the ratings in general non-acceptance of

non-abstinence-based treatment options and needle exchange program, the participants were more favorable to moderate drinking and free condom sharing. This is probably due to the initially stated acceptance of alcohol in the traditional Igbo society and the part that the society has been properly educated about condom use with regards to the prevention of Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome (HIV/AIDS).

Limitations: The relatively small sample number of agencies that responded (8 out of 11) in our study may have limited the diversity of opinions.

Conclusion: The findings of this study show low availability and acceptability of HRS as a treatment option in Nigeria among service providers. Community resistance to the HRS calls for a comprehensive action by policy makers and clinicians towards demystifying the myths held by the community against HRS. This has become necessary to enhance the availability and utilization of HRS to improve access to services to drug abusers.

STATEMENT OF AUTHORSHIP

The authors contributed to the study design, analysis and interpretation of data. Drafting of the manuscript was by the first author. All authors read and approved the manuscript.

CONFLICT OF INTEREST

The authors declare no conflict of interest

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DEVELOPMENT, VALIDITY AND RELIABILITY OF TRAMADOL USE AND MISUSE KNOWLEDGE ASSESSMENT QUESTIONNAIRE

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ABSTRACT

The prevalence of tramadol misuse in Nigeria and lack of a quantitative and valid instrument to assess knowledge on the use and misuse of tramadol necessitated this study. The objective of this studywas to develop and validate a questionnaire to assess knowledge about tramadol use and misuse among tramadol users in Benue State of Nigeria. A mixed-method design was used. Literature review and focus group discussions were conducted to generate items for the questionnaire. Six experts were involved in content validation. The item-level content validity index (I-CVI) cut-off point was set at 0.83. Chain-referral sampling method was applied. Data were collected from tramadol users (n = 200) for the validation study. Item response theory model was applied in the assessment of the psychometric properties of the questionnaire. Cronbach alpha was computed to determine the internal consistency. Ten items were initially deleted for failing to meet the I-CVI cut-off point (I-CVIs < 0.83). The over-all CVI of the questionnaire was 0.86. Five more items were deleted for poor performance in both the difficulty and discrimination parameters, leaving 35 items for the final questionnaire. The reliability coefficient was 0.78 indicating good internal consistency. A valid and reliable self-report questionnaire therefore, emerged for the assessment of knowledge about tramadol in five domains including medical use, prescription, misuse, effects of misuse and withdrawal/detoxification. The questionnaire can serve as a valid and reliable tool for assessment of knowledge about tramadol and for evaluation of intervention efforts at curtailing tramadol abuse.

Keywords: development; validity; questionnaire; knowledge; tramadol; misuse

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INTRODUCTION

Tramadol is a prescription analgesic mainly indicated for providing relief for moderate to moderately severe pains. However, there are indications that tramadol as a pharmaceutical opioid is addictive and liable to misuse (Babalonis, Lofwall, Nuzzo, Siegel, & Walsh, 2013; Pollice et al., 2008; Sansone & Sansone, 2009; Zhang & Liu, 2013). Misuse of tramadol reflects in the use of the drug for a purpose that is not consistent with the medical or legal guidelines or using it in a manner or dose other than prescribed. For example, using tramadol for sexual stamina, work performance, euphoria and for several purposes other than pain treatment indicates misuse.

A report by the National Bureau of Statistics (2018), shows that 4.6 million people have misused tramadol in Nigeria. The high prevalence of tramadol misuse in Nigeria could be attributed partly to non-regulation of tramadol at the international level and its' availability at cheap prices (less than $1 for a 10-tablet strip of 100 mg) at Nigerian pharmacies which do not require prescription notes before selling out (Kayode, 2019). There is also illicit production of tramadol in Nigeria in addition to the huge, smuggled tablets. Report has it that in 2018, the Nigerian authorities seized illegal shipments of about 2 billion tablets of tramadol at the ports (Kayode, 2019). This indicates a booming market for tramadol in Nigeria whose youths are increasingly using the drug for non-medical purposes. The belief that tramadol serves as a remedy for premature ejaculation, extends orgasm and increases work performance has contributed to its popularity and massive use among Nigerian youths (Chikezie & Ebuenyi, 2019; Ibrahim et al., 2017; Orhero, 2018).

The alarming rate of tramadol misuse by young people has posed a serious health challenge globally as it is known to have dire health consequences ranging from mild effects like headache, stomachache, itchy skin and painful urination to severe long-term effects like psychiatric disorder, seizure, serotonin syndrome, cardiovascular collapse and respiratory depression (El-Hadidy & Helaly, 2015; Sansone & Sansone, 2009). A report on drug use shows that 450,000 people died in 2015 worldwide as a result of drug use. Out of that figure, 167,750 deaths were linked to drug use disorders in most cases involving misuse of pharmaceutical opioids like tramadol, morphine and codeine (United Nations Office on Drugs and Crime, 2018). The United States Substance Abuse and Mental Health Services Administration also reported that from 2005 to 2011, Emergency Departments visits for tramadol-related misuse or abuse increased 250% from 6,255 in 2005 to 21,649 in 2011 (Bush, 2013). In Northern Ireland, it was reported that tramadol abuse-related deaths represented 48% of all drug misuse in 2011 (Randall & Crane, 2014). Tramadol misuse has also been linked to acts of violence and criminality. For example, cases of robbery, rape, stabbing and Boko Haram activities were reported to have been fuelled by tramadol misuse in Gabon, Ghana and Nigeria (BBC, 2018; Ebo, 2018). These threats to health and wellbeing as well as to security posed by tramadol misuse are worrisome.

The importance of assessing knowledge on drugs cannot be over-emphasized. This is because, knowledge about drugs has been shown to wield influence on attitude and behaviour relating to drug use (Barati,

2014; Embleton, Ayuku, Atwoli, Vreeman, & Braitstein, 2012; Geramian, Akhavan, Gharaat, Tehrani, & Farajzadegan, 2012). The knowledge of prescription status of drugs and their indications and contraindications would play a significant role in the correct use of drugs and in avoiding self-medication and its attendant consequences. It is, however, unfortunate that a thorough literature search has shown that there is no valid and reliable questionnaire that could be used to assess knowledge about tramadol among individuals who use the drug. Several studies that reported on knowledge about tramadol did not use any questionnaire with psychometric properties (Elliason, 2018; Fuseini, Afizu, Yakubu, & Nachinab, 2019; Tafesh, 2013). The objective of this study was, therefore, to develop and validate a questionnaire to assess knowledge about tramadol use and misuse among tramadol users in Benue State of Nigeria.

METHOD

A mixed-method design combining a qualitative approach with quantitative procedure was applied in developing the instrument named 'tramadol use and misuse knowledge assessment questionnaire (TUMKAQ)'. Two stages were involved in developing this questionnaire. The first stage involves item and domain generation while the second stage was concerned with the validation of the questionnaire by content, face, and construct validation methods as well as test of reliability.

First Stage: Items and Domains Generation

The process of generating items for the development of this questionnaire began with a thorough literature review by accessing several databases (psycINFO, PubMed, googlescholar, Drug Database, Scopus, MEDLINE, Web of science, sociological Abstracts and others) to ascertain whether there was any valid and reliable knowledge assessment instrument on tramadol use and misuse, but none was found. We, therefore, deemed it necessary and timely to develop a questionnaire that will fill this important gap in drug research. Literature review was also conducted on indications and contraindications of tramadol, prescription status, and dosage requirement. Other areas that the review covered include tramadol abuse and misuse, tolerance, dependence and addiction, effects of tramadol abuse and misuse, withdrawal symptoms, safe-withdrawal from tramadol and detoxification.

To support the information from literature, three sessions of focus group discussions (FGDs) were conducted with two groups of tramadol users (eight participants each) and one group of psychiatrists (eight participants) working in tertiary health institutions in Benue State. Participants in the FGDs were 16 regular tramadol users who were recruited in Buruku and Gboko Local Government Areas of Benue State using snowball method. Participants (tramadol users) included 12 (75.0%) males and 4 (25.0%) females between the ages of 18 and 35. Most of the participants were married and were into hard jobs like farming, building/construction, and transportation. Participants were from a varied educational background, but all had completed at least primary education and had used tramadol without prescription. Another set of participants (psychiatrists) in the FGD included 5 (62.5%)

males and 3 (37.5%) females who were purposively selected from Federal Medical Centre, Makurdi and the Benue State University Teaching Hospital, Makurdi. All the participants had work experience of at least 3 years and had at one time or another treated Patients of tramadol addiction.

The FGDs with tramadol users were conducted to explore their knowledge of tramadol, its medical use, prescription status, dosage requirement and contra-indications. Other knowledge areas explored include tramadol misuse, tolerance, dependence and addiction as well as effects of tramadol misuse, withdrawal symptoms and safe-withdrawal from tramadol use. The FGD session with the psychiatrists explored facts related to tramadol use and misuse which the psychiatrists considered users of tramadol should know.

Information gathered from literature and the themes from the analysis of the FGDs were used to generate an item pool of 50 questions with five suitable domains namely: medical use (4 items), prescription (6 items), misuse (14 items), effect of misuse (19 items) and withdrawal/detoxification (7 items). A section on the demographic characteristics of the participants was also created with 7 items bringing the total number of items to 57. The response options for the questionnaire were 'True' 'False' and 'Not Sure'. The option of 'Not sure' was included to avoid guessing by the respondents.

Second Stage: Validation

Validation of the questionnaire (TUMKAQ) was done in three phases namely, content validation, face validation and construct validation as described below:

Content validation

Copies of the draft questionnaire with a pool of 50 items were emailed to six experts including two psychiatrists, two addiction counsellors, one pharmacist and one expert in test and measurement to rate the relevance of the test items to the measured domains using a 4-point Likert format: "the item is not relevant", "the item is somewhat relevant", "the item is quite relevant", and "the item is highly relevant" with the numerical values of 1, 2, 3 and 4 respectively. They were also requested to carry-out qualitative assessment of the items that would make them suitable for the target group. Rating scores of 4 and 3 were converted to valid (1) and rating scores of 2 and 1 were converted to invalid (0) and the scores were entered into Microsoft excel to compute the item-level content validity index (I-CVI) and the scale-level content validity index (S-CVI) of the questionnaire. The cut-off point for retaining items was set at 0.83 (Polit, Beck, & Owen, 2007).

Face validation

To ensure the clarity and comprehensiveness of the items, copies of the questionnaire were given to 30 tramadol users to rate the degree of clarity and comprehensiveness of each item using a 4-point Likert format: "the item is not clear and understandable", "the item is somewhat clear and understandable", "the item is clear and understandable" and "the item is very clear and understandable". Rating scores of 4 and 3 were converted to valid (1) and rating scores of 2 and 1 were converted to invalid (0), and the scores were entered into Microsoft excel in computing item-level face validity index (I-FVI) and the scale-level face validity index (S-FVI) to identify those items that would be

retained or removed. The cut-off point was set at 0.83 (Yusoff, 2019).

Construct validation

Under this phase of validation, the subheadings of sample and sampling, research tool, data collection method, data analysis and ethical considerations are described.

Sample and sampling

Two hundred participants who were aged 18 to 35 years (age bracket for youth in Nigeria according to the National Policy on Youth Development, 2009), and who were screened positive for tramadol use using tobacco, alcohol, prescription medications and other substance use (TAPS) tool (McNeely et al., 2016), specifically indicating tramadol use were recruited from communities in Logo and Tarka Local Government Areas of Benue State to participate in the study. There is no precise sample for item response theory (IRT) analysis of a knowledge questionnaire, however some studies recommended a range from 100 to 500 participants (Edelen & Reeve, 2007; Goni et al., 2020; Zahiruddin et al., 2018). The sample size of 200 tramadol users was, therefore, considered sufficient for TUMKAQ validation. The chain-referral method of sampling was used. It is a technique for gathering research subjects through identification of an initial subject who is used to recruit others. The method was considered best for this study because of its suitability and effectiveness in studying sensitive and private matters (Waters, 2015). The first few subjects that were identified through an informant were used in recruiting their fellow tramadol users after convincing them by explaining the purpose of the study and assuring them of confidentiality.

Research tool

A self-report 40-item TUMKAQ (after deleting 10 items for low I-CVI) was used for data collection. The questionnaire was structured along five domains namely, medical use; prescription, misuse; effects of misuse, and withdrawal/ detoxification. Items were dichotomously scored with 'correct' answer getting a score of '1' and 'incorrect' answer getting a score of '0'. The option of 'Not sure' was also considered as 'incorrect' and was therefore given a score of '0'.

Data collection method

Data for this validation study were collected from April 2020 to May, 2020. The method of administration was face-to-face and no questionnaire was lost in the process. Data were collected for IRT analysis, which was used to evaluate the difficulty and the discriminative abilities of the questionnaire items.

Data analysis

The item response theory (IRT) model was applied for data analysis using R-software to assess the psychometric properties of the TUMKAQ. Two-parameter logistic IRT (2 PL IRT) model was specifically used because the aim was to estimate only the difficulty and discrimination parameters of the questionnaire items without the inclusion of guessing as a pseudo-parameter (Arifin & Yusoff, 2017). For the difficulty parameter, the acceptable range of -3 to +3 was used as a cut-off point while for discrimination, 0.25 to infinity was set as a cut-off point (Wyse, 2010). Item fit was measured using chi-square goodness-of-fit, and items with p-values greater than 0.05 ($P > 0.05$) were considered fit in the model. Modified parallel analysis was applied to check the assumption of unidimensionality of the items in the domains

with p-values greater than 0.05 confirming the assumption. Cronbach alpha was computed to assess the internal consistency of the TUMKAQ. The cut-off was set at 0.70 as acceptable reliability (Taber, 2018).

Ethical considerations

The study protocol was reviewed and approved by the Human Research Ethics Committee of Universiti Sains Malaysia (USM/JEPeM/19050316) and approval letters were obtained from the Local Councils of Logo and Tarka before data collection. After adequate briefing of the participants about the study and assurance of confidentiality, informed consent was obtained from each participant who agreed to participate in the study.

RESULTS

Description of the Participants

Descriptive statistics were used to analyse the demographic data of the participants as shown in Table 1 below:

Table 1. Descriptive analysis of demographic data (n = 200)

Variables	Mean (SD)	n	(%)
Age	26. 5 (4.8)		
Sex			
Male		188	(94.0)
Female		12	(6.0)
Marital Status			
Single		74	(37.0)
Married		115	(57.5)
Separated		9	(4.5)
Widowed		2	(1.0)
Level of Education			
Nil/primary		8	(4.0)
Secondary		172	(86.0)
Tertiary		20	(10.0)
Occupation			
Farming		105	(52.5)
Construction		37	(18.5)
Fishing/Hunting		8	(4.0)
Transportation		32	(16.0)
Trading		12	(6.0)
White-collar job		4	(2.0)
Others		2	(1.0)
Tramadol Prescription Status			
Prescribed for me		4	(2.0)
Not prescribed for me		196	(98.0)
Duration of Tramadol Use			
Less than one year		27	(13.5)
One year		5	(2.5)
More than one year		168	(84.0)

SD = standard deviation, n = frequency

Content Validity

The result of the content analysis showed that 10 out of 50 items had item-level content validity index of less than 0.83. Based on the cut-off point of 0.83 (Polit et al., 2007), Q1 (0.67), Q4 (0.5), Q5 (0.67), Q7 (0.67), Q12 (0.5), Q18 (0.67), Q21 (0.67), Q22 (0.5), Q31 (0.67) and Q48 (0.5) were deleted (I-CVIs < 0.83). The overall content validity index was 0.86, indicating good content validity for the TUMKAQ. Some of the items were rephrased in line with expert suggestions as shown in Table 2.

Face Validity

The result of the face validity analysis showed that all items had I-FVIs of greater than 0.83 except Q24 that had I-FVI of 0.33 (< 0.83). This means items were clear and understandable by the target group. However, Q24 was not removed based on expert advice that the item was important in the measurement of tramadol knowledge. It was rather, rephrased from "Tramadol misuse does not cause difficulty in emptying of the bowels (constipation)" to "Prolonged use of tramadol does not cause difficulty in passing stools" for better clarity and comprehension. Overall, the TUMKAQ had good face validity index of 0.97 (FVI > 0.83).

Construct Validity

The IRT analysis showed the psychometric properties of the TUMKAQ as shown in Table 3.

Based on the IRT results as presented in Table 3, Q12 in the misuse domain; Q32, Q34 and Q35 in the effects of misuse domain; and Q14 in withdrawal/detoxification domain were deleted for poor performances in both the difficulty and discrimination parameters (outside -3 to +3 range and < 0.25). In the medical use domain, Q7 and Q16 had poor discriminative indices (a < 0.25), and the p-values for all the items in the domain indicated they were not fit in the model ($p < .05$). They were, however, retained for good performances in the difficulty parameter. In the prescription domain, all the items except Q4 had p-values less than .05 indicating they were not fit in the model. These items were also retained for having good difficulty and discrimination indices (within the -3 to +3 range and > 0.25). In the misuse domain, apart from Q12 that was deleted, only Q17 had a poor discriminative index (a < 0.25) with Q5, Q8, Q10 and Q13 having p-values less than .05 indicating misfit in the model. The items were, however, accepted because they had good difficulty indices. In the effects of misuse domain, apart from Q32, Q34

Table 2. Result of the qualitative assessment of items

Item	Suggestion	Action taken
Q16	The item should be correctly written. Increasing the consumption of tramadol to get the desired effect is tolerance and not a cause of tolerance.	The question was rephrased: Increasing the consumption of tramadol to get desired effects is known as tolerance.
Q49	Eating fruits and vegetables helps in detoxifying (removing) tramadol from the body system. Select one	Fruits were removed from the question: Eating vegetables helps in detoxifying (removing) tramadol from the body system.
Q34, Q38, Q40, Q42 Q44	The word 'chronic' should be replaced with a better and friendlier word.	The word 'chronic' was replaced with 'prolonged' in some of the items affected and in others it was replaced with 'long-term'.

Table 3. Result of item response theory (IRT) analysis (n = 200)

Domain	S/N	Item	b	a	χ^2 (df=8)	p-values
Medical Use	Q1	Tramadol was originally produced to boost sexual stamina	0.3372698	0.8205658	150.5090	**< .0001**
	Q7	Tramadol is medically used for relieving tiredness	-2.0373397	-0.2115521	196.3006	**< .0001**
	Q16	Tramadol is meant for pain treatment	3.5212039	-0.2300538	195.4775	**< .0001**
Prescription	Q2	Tramadol is strictly a prescription drug	3.1710875	0.3656307	17.7908	**.0229**
	Q3	Tramadol is good for pregnant women	1.1685897	1.2410745	83.7627	**< .0001**
	Q4	Tramadol should not be used by people younger than 18 years	0.1264903	18.3399667	1.5203	.9924
	Q6	The maximum recommended dose for tramadol is 800 mg per day	1.3708777	1.1952604	57.6510	**< .0001**
	Q15	Tramadol is an over-the-counter drug	2.2620281	0.4234638	40.2409	**< .0001**
Misuse	Q5	Using tramadol for sexual satisfaction is not misuse of the drug	0.3757775	1.58385094	27.0159	**.0007**
	Q8	Dissolving tramadol tablets in energy drinks before taking is non-medical	0.5943807	1.20083421	31.5248	**.0001**
	Q9	Using tramadol to get energy for work constitutes tramadol misuse	1.3196685	2.20039265	8.5999	.3772
	Q10	Using tramadol without doctor's prescription is tramadol misuse	0.2208292	2.61161240	27.5748	**.0006**
	Q11	Increasing the consumption of tramadol to get desired effects is known as tolerance	1.1548817	2.39031969	13.6745	.0907
	Q12	Continuous use of tramadol makes one physically dependent on it	20.9823943	0.09512118	16.2105	**.0395**
	Q13	Taking larger amounts of tramadol over time is a sign of tramadol addiction	-0.0199840	1.0579246	30.8196	**.0002**
	Q17	Peer pressure can influence one into tramadol misuse	-1.5435334	0.14382681	10.1388	.2504
	Q18	Experimentation is one of the factors that influence tramadol misuse	1.7208307	0.26438267	10.2131	.2504
Effects of Misuse	Q19	Itchy skin is one of the effects of prolonged use of tramadol	0.6074271	1.63150974	12.7815	.1196
	Q20	Excessive sweating is not an effect of misusing tramadol	0.5527224	1.60791053	13.3562	.1002
	Q21	Tramadol misuse does not cause psychiatric disorder	0.5346347	2.27490307	15.4608	.0508
	Q22	Tramadol misuse causes convulsion	0.6349961	3.17671897	12.3739	.1353
	Q23	Indigestion could be caused by prolonged use of tramadol	0.2735393	2.21463403	12.0749	.1479
	Q24	Prolonged use of tramadol does not cause difficulty in passing stools	1.0810489	1.26108238	9.2759	.3196
	Q25	Prolonged use of tramadol could cause heart attack	0.5979380	0.82665471	24.3748	**.002**
	Q26	Irregular heart rate is not associated with tramadol misuse	0.9210071	0.83079090	11.6639	.1668

Table 3. Result of item response theory (IRT) analysis (n = 200) *(continued)*

Domain	S/N	Item	b	a	χ^2 (df=8)	p-values
	Q27	Long-term use of tramadol decreases breathing rate	0.8408041	0.51405934	30.6380	**.0002**
	Q28	Erectile dysfunction is not an effect of long-term tramadol use	1.2717371	0.36377542	12.7014	.1225
	Q29	Prolonged use of tramadol by women of reproductive age could cause amenorrhea (absence of menstruation)	0.9470038	0.30539529	13.3240	.1012
	Q30	A new-born baby whose mother was using tramadol during pregnancy could suffer from seizure	1.3964453	0.44861039	16.5485	**.0352**
	Q31	Long-term use of tramadol delays the healing of a wound	1.2556181	0.21118082	7.7164	.4616
	Q32	Tramadol misuse increases chances of contracting viral diseases	5.2470163	0.05769508	4.6151	.7978
	Q33	Prolonged use of tramadol can disrupt social relationship	2.5201954	0.93047012	10.0230	.2634
	Q34	Anxiety is associated with prolonged use of tramadol	-4.4003098	0.06877541	17.5300	**.025**
	Q35	Prolonged use of tramadol does not lure one into stealing	-4.9314309	-0.04890723	9.1893	.3266
	Q36	Tramadol misuse can disintegrate a family	-3.6190233	0.19103041	13.6657	.0909
Withdrawal/ Detoxification	Q14	Body pain is a withdrawal symptom of tramadol	-4.2205771	0.2084812	21.2238	**.0066**
	Q38	Tapering tramadol is good for safe withdrawal	0.4648767	1.7619706	73.3110	**< .0001**
	Q39	Eating vegetables helps in clearing tramadol from the body system	0.2621256	3.2987172	40.9371	**< .0001**
	Q40	Regular physical exercise can help clear tramadol from the body system	0.1781576	1.4107788	58.4245	**< .0001**

b = difficulty, **a** = discrimination, χ^2= chi-square, **p-values** < 0.05 are highlighted in **bold**

and Q35 that were deleted, only Q31 and Q36 had poor discrimination abilities but were retained based on their good performances in the difficulty parameter. All the items in the effects of misuse domain indicated fitness in the model ($p > .05$) except Q25, Q27 and Q30 ($p < .05$). In the withdrawal/detoxification domain, all the items indicated unfitness in the model ($p < .05$) but were all retained because they performed well in both the difficulty and discrimination parameters except Q14 that was deleted. A valid 35-item TUMKAQ was produced after deleting five items. The amount of information tapped by the items in the five domains were 70.3%, 96.3%, 95.9%, 89.9% and 97.6% respectively.

After deleting Q12, Q14, Q32, Q34 and Q35, the modified parallel analysis was applied to check the unidimensionality of the items in the domains. The assumption of unidimensionality was confirmed in the medical use, prescription and withdrawal/detoxification domains ($p = .7525$, .4059 and .396 respectively which were greater

than .05). The assumption of unidimensionality was however violated in the misuse domain (p = .0099 < .05) and the effects of misuse domain (p = .0099 < .05).

Reliability

After deleting Q12, Q14, Q32, Q34 and Q35, Cronbach alpha was computed to assess the internal consistency of the TUMKAQ. The result yielded a reliability coefficient value of 0.78. This value is above the acceptable reliability coefficient value of 0.70 (Taber, 2018) indicating that TUMKAQ has good internal consistency.

DISCUSSION

A 35-item TUMKAQ in a self-report format has been developed to assess tramadol users' knowledge about the drug they use. The analysis has shown that the questionnaire has satisfactory content and psychometric properties as it consists of relevant items with adequate coverage, good difficulty and discrimination indices. However, the chi-square goodness-of-fit results showed that many items (Q1, Q7 and Q16 in the medical use domain; Q2, Q3, Q6 and Q15 in the prescription domain; Q5, Q8, Q10 and Q13 in the misuse domain; Q25, Q27 and Q30 in the effects of misuse domain; and Q37, Q38, Q39 and Q40 in the withdrawal/detoxification domain) were not fit in the IRT models. The misfit was, however, ignored. The decision for retaining the misfit items was taken in accordance with the observation that both the content validity and the psychometric quality of a test as a whole may be affected by removing misfit items, and this may have an effect on the important outcome measures (Crişan, Tendeiro, & Meijer, 2017).

The psychometric properties of TUMKAQ were evaluated and its face validity was determined unlike the KAP questionnaire on tramadol (Tafesh, 2013) and knowledge on drug abuse questionnaire (Geramian et al., 2012). Compared with the Brief Opioid Overdose Knowledge (BOOK) questionnaire (Dunn et al., 2016), TUMKAQ is longer (35 items) and specifically related to tramadol, while BOOK (12 items) is concerned with overdose knowledge on opioids generally without the mention of tramadol.

TUMKAQ has been developed to cover the important knowledge areas about tramadol. Assessing individuals' knowledge about the medical use of tramadol as covered by this questionnaire is vital considering the critical role knowledge of indications for medications play in the correct use of drugs (Bosch-Lenders et al., 2016). The assessment of knowledge on the prescription status of tramadol as covered by TUMKAQ is equally important. This is because, knowing that a particular drug is strictly a prescription drug could help in avoiding self-medication and its attendant consequences (Singh, Trivedi, Elnour, & Patel, 2015). TUMKAQ also covers assessment of knowledge on what constitutes tramadol misuse and the adverse effects. This is based on the belief that knowing the non-medical purposes and methods of drug use as well as its adverse effects could encourage abstinence (Sussman, Miyano, Rohrbach, Dent, & Sun, 2007; Twombly & Holtz, 2008). The questionnaire also assesses the knowledge about the withdrawal process and detoxification of tramadol. This will determine the knowledge status on safe-withdrawal from tramadol use, as abrupt withdrawal without medical detoxification could be catastrophic.

TUMKAQ can help specialists in health promotion, drug education, addiction counselling and even clinical identification of individuals who may be in need of educational interventions. Using this questionnaire for assessing individuals' baseline knowledge about tramadol can help in determining the kind of information they need as well as the method of delivery and the duration. The questionnaire may as well serve as a valid and reliable tool for evaluating the effectiveness of educational interventions in tramadol misuse among those who use the drug and the at-risk groups. The TUMKAQ is primarily intended to be used in communities, rehabilitation centres and in clinics managing patients with tramadol addiction.

CONCLUSION

A 35-item TUMKAQ in a self-report format with adequate content and satisfactory psychometric properties, and good internal consistency has been developed to assess knowledge about tramadol in the areas of medical use, prescription, misuse, effects of misuse and withdrawal/detoxification. It can be used in identifying individuals who may be in need of educational interventions. TUMKAQ can also help in determining the nature and content of educational interventions to correct misinformation about tramadol. The questionnaire can as well be used for the pre-test and post-test evaluation of educational interventions in tramadol abuse.

LIMITATIONS

The ability of this questionnaire to measure change in knowledge after an educational intervention has not been studied. It is, therefore, recommended that its' ability should be studied before subjecting it to a wider application and epidemiological research. The factor structure has also not been verified, thus creating the need for a confirmatory factor analysis (CFA) in future to confirm the construct validity of the TUMKAQ.

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SUBSTANCE USE AMONG PEOPLE WITH MENTAL DISORDERS ATTENDING MENTAL HEALTH CARE CENTRE, WINDHOEK CENTRAL HOSPITAL

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ABSTRACT

Studies from other parts of the world showed high rates of substance use among people with severe mental illness. A cross-sectional survey of 385 outpatients attending the Mental Health Care Centre at the Windhoek Central Hospital was conducted. It aimed to determine the prevalence of substances use and the type of substance abused by patients. About thirty-two percent of participants used alcohol, 21% used nicotine and 9% used illicit drugs. The use of substances was associated with male gender and young age. There were significant associations between alcohol use and psychiatric conditions, but not between psychiatric conditions and the use of nicotine or illicit drugs. Comorbid substance use and mental illness point to the need for a comprehensive approach that identifies, evaluates, and simultaneously treats both disorders.

***Keywords**:* substance use, psychiatric conditions, comorbid condition

INTRODUCTION

There is a reciprocal connection between mental illness and substance abuse. People who abuse alcohol or other drugs tend to develop mental illnesses, and people with certain mental conditions tend to develop substance abuse problems. The most common issue connecting mental illness and substance abuse is the intention of patients to medicate the mental health symptoms that they find disruptive or uncomfortable by using alcohol and drugs. (Mental Health Care, 2012).

Alcohol can be used as a form of coping for severe mental illness. It can temporarily alleviate feelings of anxiety and depression, and people often use it in an attempt to cheer themselves up or sometimes help with sleep (Netdoctor, 2015). Alcohol consumption can make existing mental health problems worse. Evidence shows that alcohol consumption can be a contributing factor to some mental health problems, such as depression (Peltzer,

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2015; Rotheram-Borus, 2015). In addition to the direct pharmacological effects of alcohol on brain function, psychosocial stressors that commonly occur in patients who abuse alcohol, such as legal, financial, or interpersonal problems may indirectly contribute to ongoing alcohol-related symptoms, such as sadness, despair, and anxiety (Anthenelli, 1997; Anthenelli et al., 1993).

The prevalence of smoking in people with a severe mental illness is about three times the general population (Royal College of Physicians, 2013). Williams, Steinberg, Griffiths and Cooperman, (2013) reported that people with mental illness have higher smoking rates, higher levels of nicotine dependence, lower cessation rates and a disproportionate health and financial burden from smoking compared with the general population. People with mental illness who smoke are far more likely to die as a consequence of smoking than from their psychiatric condition **(**Williams, et al., 2013)**.** Smoking is also a predictor of suicide even after controlling for mental illness, and the risk falls after cessation. (Yaworski, Robinson, Sareen & Bolton, 2011).

The prevalence of cannabis use is twice as high among people with mental disorders compared to the general population (Green, Young & Kavanagh, 2005). Studies show that the use of cannabis can trigger psychoses and lead to persistence of psychotic symptoms (Kuepper, et al., 2013; Semple, et al., 2005).

Alcohol and drug misuse and abuse are among the most significant health concerns that face Namibia today. Consumption of alcohol is widespread in Namibia. Data from the World Health Organization Noncommunicable Disease (WHO NCDs) Country Profiles indicate that Namibia has one of the highest average total per capita alcohol consumption of 10.8 L for both men and women in the region (World Health Organization, 2018). Adverse effects of alcohol consumption found in the Namibian context include higher rates of violence, arguments, crime, health and financial problems (Ministry of Health and Social Services, 2013). The 2018 NCDs country profiles indicate that Namibia has a high prevalence of tobacco smoking (20% average for both men and women; 30% for men and 9% for women). There is limited data on the prevalence of substance use among the mentally ill in Namibia. Therefore, the objective of the study was to identify the prevalence of substance use among the patients attending the Mental Health Care Centre (MHCC), explore the association of mental conditions and substance use, and factors associated with the use of substances.

METHOD

Study Design, Setting, and Participants

This cross-sectional study was conducted between May and December 2017 at the outpatient of MHCC, Windhoek Central Hospital. The MHCC is a referral and teaching health facility. The study population was service users with mental illness attending outpatient service of the MHCC. All patients attending the MHCC are registered at the outpatient of that facility. Inclusion criteria were adult patients attending the outpatient of MHCC, aged 18 years and above, and those who could independently provide informed consent to participate in the study.

Material

The Alcohol Use Disorders Identification Test (AUDIT) that was designed by

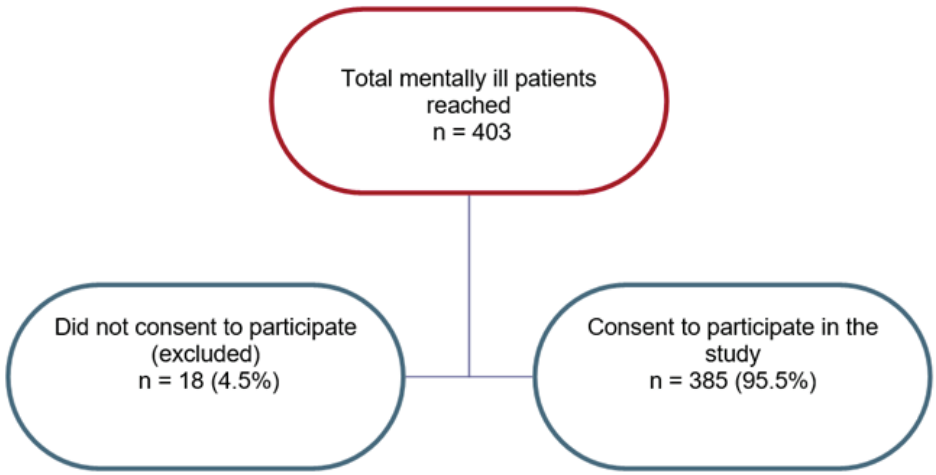

Figure 1. Number of study participants

WHO (World Health Organization, 2001) to screen for hazardous and harmful drinking, was administered to all participants to assess alcohol consumption, drinking behaviours, and alcohol-related problems. The WHO guidelines for the AUDIT (Babor, Higgins-Biddle, Saunders,& Monteiro, 2001) specify four "zones" (shown in Table 1) of scores that indicate increasing levels of alcohol-related risk.

The Fagerstrom Test for Nicotine Dependence (FTND) was used to evaluate the quantity of cigarette consumption, the compulsion to use, and dependence (Heatherton, Kozlowski, Frecker & Fagerstrom, 1991). The dependence scores are *very low* 0-2; *low* 3-4; *moderate* 5; *very high* 8-10. The higher the total Fagerström score, the more intense is the patient's physical dependence on nicotine.

Illicit drugs use was determined during an interview on health behaviours. Patients were asked whether they used cannabis, mandrax, cocaine, heroin, and other illegal drugs during the last three months, and how much they used per week.

Procedure

A systematic random sampling method was used. Every fourth patient was given a number to take part in the study. In cases where the fourth patient was a child or had no capacity to give consent, the subsequent patient was assessed.

Medical officers at MHCC referred patients to participate in the study after the

Table 1. Zones of alcohol risk levels

Score		Zone	Risk level
0-7	Low risk	Zone I	Abstinence/lower risk drinking
8-15	Medium risk	Zone II	Hazardous use
16-19	High risk	Zone III	Harmful use
20- 40		Zone IV	Possible dependence

Adapted from Babor et al., 2001

routine assessment and management. Patients were reviewed for inclusion criteria; those who did not meet the requirements were thanked and excluded from the study. For those who were eligible and willing to participate in the study, explanations about the study were made, and informed consent forms were signed. An explanation was provided to all participants that their participation was entirely voluntary. Participants were advised that there would be no material gain from the study, and they may withdraw from the study at any time in the course of the interview. Participants were further assured that refusal to participate would not in any way affect their health services/benefits to which they are entitled.

Ethics

Approval to carry out the study was obtained from the Ethics and Research Committee from the Ministry of Health and Social Services, Windhoek, Namibia. Authorisation of patients' participation was also sought from the institution's head. Once the study procedures had been explained, all participants provided their written consent to participate. The patients who did not consent to participate were excluded. Moreover, to ensure patient confidentiality, serial numbers were assigned to patients to replace their names.

RESULTS

Data Analysis and Processing

The data were analysed using the IBM SPSS Statistics version 23. The dataset was coded before data entry and then checked for errors and outliers. Descriptive summary statistics in the form of measures of centrality and dispersion, frequency distributions, and charts were used to establish patterns of alcohol and drug use in patients with mental disorders attending MHCC.

Cross tabulations and chi-square tests of association were conducted to establish whether significant associations existed between the following variable pairs at 5% level: Demographic data and psychiatric conditions versus smoking/alcohol/illicit drugs.

Characteristics of the Study Population

Table 2 shows the clinical and demographic characteristics of the participants in association with the use of substances. Of the 385 participants, 52.2% were males, and 47.8% were females. The mean age at enrolment was 37.14 years and a standard deviation of 10.44 years. Forty-eight percent of the participants were middle-aged, 67.8% had secondary education, and 79% were single. About half of the participants were unemployed, and 60% were of a low socio-economic status.

Out of the total participants, 122 (31.7%) used alcohol, 80 (20.8% smoked tobacco, and 35 (9.1%) used illicit drugs. Alcohol use was common among males 42.7%, youth 37.2%, and those with depressive disorders 43.9%. Of those who used alcohol, 75.2% were in zone I, 13.2% were in zone II, 3.4% were in zone III, and 7.5% were in zone IV of alcohol risk levels. About 24% of the participants used alcohol harmfully/hazardously or were possibly dependent on alcohol. There was a significant association between the patient's psychiatric condition and alcohol use (χ^2=20.450, p=0.002), but there was no significant association between the patient's psychiatric condition and risk level of alcohol.

Table 2. Association between demographic and clinic Characteristics of participants and use of substances

		Substance use among participants		
Demographic and clinical Characteristics	**Entire Sample**	***Alcohol***	***Tobacco***	***Illicit drugs***
Sex				
Female	184(47.8%)	36 (19.6%)	18(9.8%)	2 (1.1%)
Male	201(52.2%)	86(42.7%)	62 (30.8%)	33 (16.4%)
P-value		**<0.001**	**<0001**	**<0.001**
Age group in years				
Youth (18-35)	180(46.8%)	67(37.2%)	35(19.4%)	23(12.8%)
Middle age (36-55)	185(48.0%)	53(28.6%)	38 (20.5%)	12(6.5%)
Older people (56 and above)	20(5.2%)	2(10.0%)	7 (35.0%)	0(0.0%)
P-value		= **0.012**	=0.266	**=0.038**
Marital Status				
Single	304(79%)	100 (32.9%)	84(27.6%)	33 (10.5%)
Married	58(15.1%)	16(27.6%)	10 (17.2%)	2 (3.4%)
Separated	13(3.4%)	6 (46.1%)	4(30.8%)	0(0.0%)
Widowed	10(2.6%)	0 (0.0%)	2(20.0%)	0(0.0%)
P-value		=0.094	=0.739	<0.125
Education				
None	7(1.8%)	5(71.4%)	3 (42.8%)	3(42.8%)
Primary	58(15.1%)	15 (25.9%)	12(20.7%)	0(0.0%)
Secondary	261(67.8%)	80 (30.6%)	57 (21.8%)	29 (11.1%)
Tertiary	56(14.5%)	22(39.3%)	11(19.6%)	6(10.7%)
P-value		=0.415	=0.574	=0.047
Occupation				
Student	28(7.3%)	9 (32.1%)	1(3.6%)	2(7.1%)
Self-employed	25(6.5%)	9 (36.0%)	8 (32.0%)	3(12.0%)
Employed	117(30.4%)	42 (35.9%)	17 (14.5%)	9 (7.7%)
Unemployed	198(51.4%)	61(30.8%)	50 (26.5%)	21(10.6%)
Other	16(4.2%)	1(6.2%)	4(25.0%)	0 (0.0%)
P-value		=0.070	=**0.011**	=0.631
Socio-economic status				
Low (Never employed)	230(59.7%)	69 (30.0%)	55 (23.9%)	24 (10.4%)
Medium (other employment)	127(33.0%)	43 (33.8%)	21(16.5%)	9 (7.8%)
High(White collar job)	22(5.7%)	10 (45.4%)	4(18.1%)	2(9.0%)
P-value		<0.641	=0.186	<0.584
Psychiatric conditions				
Schizophrenia Spectrum and Other Psychotic Disorders	210(54.5%)	68 (32.4%)	45 (21.4%)	24 (11.4%)
Bipolar and Related Disorders	68(17.7%)	12 (17.6%)	13(19.1%)	2(2.9%
Depressive Disorder	86(22.3%)	36 (43.9%)	18 (21.9%)	7 (8.5%)
Others	21(5.5%)	4(19.0%)	2(9.5%)	2(9.5%
P-value		=**0.002**	=0.073	=0.237

The percentage distribution of patients according to the FTND was Very low (7.8 %), Low (9.1%); Moderate (1.8%); High (1.3%); Very high (0.8%). There was no significant association between the participants' psychiatric condition and tobacco use (χ^2 = 11536, P-value = 0.073). Among those who used illicit drugs, 30 (85.7%) used cannabis, while 5 (14.3%) used cocaine. The following substance-induced conditions were identified: Alcohol-Induced Psychotic Disorder (6.5%), Alcohol-Induced Depressive Disorder (1.8%), and Cannabis Induced Psychotic Disorder (1.8%).

Factors Associated with Substance Use

The gender of the patient was significantly associated with smoking (χ^2=25.151, p<0.001), alcohol drinking (χ^2=21.190, p<0.001) and use of illicit drugs (χ^2=25.813, p<0.001). Even though there was no significant association between the age of the patient and smoking, there was a significant association between the age of the patient and their alcohol or illicit drug use (χ^2=8.785, p=0.012, χ^2=6.516, p=0.038 respectively). The marital and socio-economic status of the patient did not significantly influence smoking, alcohol or illicit drug use. The level of education of the patient only influenced the use of illicit drugs (χ^2=7.968, p=0.047). There was a significant association between the occupation of the patient and their smoking status (χ^2=13.139, p=0.011). Alcohol use was significantly associated with tobacco use (χ^2 =19.693, p<0.001). The highest percentage of alcohol users was among those who use tobacco. However, there was no significant association between alcohol use and cannabis use (χ^2=4.180, p=0.382).

Regression Analysis of the Effect of Demographics and Type of Psychiatric Condition on Substance Use

Table 3 shows the regression results of the effect of demographics and type of psychiatric condition on alcohol use. Female patients (OR=0.246, 95% CI 0.142-0.424, p<0.001) were less likely to drink alcohol compared to their male counterparts. Younger patients (18-35 years) (OR=3.240, 95% CI 1.104-9.504, p=0.032) were more likely to drink alcohol compared to older people (aged 55 years and above). The level of education, occupation or their marital status did not significantly influence alcohol use.

Regression results of the effect of demographics and type of psychiatric condition on tobacco use are shown in Table 4. Female patients (OR=0.159, 95% CI 0.082-0.308, p<0.001) were less likely to use tobacco compared to their male counterparts. The youth (18-35) (OR=0.217, 95% CI 0.076-0.618, p=0.004) and middle-aged patients (OR=0.336, 95% CI 0.129-0.879, p=.0.026) were less likely to use tobacco compared to older people (aged 55 and above). The type of psychiatric condition, socio-economic status, level of education, occupation or the marital status of the patient, did not significantly affect tobacco use.

Regression results of the effect of demographics and type of psychiatric condition on illicit drug showed that female patients (OR=0.036, 95% CI 0.008-0.168, p<0.001) were less likely to use illicit drugs compared to their male counterparts. Illicit drug use was not significantly affected by socio-economic status, age group, psychiatric condition, level of education, marital status or occupation of the patient.

Table 3. Logistic regression of the effect of demographics and type of psychiatric condition on alcohol use

Risk factors	p-value	Odds Ratio (OR)	95% Confidence Interval for Odds Ratio	
			Lower	Upper
Sex				
Female	**<0.001**	0.246	0.142	0.424
Male (Ref)		1.000		
Socio-economic Status				
Low (Never Employed)	0.867	0.873	0.179	4.256
Medium (Other Employment	**0.015**	0.285	0.103	0.786
High (White Collar Job) (Ref)		1.000		
Age Group				
Youth (18-35)	**0.032**	3.240	1.104	9.504
Middle Aged (36-55)	0.099	2.329	0.853	6.354
Older People (56 and Above) (Ref)		1.000		
Education				
Primary or No Formal Education	0.665	0.859	0.432	1.707
Secondary and Tertiary (Ref)		1.000		
Type of psychiatric condition				
Schizophrenia spectrum and other psychotic disorders	0.337	0.633	0.249	1.611
Bipolar and related disorders	**0.040**	0.330	0.115	0.950
Depressive Disorders	0.272	1.701	0.659	4.391
Others (Ref)		1.000		
Occupation				
Unemployed, Students and Others	0.142	0.358	0.091	1.412
Employed (Ref)		1.000		
Marital Status				
Single, Separated or Widowed	0.319	1.425	0.710	2.859
Married (Ref)		1.000		

DISCUSSION

The main aim of the study was to identify the prevalence of substance use among the service users at MHCC of the Windhoek Central Hospital. The findings show that 31.7% of the participants use alcohol, 21% use nicotine and 9% use illicit drugs. Substance use was higher among people with mental illness compared to the general population where 27.7% of Namibians aged 15 years and above reported to consume alcohol (Ministry of Health and Social Services, 2013), and 20.0% smoked tobacco, (World Health Organization, 2018). The use of illicit drugs was about three times high compared to the general population, where 2.6% used cannabis and 0.4% used mandrax (Government of the Republic of Namibia 2002).

The results of this study concur with findings of studies from other parts of Africa (Okpataku, et al., 2014, Saban, et al., 2010) that revealed use of substances, particularly alcohol and cannabis,

Table 4. Logistic regression of the effect of demographics and type of psychiatric condition on tobacco use

			95% Confidence Interval for Odds Ratio	
Risk factors	**p-value**	**Odds Ratio**	**Lower**	**Upper**
Sex				
Female	**<0.001**	0.159	0.082	0.308
Male (Ref)		1.000		
Socio-economic Status				
Low (Never Employed)	0.100	4.637	0.746	28.831
Medium (Other Employment	0.999	0.999	0.285	3.496
High (White Collar Job) (Ref)		1.000		
Age Group				
Youth (18-35)	**0.004**	0.217	0.076	0.618
Middle Aged (36-55)	**0.026**	0.336	0.129	0.879
Older People (56 and Above) (Ref)		1.000		
Education				
Primary or No Formal Education	0.071	0.470	0.207	1.068
Secondary and Tertiary (Ref)		1.000		
Type of psychiatric condition				
Schizophrenia spectrum and other psychotic disorders	0.365	0.593	0.192	1.836
Bipolar and related disorders	0.983	1.013	0.306	3.350
Depressive Disorders	0.701	1.250	0.400	3.905
Others (Ref)		1.000		
Occupation				
Unemployed, Students and Others	0.409	0.535	0.121	2.366
Employed (Ref)		1.000		
Marital Status				
Single, Separated or Widowed	0.346	1.481	0.654	3.355
Married (Ref)		1.000		

among persons with severe mental illness to be higher than the general population. Studies attribute the high prevalence of substance use among people with mental illness to self-medication (Mental Health Care, 2012). At times when a person is suffering from a mental health disorder, they are unaware that the condition exists. They may experience feelings of anger, hopelessness, depression, or impulsiveness. Because of this, they find themselves at times turning to unhealthy behaviours such as the use of substances in an attempt to numb their psychological suffering.

Although alcohol and drugs may temporarily numb the symptoms that the user is experiencing, self-medicating can lead to severe problems. This can cause those suffering to consume large quantities of alcohol or drugs and may eventually develop an addiction. About 17% of the participants consumed alcohol either hazardously or harmfully, and 7.5% were dependent on alcohol.

The study by Dickerson et al., 2013, found 64% of people with schizophrenia to be smokers. In this study, 22% of participants with depression and 21.4% of participants with schizophrenia smoked. Although the findings show that most of those who use nicotine were in the very low or low level of usage, about 4% were in the moderate to high level of usage. Smoking has a powerful negative impact on population health. In Namibia, smoking is a known risk factor for cardiovascular disease; it causes lung cancer and other forms of cancer and contributes to the severity of pneumonia, emphysema, and chronic bronchitis (Ministry of Health and Social Services, 2013). It may also have an impact on individuals who are exposed to second-hand smoke.

Drugs and alcohol often do little to address the underlying mental health symptoms and ultimately create an entirely new batch of problems for the patient while also increasing the severity of the initial mental health symptoms. A study by Rush et al., 2008 found about 20% of people with a mental illness to have a co-occurring substance use problem, and 15% of people with a substance use problem to have a co-occurring mental illness. Among the participants in this study, 11.7% had a diagnosis of a substance-induced disorder. This supports the fact that substance use is a risk factor to develop mental illness. The co-occurrence of mental illness and substance use is a management problem of both disorders. It had been found to be associated with poor medication adherence, increased psychiatric admission, and poor treatment outcome (Hunt, Bergen, Bashir. 2002).

Sex is one of the factors that place individuals at risk of substance use. The results obtained concur with findings by Pearson, Janz and Ali (2013) that males were more likely than females to use substances. In this study, 42.7% of men use alcohol, compared to 19.6% of females, and 16.4% of males used illicit drugs, while only 1% of females used illicit drugs. These differences could be due to the conventional norms of male socialisation concerning alcohol use and smoking. The Namibian demographic and health survey also showed that males were twice more likely to use alcohol compared to females: 50% versus 25% (Ministry of Health and Social Services, 2013).

Although socio-economic status (SES) is the other factor reported influencing a person's substance use (Charitonidi, et al., 2016; Patrick et al., 2012), this study did not find the influence of socio-economic status on substance use. Future studies are needed to fully explore the underlying mechanisms of the relationship between SES and substance use.

The study has its limitations that should be considered in interpreting the findings. First, study participants were included based on their capacities, and willingness to participate, which could contribute to a potential reporting bias. Secondly, the participants were recruited at one health institution only, which could also represent another potential bias. Although the results are not broadly generalisable, the study results do have relevance and give insight on the use of substances among the mentally ill, attending the Windhoek Central Hospital.

In conclusion, the use of alcohol, cannabis and tobacco was common among patients with mental illness. This points to the need for an integrated approach to the identification, evaluation, and simultaneous treatment of both psychiatric and substance use disorders.

COMPETING INTERESTS

The author declares no competing interests.

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NYAOPE ADDICTION: THE DESPAIR OF A LOST GENERATION

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ABSTRACT

Nyaope, a cocktail drug, with heroin as its main ingredient, is widely used by many young and poor people in predominantly Black townships in South Africa. This qualitative study aimed to explore and describe the effect of nyaope on the lives of the users by means of focus group discussions and in depth interviews. All ethical principles were adhered to, and data collection continued until data saturation was reached, which was after 68 nyaope users were interviewed. The findings are that the addictive nature of nyaope interrupts the physical, mental and social health of the lives of young South Africans.

Keywords: nyaope addiction, South Africa

INTRODUCTION

Substance abuse is a global public health problem, with a negative impact on the health of the user and the immediate environment of the user (Fabricius, Langa & Wilson, 2007). As of 2000 the novel psychoactive substance "nyaope", which comprise of 10-70% third grade heroin to which a variety of substances (Khine, Mokwena, Huma & Fernandes, 2015) including antiretroviral drugs (Grelotti, Closson, Smit, Mabude, Matthews, Safren, Bangsberg & Mimiaga, 2013; MCeachran, 2013) are added, has been increasingly used in South Africa. The ingredients which may differ from one area to another, is determined by the availability of raw material and the demand pattern from the regular users (Khine & Mokwena, 2016). Although initially this mixture was rolled with cannabis, heated and the fumes inhaled, there is an increasing trend of dissolving the mixture in water and injecting it directly into the veins of the user (Baloyi, 2018). Nyaope is also one of the cheapest illicit drugs available in South Africa (available for ±$3), and is easily accessible to many young people who are soon addicted finding themselves

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wishing to, but unable to quit as it is claimed that a person can get hooked after using nyaope a few times (Mokwena & Huma, 2014; Groenewald, 2018). It is also said that drug users are three times more likely to drop out of school than non-users (DuPont, Caldeira, DuPont, Vincent, Shea & Arria, 2013) which is a problem for the typical nyaope user which is identified as a young adult.

The severe mental/psychological effect of nyaope on the user and the physical pains they experience after withdrawal, affects their functionality while their display of poor personal hygiene and tendency to resort to criminal activities like theft, to feed their habit (Naik & Serumula, 2015) is compromising the social acceptability of the users (Mokwena, 2016).

Despite the fact that nyaope was classified as an illegal substance in South Africa with the amendment of the Drugs and Trafficking Act of 2014 (Government Gazette, 2014) nyaope has become a national crisis (Mokwena, 2015; Masombuka & Qalinge, 2020) affecting mainly young, poor unemployed people in predominantly Black townships in South Africa. Nyaope also brings additional challenges to already inadequate mental health services because of poor understanding of nyaope as a drug, the large numbers of addicts and not enough access to rehabilitation services (Mokwena, 2015).

The aim of this qualitative study was to explore and describe the effect of nyaope on the lives of the users.

METHOD

Research setting and population

Male and female nyaope users (18 years and older) admitted to drug rehabilitation centres registered and funded by the Gauteng Department of Social Development located in Tembisa, Ebony Park, Soshanguve, Hammanskraal and Cullinan and nyaope users from the streets of the urban areas of Ga-Rankuwa, Soshanguve and Hammanskraal formed the study population.

Recruitment and sampling

A sample of convenience was done at the rehabilitation centers while for the man in the street the researchers made use of purposive snowball sampling identifying users based on their distinct characteristics (un-kept appearance). Through convenient sampling, based on the availability of participants and their willingness to participate in the study, by signing a consent form, 68 individuals were recruited. Only those users who were mentally able to understand the communications that took place regarding the purpose and procedure of the study were included.

Study design and data collection

A linguistically and culturally appropriate semi-structured interview guide, available in English and the local language Setswana, was used to collect data in this qualitative study that describe how nyaope use has affected the lives of the users. For data collection in the rehabilitation centres arrangements were made with the Chief Executive Officers and management of the different centres to collect data on a pre-determined day. On the arranged day the eligible clients were asked to assemble in a room allocated by the rehabilitation centre where the purpose of the study was explained and after signing informed consent data collection took place. For the nyaope users

recruited from the street a pharmacist in Soshanguve, who was working closely with nyaope users, made a room available in the pharmacy where data collection took place. Local trained research assistants that were familiar with the targeted population of nyaope users conducted the interviews. A total of seven focus group discussions (FGDs) with an average of six participants per group and 21 in depth interviews (IDIs) were conducted. A total of 68 individuals participated in the FDGs and IDIs. The choice of FGDs or IDIs was dependent on the numbers available at any one time. Data debriefing sessions between the researchers and research assistants took place where the audiotapes and /or transcripts were reviewed, the experiences and observations of the data collectors were discussed ensuring that the data collected was relevant and suggestions were offered for future data collection.

Trustworthiness

Trustworthiness in this study was dependent on credibility, dependability, conformability and transferability.

Credibility was accomplished by the verbatim recording of what the participants said, which accurately represented what the participants think, feel and do. This was further achieved by making use of relevant probes, obtaining detailed field notes, and careful observation and documenting of the non-verbal communication from the participants. Credibility was also enhanced by the fact that the research assistants were familiar with the culture of the rehabilitation centres as they have done data collection at these institutions for previous studies. As neither the researchers nor the research assistants had any affiliation with any rehabilitation centres participants were able to share their experiences without them fearing the loss of credibility in the eyes of managers or employees of the centres.

Dependability was accomplished by making use of a good quality digital audio recorder and by transcribing the interviews verbatim. Transcripts were reviewed for errors by the research assistants who conducted the interviews before translation into English. The typed Microsoft Word documents were transported into Nvivo (QSR International, Cambridge, MA) version 10 for analysis. The transcripts were read multiple times to initiate the development and defining of codes. In order to analyse the textual data qualitative content analysis was applied. The themes and codes that emerged from the conversations were defined, described and modified continuously in order to ensure consistency in the coding process applied to all the transcripts.

Confirmability in order to reduce the effect of researcher bias data methodological triangulation was applied where data was collected through FGDs and IDIs. Data triangulation was achieved by collecting data from different study sites and different townships, by interviewing both males and females and collecting data from participants in rehabilitation centres as well as those recruited from the street.

Transferability was achieved by documenting and providing sufficient detail of all the procedures used covering the recruitment of participants, how the FGDs/ IDIs were conducted, the decisions and conclusions that were made during data analysis. On average, the discussions for

both IDI and FGD lasted between 30 to 45 minutes.

Ethical considerations

Institutional ethical clearance was obtained from the Medunsa Research and Ethical Committee (MREC/H/127/2014: PG), the Gauteng Department of Social Development and South African National Council on Alcoholism and Drug Dependence (SANCA) management. All potential respondents were informed that their participation was voluntary without any coercion, they were given the opportunity to refuse to participate in the study in order to ensure that data was only collected from those who were genuinely willing to participate, and who were prepared to offer data freely. It was emphasized that participants had the right to withdraw from the study at any point without any explanation and that non-participation did not affect their eligibility to receive rehabilitation services. The FGDs and IDs made use of fictitious names or numbers in order to link the demographic data with the data obtained from the participants.

FINDINGS

A total of 61 (90%) males and 7 (10%) females participated in the FGDs and IDIs discussions. Sixty-six percent were less than 26 years of age, 83% had a high school education, and 74% were unemployed. For more information on the socio-demographic information of the participants see Table 1.

From the FGD and IDIs six themes were identified related to nyaope addiction and how nyaope has effected and influenced the lives of the users. The themes were: how they started using nyaope; how nyaope use impacted on their daily lives; the continued use of nyaope, the physical effects of nyaope on the body, the social impact and behavioral problems.

Table 1. Socio-demographic characteristics of participants (n=68)

Characteristic	Frequency	Percentage
Gender		
Male	61	90%
Female	7	10%
Age		
18-21 years	18	26%
22-25 years	27	40%
26-29 years	17	25%
30-34 years	6	9%
Educational status		
No schooling	2	4%
Finished primary school	9	13%
Finished high school	52	76%
Got tertiary education	5	7%
Employment status		
Employed	18	26%
Not employed	50	74%

A summary of the six main themes and 19 subthemes that emerged from the data is presented in Table 2.

1. GETTING STARTED ON NYAOPE

The study explored the use of nyaope and one of the key objectives was to understand what influence young people in the communities were nyaope is widely used to start using nyaope. As such, the participants were asked to describe how they started smoking nyaope. Four sub themes emerged that describe how the participants started using nyaope namely the ease of access to nyaope, the monetary cost of nyaope, the risk taking nature of adolescents, and the influence of peer pressure and friends.

1.1 The ease of access to nyaope: The narratives revealed that the ease of access to nyaope is enabled by the many dealers and lack of law enforcement which increases the prolific use in affected communities. Their views were expressed as follows:

> "*Right now nyaope is everywhere; there is not a place where it is not available*" [Male, 34]

> "*Anyone like a grown man to an old woman who have families, even young guys even grandmothers, friends and the police*" [Male, 23] (will be able to supply a user).

1.2 The monetary cost of nyaope: The extent to which the cheap price of nyaope

Table 2. Themes and sub-themes identified

THEME	SUB THEME
1.Getting started on nyaope	1.1 Ease of access
	1.2 Monetary cost
	1.3 Risk taking nature of teenagers
	1.4 Peer influence and friendships
2.The effect of nyaope on their daily activities	2.1 Life priorities
	2.2 Functional and recreational drug use
	2.3 Criminal activities
	2.4 Family dynamics
3.Continued use of nyaope	3.1 Very addictive
	3.2 To relieve stress
	3.3 To function optimally in society
	3.4 Reality of everyday life
4. Physical effects of nyaope	4.1 Dopamine effect
	4.2 Side effects
	4.3 Risk of communicable diseases
5. Social impact	5.1 Dropping out of school
	5.2 Finding a job
6. Behavioral problems	6.1 Internalizing problems
	6.2 Externalizing problems

contributed to ease of access was identified as the main contributor to the wide spread use of nyaope. In the case where a user does not have enough to buy a joint, they even have a system of pooling their money together, and this was expressed as follows:

> "*When you have R30 you can go and buy if you have R15 you can compare with someone and go and buy, that's how we live and get by*" [Male, 27].

1.3 Risk taking nature of adolescents: Their narratives revealed the 'normal' risk taking nature that many adolescents engage in, where adolescence is a period of curiosity, experimenting, and seeking for personal identity while not thinking about the consequences of experimenting with nyaope was expressed as follows:

> *"My first experience with nyaope was because we use to like to experiment with things and to know how things work. I wanted to taste it and I started enjoying it and that's how I got hooked to it"* [Male, 32].

> *"I would say that I was curious and from my curiosity I found the source of euphoria in the high of nyaope that they introduced, only to find that the consequences are horrific. It ends up manipulating you to do things that you would not do in normal circumstances"* [Male, 29].

> "*Forever wanting to try something it's what got me into this trouble*" [Female, 30].

1.4 Peer influence and friendships: This theme refers to the strong influence and extent of peer pressure and friends in the participant's first and subsequent use of nyaope as indicated by the following quotations:

> "*I was under pressure at home, school and my girlfriend's place so my friends told me that they can give me something that can help relax and clear my mind so that I can think*" [Male, 20].

> "*I found new friends who were smoking nyaope and so I started smoking with them and became addicted*" [Male, 20].

> "*My friends told me that dagga is not strong, I should try something different that was when they offered me nyaope, since that day I became addicted to nyaope*" [Male, 27].

> "*I started smoking dagga with friends and as time went on nyaope came into fashion and my friends started to smoke it, for me to smoke it was because of I saw my friends smoking it*" [Male, 27]

2. THE EFFECT OF NYAOPE ON THEIR DAILY ACTIVITIES

Participants were asked to describe what effect nyaope had on their daily activities and four sub themes emerged. The sub themes are describing how nyaope has become a priority in their life, a way to be kept busy during the day and the fact that nyaope is needed in order to perform their daily functions helping them to overcome their social inhibitions. This daily need is so intense that they are even resorting to criminal activities in

order to obtain nyaope and that is also affecting their family dynamics.

2.1 Life priorities: The data revealed that the participant's main focus in life is to get the next fix where the craving for nyaope defined their everyday activities.

> *"Nyaope becomes a priority, everything else is no longer a necessity, and it shifts your mind so that you make it a priority. Even hygiene becomes something that is not necessary anymore. It kind of brainwashes you into making it a number one priority in your life"* [Male, 27].

> "*When you are using this stuff the only thing that you need to worry about is where you going get your next fix from. That's the only thing that is in your mind*" [Female, 31].

2.2 Functional and recreational drug use: Narratives indicate that nyaope is used as a means to enable the user to perform ordinary daily tasks and helping them to overcoming their social inhibitions as evident with these quotations:

> "*The first thing when you wake up you need to smoke so that you can face the day, without smoking there is nothing that you can do*" [Male, 25].

> "*Nyaope is like your breakfast, after you have smoked it that is when you can face the day. Once you are addicted there is nothing you can do or achieve without having nyaope*" [Male, 25].

> "*After sleeping with the girl I felt like a boss because I had satisfied her very much so every time I was with this girl I felt that I have to use this nyaope, so that is how I got addicted*" [Male, 25].

2.3 Criminal activities: The nyaope user's lowered inhibitions can encourage them to commit crimes with the narratives showing to what lengths and criminal activities a user will go in order to get the money to buy nyaope.

> "*If you do not have finance you have to go begging and stealing even from your own folks. The main thing that makes it difficult to smoke nyaope is financial issues"* [Male, 20].

> *"You can even kill your own parents if you know that there is a safe at home or that your father keeps his gun in the house. It is so easy for you to kill him just that you can get money for nyaope"* [Male, 21].

2.4 Family dynamics: This theme describes the impact of nyaope on family relationships where it is creating conflicts between the parents, the family and the nyaope addict. Due to the lies they are telling and the fact that some are even stealing from home they become unreliable and untrustworthy. Families are reacting by hiding things that are valuable under lock and key with some parents even taking drastic measures like turning their backs on their own children. The loss in trust is a real regrettable situation for the user but they claim that they have no control over:

> "*I steal from them when I'm there at their house. I steal from them very badly. I lie through my back teeth. Like I lie so badly even I actually believe myself a lot of the time*" [Female, 31].

"*It also causes conflicts within the family because you start lying and you start stealing from people that are close to you and it creates a lot of trouble not only with the family but also within yourself because you become an untrusted individual. They have to start hiding things from you and locking their bedroom doors and things that are valuable*" [Male, 29].

"*Right now my mother does not trust me with anything. She can't even trust me with money anymore because I will take that money and will not be seen for up to five days. When I come back my mother will cry and tell me that what I am doing is not right. I will keep telling her that was the last time I did that. I would end up doing it again because she would give me money but I would spend it on nyaope. It is just so difficult because it is not that I like what I am doing or that I like taking my mother's money. It is just so difficult to stop smoking this thing*" [Male, 27].

"*When my family found out that I was smoking nyaope, my father knocked me down with a car. My girlfriend has left; my child is also gone*" [Male, 27]

You are not able to stay with the people you use to stay with, people turn their backs on you". [Male, 25]

However, the typical user also regrets about how the use of nyaope has impacted on their life by destroying their family relationships.

"*I am tired of the corrupt life that we live, fighting with my family all the time and every time you are in the community they call you with names. You don't communicate with people well, your parents and the people who support you always blame you if something goes wrong*" [Female, 26].

3. CONTINUED USE OF NYAOPE

The participants were asked about their continued use of nyaope, and their narratives indicated that for many of them, it is difficult to stop using nyaope. They expressed that nyaope was very addictive, that it has become a way for them to relieve stress, to function optimally in society, and to be able to cope with the problems of everyday life.

3.1 Nyaope is very addictive: The participants reported that smoking nyaope was very addictive and that the effects that they were experiencing with nyaope was different from the other drugs that they have used in the past.

"*Nyaope is very addictive, its addictiveness is abnormal*" [Male, 22] with a "*high that is higher*" than any drug that the user has ever smoked [Male, 23].

"*It's exceptionally interesting to me how something so small can be so controlling, it just makes you take every sense that you had have out of you and it just makes you numb*" [Female, 31].

3.2 A way to relieve stress: The data revealed the role that nyaope is playing in the emotional, psychological and social-wellbeing of a nyaope user. The following

quotations reflect the way nyaope is used by the participants to relieve stress:

"*Every time I had smoked I would feel like everything is simpler, I would feel like I no longer had problems and all sorts of troubles, I would feel like I was just living with no problems*" [Male, 26].

"*It has this stress free element that it releases out in you that you do not have to worry about the world or any other situation happening around you. It creates this false hope of freedom that is non-existent that it is for the short time. When the high depletes and you come back to reality you realise that I can't live in a world like this, which is when you go back"* [Male, 27].

3.3 ***To function optimally in society*****:** Nyaope give the user the confidence to face other people as reflected below.

"*When I smoke I have energy and confidence. I can talk to people at home and the way we talk I can confront them and tell them anything I want to say*" [Female, 26].

3.4 To escape the reality of everyday life: The smoking of nyaope also provided some form of escape from their everyday boring life without a future. The data also revealed that the participants use nyaope as a means to escape the reality of the situation that they are in.

"*If you just sitting and doing nothing it is hard to stop smoking. We get bored here in the township*" [Male, 25].

"*I had no money to continue college so I would get bored by sitting around the township that was when I started smoking nyaope so that I can be like the other guys"* [Male, 32].

"*I thought maybe if I smoke nyaope my life will be better. It makes me forget my problems, all the–time*" [Female, 26].

"I want to escape the reality of reality. I don't want to be in reality. I'm afraid of responsibility. I'm terrified of reality as I've just said I'm scared of the world I've never lived in it before" [Female, 31].

4. EFFECTS OF NYAOPE

The data revealed that when smoking nyaope, users experienced both positive and negative effects. Besides the experience of being high, nyaope also had an effect on their physical appearance and is evidently contributing to the spread of communicable diseases.

4.1 Euphoric effects: The participants claimed that what they experience after smoking nyaope, they haven't experienced with any other drugs that they have used before. The use of dagga and heroin (both contents of nyaope), were causing nyaope users to experience dopamine-like euphoric effects as explained:

"I enjoyed being high then nyaope came along and I started smoking it, so when I tried it I realised that it makes me very high more than any other drug that I have smoked. You

see with this other drugs I will remain high for about fifteen minutes but with nyaope it makes you high for about two to four hours, that's how I got hooked up until this day because I enjoyed being high" [Male, 23].

"*I will never forget that first feeling and that's how I was hooked*" [Male, 22].

"*If you taste nyaope once you will always continue smoking. Nyaope is very nice*" [Female, 24].

"*Nyaope makes me very high compared to dagga because whenever I smoked dagga I would feel a zing zing …… sound in my head and after it will make me eat the whole loaf of bread alone but nyaope hmmmm (sigh) it makes me a cool calm guy. I feel like I am in own world or I am in planet Mars when I smoked nyaope I feel great*" [Male, 26].

4.2 ***Side effects:*** The devastating and debilitating side effects and physical changes nyaope users are experiencing when trying to stop is forcing them to smoke again

"Unfortunately we didn't know the side effects it causes" [Male, 22].

"This thing affects the brain, self-esteem, manhood, trust, behaviour; this thing is bad it destroys everything. The downs become too much, you crave it too much and that's how you go in deeper into smoking it" [Male, 23].

Nyaope users are also experiencing visible physical side effects

"Some of the guy's hands turn grey and some of them they turn black, their mouths turn black" [Male, 19] and "*You end up bleeding with your mouth because nyaope has damaged your stomach inside*" [Male, 22].

4.3 Risk of communicable diseases: Participants have mentioned that being a nyaope user is contributing to the spread of tuberculosis

"*Sometimes it causes diseases for some of us. It's because we share the drug, one person will smoke and pass to another and as this happens every smoker leaves a bit of their saliva and some of us are sick. That is how diseases spread amongst us, we all end up suffering from the same disease. Right now there are about eight to ten of our friends who have died because of the same disease*" [Male, 24].

5. SOCIAL IMPACT

As drug abuse occurs more frequently amongst young people the impact that nyaope had on the participant's academic development and working prospects were identified.

***5.1 Dropping out of school*:** The participants narrated the impact of nyaope on their schooling and academic performance. The participants reported that they dropped out of school because they were constantly thinking about getting nyaope, which made it difficult for them to concentrate at school. While some reported that they were expelled from school because of their use

of nyaope or quit school due to their fear of prosecution after committing a criminal act.

"*Nyaope does not go together with school. When you are at school your mind will not be concentrating on what you being taught, all you thinking about is how you are going to get nyaope"* [Male, 26].

"*I didn't drop (from) school because I wanted to, but I ended up being expelled at school because I was using the drugs and they said I will end up condemning other young children in lower grades*" [Male, 21].

"*I was in grade eight; I was at school when I heard that the police are looking for me and my friend, I ran out of school, so when the police came to school to look for me they never found me and that was the last day I went to school*" [Male, 24].

"*Leaving school was one of my biggest mistakes*" [Female, 31].

5.2 Finding a job: Though caught up in a circle where unemployment is contributing to drug use and drug abuse is increasing their chances of losing their jobs, the participants were of the view that if they were able to find employment they would be able to stop using nyaope.

"When you have a job you will be focusing on the job and you will not have time to focus on drugs. If you have nothing to do you get bored and you just find something to keep you busy like smoking to keep your mind working" [Male, 32].

"I prefer to get a job and work full time, live with my parents again and things to be normal they way they were before. If I can get a job I can stop smoking nyaope completely" [Male, 22].

6. BEHAVIOR PROBLEMS

The data revealed that the participants suffer from behavioural problems that can be divided into internalizing and externalizing problems.

***6.1 Internalizing problems*:** Internal problems like depression, social withdrawal and anxiety were described were nyaope users were keeping their problems to themselves.

"*There are thirteen of us in here and I know that each and every one of us has thought about committing suicide*" [Male, 33]

"*There are times when I just go to my room and cry, wishing that I never knew the taste of this nyaope. I will ask myself why I ever got to know the taste of this thing"* [Male, 27].

"*Life becomes difficult because when you look around the place you grew in and spent the rest of your life at is no more nice. You even think of killing yourself*" [Male, 22].

***6.2 Externalizing problems*:** Nyaope users with externalizing behaviors were directing their feelings outward to other people instead of being able to express their negative emotions or responses to life pressures in a healthy productive way. Externalizing problems

such as impatience and aggression were identified.

> "*Eish! I used to be an understanding person but now I am an impatient person*" [Male, 34].

> "*You just wake up angry at everyone at home just because you need money to buy nyaope. It also happens that you can fight with your parents because of money*" [Male, 27].

DISCUSSION

This study explored and described how nyaope has affected the lives of the nyaope users. Due to the fact that nyaope is relatively cheap, freely and widely available in some communities, it is easily accessible to young people. Results from this study indicate that the majority (66%) of participants were between 18 and 25 years of age. However, the cut-off age of 18 years does not present the full picture as anecdotal evidence suggests nyaope users to include younger children, but due to the ethics of conducting this study, users who could not provide informed consent were not included.

In this study 90% of nyaope users who participated in the in the FGDs and IDs discussions were males. The general belief is that for males the funding and opportunity to utilise or abuse substances is better, that parents tend to be stricter with female than with male children, and that it is more socially acceptable for male youths to smoke and consume alcohol (Ramlakan, 2010). Although the commonly held view is that substance and drug abuse is predominantly a male issue, the results of this study is in agreement with the report of the Department of Community Safety Policy and Research which also reported that a minority of the respondents who were using nyaope were females (Gauteng Province Community Safety [GPCS], 2014).

Knowing that adolescence is a period of curiosity, experimenting and seeking of personal identity drug dealers are exploiting the situation. During this period of adolescence, the youth are vulnerable and more susceptible to drug abuse as some teenagers seek the thrills and adrenaline rushes by achieving that "high" feeling from substance use under the influence of peer pressure. The influence of peer pressure is well documented as friends and acquaintances play a big role in behavior during adolescence with many of the participants in this study admitting that they were influenced by their friends to start using nyaope.

As the participants indicated *"nyaope does not go together with school".* Drug users are often absent from school and as drug use impairs the memory of the user it further leads to poor school achievement, which in turn affect the motivation of the learners resulting in them dropping out of school. It is reported that 47% of school children quit school at Grade 10 (Rademeyer, 2014) with substance abuse one of the causes of school dropout (Mnguni, 2014).

Contributing to the South African nyaope problem is the fact that the young people are finding themselves caught up in a vicious circle of poverty, a lack of education and unemployment. As the results indicated nearly three quarters (74%) of the participants in this study were unemployed. This is the start of a vicious circle where unemployment is contributing to drug use while drug abuse is increasing

the chances of the user losing his/her job (Mokwena & Morojele, 2014).

While drug abuse in general does have a criminal element, nyaope in particular has an increased element of criminality because of the increase in petty crime like stealing, as it is a direct way of providing money for more nyaope. When combining the unemployment with a crime rate where about 60% of all crimes are caused by drug users, with nyaope users forming a significant portion (GPCS, 2014; MCeachran, 2013), the devastation that is caused by nyaope is prolonging and deepening poverty in South Africa increasing the generations of unemployed youth without a future that turn out to be criminals and addicts.

Although rehabilitation is possible where it takes between 12 and 15 months for addicts to get rehabilitated (Makhubu, 2014) it requires a multi-discipline professional approach with the support of a medical doctor, psychologist, social worker and drug counsellor all working together to assist the users with the rehabilitation process. Heroin addiction treatment is also very expensive due to the high cost of medication needed for the withdrawal symptoms (GPCS, 2014) and due to the socioeconomic situation of most users they are just not in a position to afford rehabilitation services. As South Africa is also dealing with an inadequate mental health service provision (Mokwena, 2015) there is also no relief for the problems of the nyaope user such as depression, social withdrawal, anxiety and thoughts of suicide all indications of the mental/psychological effect of nyaope on the user.

As the incidence and prevalence of substance use among young people is increasing, Green (2007) stated that from 1992 - 1995 the use of drugs among teenagers increased by 600% and that this figure was on the increase and was standing at 1100% in 2007. It is also reported that 1 in 2 children in the average South African home is addicted to drugs or alcohol, or run the risk of becoming addicted (Pienaar, 2011). This is a concerning trend and raises the need for comprehensive intervention programmes for those already addicted. But most drug rehabilitation centres have a success rate of less than 3% (Green, 2007), and drop-out rates of 40% specifically for nyaope have been reported.

The plight of addicts is expressed with words such as: “We need help! We are human and we want to live normal lives” (Mathebula, 2015) and “Consider our plight” as reported by Mokwena (2015). The problem is so big in that nyaope addicts in Ekangala east of Pretoria did not wait for the government for an intervention, but started their own initiative by turning a local community hall into a rehabilitation centre in their plight to attract the attention of the provincial government (Stuurman, 2014). However, the extent to which this approach is successful is not known.

CONCLUSION

The cock-tail drug nyaope, which is unique to South Africa, is highly addictive and is causing irreparable harm to the individual physically, mentally and socially. Based on the outcry of one of the participants saying “*We are waiting for Jesus to come and save us basically we are the lost generation”* [Male, 20] urgent governmental and societal intervention is needed as nyaope is leading to the destruction

of the lives of young South Africans and destroying the future workforce of the country.

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PATTERN AND CORRELATES OF PSYCHOACTIVE SUBSTANCE USE AMONG NEW PRISON INMATES IN NIGERIA

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ABSTRACT

Psychoactive substance disorders among prison inmates are challenges to the prison authority, and this may interfere with the processes of reformation and rehabilitation therein. The study assessed the prevalence, pattern, and correlates of psychoactive substance use in a cross-sectional study involving 552 new inmates in a custodial center in Enugu, Nigeria. Diagnoses were made using the MINI-Plus (version 6) in line with the ICD 10. Lifetime and 12-month prevalence of psychoactive substance disorder were 57.4% and 50.7%, respectively. The commonest substance disorders were tobacco (48.2% lifetime and 41.1% 12-month), cannabis (36.8% lifetime, and 32.4% 12-month), and alcohol (7.2% lifetime, and 6.9% 12-month).

Descriptive statistics, Mann-Whitney U test, Chi-squared test, and regression analyses were performed to assess the extent to which socio-demographic characteristics, type of offence, and family dysfunction predicted psychoactive substance use or disorder. Four hundred and seventy eight (86.6%) of participants had used psychoactive substance in their lifetime, while it was 405 (73.4%) in the last 12 months prior to imprisonment. Lifetime and 12-month rates of psychoactive substance disorder were 57.4% (n=317) and 50.7% (n=280), respectively. Male gender, unemployment, parental divorce, and parental drug use respectively, significantly predicted 12-month psychoactive substance disorder [β = 0.12, 95% (CI: 0.04, 0.39)], [β = 1.79, 95% (CI: 1.24, 2.60)], [β = 0.29, 95% (CI: 0.14, 0.59)], and [β = 0.56, 95% (CI: 0.39, 0.81)]. Lifetime disorder was significantly predicted by male gender [β = 0.12, 95% (CI: 0.04, 0.35)], unemployment [β = 1.60, 95% (CI: 1.10, 2.32)], parental divorce [β = 0.23, 95% (CI: 0.10, 0.52)], and parental drug use [β = 0.49, 95% (CI: 0.34, 0.72)]. Similarly, lifetime psychoactive substance disorder was associated with older age (U = 33355, Z = -2.104, p = 0.035), while the prevalence of

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12-month use of psychoactive substance was significantly associated with charges of violent offences (χ^2=13.55, p<0.01).

Conclusively, there is a high prevalence of psychoactive substance use and disorders among new prison inmates with tobacco, cannabis and alcohol as the commonest. Given that male gender, unemployment, parental divorce and parental drug use increase the likelihood of these disorders, it will be worthwhile for any drug intervention program to address these factors.

Keywords: Psychoactive substances; drug; inmates; crime; Nigeria.

INTRODUCTION

Data from the United Nations Office on Drugs and Crime (UNODC) suggest that the annual global prevalence of any psychoactive substance use in 2016 was 5.6% (UNODC, World Drug Report 2018). The situation appears more alarming in Nigeria as a higher number of people have recently been reported to be using psychoactive substances. This observation was made in the 2018 National Drug Use Survey in Nigeria, where the annual prevalence of any psychoactive substance use in 2017 was 14.4% (UNODC, Drug Use in Nigeria 2018).

The global pattern of psychoactive substance use reported the most frequently used substances to be cannabis, opioids and stimulants, whereas cocaine use was the least frequent (UNODC, World Drug Report 2018). While the National Drug Use Survey in Nigeria corroborated the global pattern of use, a community-based study (Gureje et al, 2007) earlier conducted in Nigeria reported a different pattern of use, where alcohol and tobacco were the most frequently used substances, while cocaine had the least frequency of use (Gureje et al, 2007). Cannabis use was the fourth most prevalent after the use of sedatives which was reported as the third most prevalent in this same community-based study (Gureje et al, 2007). Further research evidence has supported this pattern of use in the Nigerian general population (Ani, 2014; Babalola et al., 2014; Omoluabi, 1995).

Several prison-based studies, both globally (Bronson et al, 2017; Esmaili, 2016; Khalooei et al, 2016; Long et al., 2004; Stover & Michels, 2010; Vicens et al, 2011) and in Nigeria (Ogunwale et al, 2012), have reported the prevalence of psychoactive substance use between 66.7% and 77%, which is comparatively higher than the general population findings that ranged between 3.4% and 14.4% (Steel et al, 2014; UNODC, Drug Use in Nigeria 2018).

Some of these psychoactive substance users experience disorders such as abuse and dependence (Fazel et al., 2017). In one prison-based study in Ireland, 58% of the participants had substance dependence (Mohan et al, 2006); whereas in India, 47.1% of the prison inmates had substance use disorder (Ayirolimeethal et al, 2014). More so, about one quarter of the prison inmates that participated in a prison-based study in the United States had substance use disorder (James & Glaze, 2006). In Nigeria, 20.1-54% of prison

inmates have been reported to have suffered from these disorders (Abdulmalik et al, 2014; Armiya'u et al, 2017).

A prison is a stressful environment associated with regimented life style, overcrowding, social deprivation, and bullying from other inmates (Mansoor et al, 2015; Sykes, 1958). More so, it is a high-risk environment for initiation (Boys et al., 2002) and continuation of drug use (Rowell et al., 2012; Rowell-Cunsolo et al., 2016). While some offenders with psychoactive substance use were remanded in prison due to drug use (Clarke et al., 2001; Rowell et al., 2012), others got remanded on account of offences not related to drugs. In either case, they may continue to use psychoactive substance (Clarke et al., 2001; Cope, 2003; Rowell et al., 2012; Rowell-Cunsolo et al., 2016) as a coping strategy despite prohibition by the institution (Caulkins & Sevigny, 2005; Skowronski & Talik, 2018).

Some demographic and family factors such as age, adverse childhood experiences, polygamous family setting, and parental deprivation following parental separation or divorce have been found to increase the likelihood of psychoactive substance use and other behavioural problems (Akanni & Adayonfo, 2015; Al-Sharfi et al, 2016; Fatoye, 2003; Jogdand & Naik, 2014; McGee et al., 2011).

Adverse childhood experiences which include childhood maltreatment, parental separation or divorce, parental drug use, and exposure to domestic violence in the family are important aspects of life that largely affect the process of human development, and which may further lead to psychoactive substance use and other health risk behaviors (Francisco et al., 2013; Bellis et al., 2014; Hughes et al., 2017).

Gender influence on psychoactive substance use in the prison population has been inconsistent. While some authors found the use of psychoactive substance to be higher among female prison inmates than among the male inmates (Bronson et al, 2017; Fazel et al, 2017); others have reported a higher prevalence among male inmates (Mendes dos Santos, 2014; Rowell-Cunsolo et al, 2016).

Similarly, a higher prevalence of psychoactive substance use has been associated with social disadvantages such as unemployment, poverty, and low level of education (Rowell-Cunsolo et al, 2016). The majority of the prison inmates prior to their imprisonments experienced these social disadvantages which, in the presence of the stressful prison environment, may account for the overrepresentation of psychoactive substance users in the prison (Mendes dos Santos, 2014; Fazel et al., 2017; Lukasiewicz, 2007; Rowell-Cunsolo et al, 2016).

This study was relevant following the dearth of studies on associated factors of drug use among new prison inmates especially in Sub-Saharan Africa; the benefit of early recognition of these problems and concerted effort toward intervention and policy making in custodial centers; the barriers posed by these problems to any meaningful rehabilitation and intervention in a correctional facility (Baltieri, 2014); and the need to address the gap in literature. Hence, our study was guided by the following objectives (1) to determine the prevalence of psychoactive substance use and disorder (2) to assess the pattern of use and disorder (3) to address its association with type of offence (4) and to evaluate its relationship with family and socio-demographic factors.

METHOD

Study design and setting

This was a cross-sectional study conducted in Enugu Maximum Security Custodial Center (formerly known as the Enugu Maximum Security Prison); and which was established in 1915 with a statutory capacity of 638 (Okoro et al., 2018). However, there were between 1901 and 2097 prison inmates in its custody during the time of the study. It accommodates all classes of prison inmates including those on death row, life sentences, awaiting-trial prison inmates, short and long term sentences. It also accommodates both the male and female inmates, but in different wings (Okoro et al., 2018). There are different cells for the different classes of inmates; and in addition, all new inmates are first kept in a different cell until they appear before the prison admission board. Thereafter, they are assigned to their respective cells according to their offences.

Participants and sample size calculation

The sample size for the study was calculated using the formula: $n=Z^2P\ (1-P)/d^2$ (Araoye, 2003).

Where: n = Sample Size. P = the proportion of the target population with the problem.

Z = the Standard normal deviate, set at 1.96 which corresponds to the 95% confidence level.

d = precision, tolerable margin of error set at 5% (0.05).

To calculate 'n,' we used the value of 'p' in the study done by Armiya'u et al., (2017) in a Maximum Security Prison in Jos, Nigeria. They found substance use disorder in 54% of the participants. Thus, sample size 'n' was calculated as: $n = (1.96)^2(0.54)(1 - 0.54)/(0.05)^2 = 382$

Though 382 was the estimated minimum sample size. However, this was a part of a larger study design that followed the participants up for 6 months, and in which dropout rate was expected to be high as a result of inmates being released from the prison, we used a sample size of 552 which makes allowance for 30% attrition at the 6th month.

A total of 552 inmates were recruited by a convenient sampling between 3rd of May and 4th October, 2019, and this represented 95.5% of the total 578 inmates (25 females versus 553 males, 546 awaiting-trial inmates versus 32 sentenced inmates) remanded in custody during this period. Twenty six inmates (4.5%) did not participate in the study, out of which 19 (3.3%) were already discharged from prison custody before the day of interview for several reasons including the completion of their prison sentences, and the fulfillment of their bail conditions; while the remaining 7 (1.2%) declined to give consent after the purpose of the interview was explained to them.

Data collection procedure

The study lasted between 3rd May and 4th October, 2019, and all new inmates brought to prison custody within this period appeared before the prison admission board within their first 24-72 hours of imprisonment. The interview which was done twice a week occurred within their first week of imprisonment after they had gone through the prison admission process. On each interview day a list of all new prison inmates that attended the preceding prison admission process was obtained from the prison record, and with the assistance of a staff of the

custodial center, they were all brought to the medical unit of the center, where the interview was done. The aim of the study was explained to these new inmates that were usually between 10 and 15 for every interview day; thereafter, consent was obtained from them, and those who consented were selected for the study.

The interview was done in 2 stages; the first was the administration of the socio-demographic questionnaire designed by the researchers to all the selected participants. Those that could read and write had the questionnaire self-administered, while those that could not read or write were assisted by the researchers who read the questions out to them and guided them in ticking their responses.

Those that responded "yes" to the item on the socio-demographic questionnaire that enquired if they had ever used any psychoactive substance proceeded to the second stage which was the administration of the substance and alcohol modules of the MINI-Plus to them by two of the researchers who are psychiatrists.

The interviews with the MINI-Plus commenced when the 5th co-author who is a specialist psychiatrist had achieved satisfactory inter-rater reliability with the corresponding author, a consultant psychiatrist with experience in the use of the MINI-Plus. Thereafter, they conducted each interview simultaneously, in which one interviewer carried out the interview and the other was an observer who nevertheless, asked necessary questions during the interview for further clarification. Each participant was independently scored by the two interviewers. The collation of the results of the two interviewers was done in such a way that any agreement in the two interviews was recorded as a case (having the diagnosis), while where there was no agreement between the two interviewers, the participant was recorded as having no case (not having the diagnosis). The average time spent on the two stages of the interview on each participant was 20 minutes.

Inclusion criteria

All the new inmates that had not spent more than 1 week and had gone through the prison admission board were included in the study.

All inmates who gave written informed consent were selected for the study.

Exclusion criterion:

All new inmates who were transferred from other custodial centers to the study center during the period of the study were excluded.

Ethics

Permission for the study was sought and obtained from the authority of the Nigerian Correctional Service, Enugu State Command, and ethical approval was obtained from the State Ministry of Health, Enugu State, Nigeria. The objectives of the study were explained to the participants and they were assured of confidentiality of their information. They were made to understand that participation in the study was voluntary and that they could withdraw at any point even after they had given their consent and that such withdrawal wouldn't affect them negatively. Thereafter, both verbal and written consent were obtained from them. Furthermore, with the consent of those with drug use problems and in need of therapy, they were referred to the prison authority, with the hope of good health care services for them.

Instruments

Socio-Demographic Questionnaire:

A socio-demographic questionnaire designed by the researcher was used to elicit socio-demographic and forensic information from each consenting participant. The information elicited were age, sex, religion, marital status (never married, married, or separated/divorced/widowed), level of education (no formal education, primary school, secondary school, or tertiary education), and ethnicity (Hausa, Igbo, Yoruba, Other ethnicity in Nigeria, or countries other than Nigeria). Others were prison category (awaiting-trial versus sentenced), type of offence (violent versus non-violent), and family setting (polygamous versus monogamous family setting). In the remaining questions, the participants had a "yes," or "no" option to choose from. Sample items of such questions were: Did you live in the state capital before your imprisonment? Have you ever used any psychoactive substance (this includes the use of alcohol)? As a child (before you turned 18 years), did any of your parents use drug? As a child (before you turned 18 years), were your parents divorced or separated?

Mini International Neuropsychiatric Interview-Plus (MINI-Plus) English version 6.0.0

The Mini International Neuropsychiatric Interview – Plus (MINI – Plus) is a modified version of the original MINI which was designed as a brief structured interview for major axis 1 psychiatric disorders in DSM-IV and ICD-10 (Sheehan et al., 1998). The MINI was developed jointly by psychiatrists and clinicians in the United States and Europe, and designed for epidemiological studies and multicentre clinical trials. Validation and reliability studies have been done comparing the MINI to the Structured Clinical Interview for DSM-III-R (SCID) and the Composite International Diagnostic Interview (CIDI)-a structured interview developed by the World Health Organization for lay interviewers for International Classification of Diseases, ICD-10 (Sheehan et al., 1998).

The results of these studies showed that the MINI has high validity and reliability, and can be administered in a much shorter period of time (usually an average of 15 minutes) than the SCID and CIDI (Sheehan et al., 1998). It has a satisfactory psychometric property including a good inter-rater reliability of 0.67-0.85 and a satisfactory concordance (Kappa value greater than 0.88) between it and expert diagnoses (Mukhtar et al., 2012).

Each module of the MINI (e.g., the psychoactive substance use module) has two parts. The first is a screener, consisting of two or three main symptoms to assess the probability of the presence of the disorder; while the second is the diagnostic part which is applied if the subject tests positive to the screener (Sheehan et al., 1998).

The MINI-plus has additional modules for somatization disorders, lifetime alcohol dependence, lifetime alcohol abuse, lifetime substance (non-alcohol) dependence, and lifetime substance (non-alcohol) abuse (Black et al., 2004).

The MINI – Plus has been used in Nigeria to conduct a study in the prison population (Abdulmalik et al., 2014), and our study utilized it to make diagnoses of psychoactive substance use disorders among the participants.

Data analysis

The data collected were entered into the Statistical Packages for Social Sciences,

version 20 (IBM-SPSS). A frequency check was run on the data to check for missing data. A test of normality done using the Kolmogorov–Smirnov test showed that age distribution was not normally distributed ($p<0.05$). A Mann Whitney U test was used to assess the relationship between age and psychoactive substance use/disorder, while a Chi-squared test was used to demonstrate the association between psychoactive substance use/disorder and all independent categorical variables. Binary regression was further applied for all socio-demographic variables that had significant association with psychoactive substance disorder on univariate analysis. All tests of significance were two-tailed at the 5% level of significance and confidence interval estimation of 95%.

Results

Table 1: The mean age of the participants was 28.09±8.92, with 528 (95.7%) of them being males and 24 (4.3%) being females. Three hundred and sixty eight (66.7%) were unemployed, while 184 (33.3%) were employed; 206 (37.3%) never had secondary education, and the remaining 346(62.7%) had at least secondary education.

The 12-month prevalence of any psychoactive substance disorder was significantly higher among the male inmates (52.3%) than the female inmates (16.7%).

Table 1. Association between socio-demographic factors and psychoactive substance disorder.

	Lifetime prevalence of any substance disorder				12-month prevalence of any substance disorder			
Variables	**Absent Freq (%)**	**Present Freq (%)**	**χ^2**	**P value**	**Absent Freq (%)**	**Present Freq(%)**	**χ^2**	**P value**
Gender			13.74	<0.01*			11.6	0.01*
Female	19(79.2)	5(20.8)			20(83.3)	4(16.7)		
Male	216(40.9)	312(59.1)			252(47.7)	276(52.3)		
Settlement			2.47	0.12			0.63	0.43
Rural	100(46.7)	114(53.3)			110(51.4)	104(48.6)		
Urban	135(39.9)	203(60.1)			162(47.9)	176(52.1)		
Marital status			1.45	0.49			0.24	0.89
Never married	139(44.1)	176(55.9)			154(48.9)	161(51.1)		
Married	78(41.9)	108(58.1)			94(50.5)	92(49.5)		
Sep/div/widow	18(35.3)	33(64.7)			24(47.1)	27(52.9)		
Job status			4.54	0.03*			7.67	0.01*
Unemployed	145(39.4)	223(60.6)			166(45.1)	202(54.9)		
Employed	90(48.9)	94(51.1)			106(57.6)	78(42.4)		
Education			1.42	0.23			1.75	0.19
None/Primary	81(39.3)	125(60.7)			94(45.6)	112(54.4)		
Sec/tertiary	154(44.5)	192(55.5)			178(51.4)	168(48.6)		
		Mean Rank	U			Mean Rank	U	
Age(mean=28)			33355	0.035*			37853	0.90
No	235	259.9			272	275.66		
Yes	317	288.8			280	277.31		

*=Significant value. Sep=separated. Div=Divorced. Freq=Frequency. %=Percent.
χ^2=Chi-squared test. U=Mann-Whitney test. Sec=Secondary education.

Similarly, lifetime prevalence of any psychoactive disorder was significantly higher among male (59.1%) than female (20.8%) inmates ($p<0.05$). The participants who lived in the urban areas had higher lifetime (60.1%) and 12-month (52.1%) prevalence of any psychoactive substance disorder than the rural settlers that had 53.3%, and 48.6%, respectively.

The prison inmates that were unemployed were significantly more likely than the employed ones to have lifetime (60.6% versus 51.1%); and 12-month (54.9% versus 42.4%) prevalence of any psychoactive substance disorder. One hundred and sixty eight (48.6%) of the 346 inmates that attended at least secondary school had 12-month prevalence of psychoactive substance disorder, while 112 (54.4%) of the 206 that did not attend secondary school had the disorder.

Lifetime disorder was seen in 192 (55.5%) of the 346 that attended at least secondary school, whereas 125 (60.7%) of the 206 that did not attend secondary school had the disorder. A Mann-Whitney U test was done to determine if there were differences in age between those with lifetime psychoactive substance disorder and those without. The difference in age for those with lifetime disorder (mean rank = 288.8) and those without (mean rank = 259.9) were statistically significant ($U = 33355$, $Z = -2.104$, $p = 0.035$).

Table 2 is the prevalence and pattern of psychoactive substance use, and it shows that 478 (86.6%) of the participants have used any psychoactive sub-

Table 2. Prevalence and pattern of psychoactive substance among the participants

	N=552	
Prevalence of psychoactive substance disorder	**Lifetime Frequency(percent)**	**Annual Frequency(percent)**
Ever used any psychoactive substance	478(86.6)	405(73.4)
Non-alcohol psychoactive substance use	287(52.0)	255(46.2)
Any psychoactive substance disorder	317(57.4)	280(50.7)
Substance (excluding alcohol) disorder	276(50.0)	243(44.0)
Tobacco disorder	266(48.2)	227(41.1)
Cannabis disorder	203(36.8)	179(32.4)
Alcohol disorder	40(7.2)	38(6.9)
Opioid disorder	23(4.2)	15(2.7)
Cocaine disorder	12(2.2)	7(1.3)
Tranquilizer disorder	5(0.9)	4(0.7)
Any drug abuse	71(12.9)	66(12.0)
Tobacco abuse	37(6.7)	32(5.8)
Cannabis abuse	50(9.1)	47(8.5)
Alcohol abuse	7(1.3)	5(0.9)
Opioid abuse	2(0.4)	1(0.2)
Cocaine abuse	2(0.4)	1(0.2)
Any drug dependent	276(50.0)	241(43.7)
Tobacco dependent	229(41.5)	195(35.3)
Cannabis dependent	153(27.7)	132(23.9)
Alcohol dependent	33(6.0)	33(6.0)
Opioid dependent	21(3.8)	14(2.5)
Cocaine dependent	10(1.8)	6(1.1)
Tranquilizer dependent	4(0.7)	4(0.7)
Multiple psychoactive substance disorder	180(32.6)	156(28.3)

stance in their lifetime, while 405 (73.4%) used it in the last 12 months. The lifetime and 12-month prevalence of any psychoactive substance disorder were 57.4%, and 50.7%, respectively. Tobacco disorder had the highest lifetime (48.2%) and 12-month (41.1%) prevalence. The second most prevalent was cannabis lifetime (36.8%) and 12-month (32.4%) disorders. This was followed by alcohol lifetime (7.2%) and 12-month (6.9%) disorder. The lifetime prevalence of opioid disorder was 4.2%, while its 12-month prevalence was 2.7%.

Table 3 shows the association between family factors and the prevalence of psychoactive substance disorders. Though not statistically significant, the prison inmates from a polygamous family setting were more likely than those from a monogamous family setting to have lifetime (61.5% versus 55.3%) and 12-month prevalence (52.6% versus 49.7%) of any psychoactive substance disorder.

Comparing those whose parents were divorced to those whose parents were not divorced, there was significant higher lifetime (82.7% versus 54.8%) and 12-month (75.0% versus 48.2%) prevalence of any psychoactive substance disorder (p<0.01).

Those that their parents used drugs were significantly more likely than those whose parents did not use drugs to have higher lifetime (68.2% versus 50.4%) and 12-month (59.9% versus 44.8%) disorders (p<0.05).

Table 4 shows the association between psychoactive substance use history and socio-demographic factors. More men (87.9%) than women (58.3%) have used any psychoactive substance in their lifetime; and this was statistically significant. The 12 month prevalence of the use of any psychoactive substance was also found to be significantly higher among the male (74.8%) than the female (41.7%) inmates (p<0.05).

The inmates that were widowed/separated/divorced (78.4%) had the highest 12 month prevalence of any psychoactive substance use compared to those who were never married (74.3%) and those who were married and still living with their spouse (70.4%).

While the 12 month rate of any psychoactive substance use was higher among

Table 3. Association between family factors and psychoactive substance history

	Lifetime prevalence of any substance disorder				Annual prevalence of any substance disorder			
Family factors	**Absent Freq(%)**	**Present Freq(%)**	**χ^2**	**P value**	**Absent Freq(%)**	**Present Freq(%)**	**χ^2**	**P value**
Family setting			1.96	0.16			0.42	0.52
Monog (n=360)	161(44.7)	199(55.3)			181(50.3)	179(49.7)		
Polyg (n=192)	74(38.5)	118(61.5)			91(47.4)	101(52.6)		
Parental Div			14.99	<0.01*			13.54	<0.01*
No (n=500)	226(45.2)	274(54.8)			259(51.8)	241(48.2)		
Yes (n=52)	9(17.3)	43(82.7)			13(25.0)	39(75.0)		
Parental drug			16.98	<0.01*			12.06	0.01*
No (n=335)	166(49.6)	169(50.4)			185(55.2)	150(44.8)		
Yes (n=217)	69(31.8)	148(68.2)			87(40.1)	130(59.9)		

Monog=Monogamy. Polyg=Polygamy. Div=Divorce. Freq=Frequency. **χ^2=**Chi-squared test
*=significant value.

Table 4. Association between psychoactive substance use history and socio-demographic factors.

Variables	Lifetime use of any substance				Annual prevalence of any substance use			
	Absent Freq(%	Present Freq(%)	χ^2	P value	Absent Freq(%)	Present Freq(%)	χ^2	P value
Gender			17.3	<0.01*			12.9	<0.01*
Female	10(41.7)	14(58.3)			14(58.3)	10(41.7)		
Male	64(12.1)	464(87.9)			133(25.2)	395(74.8)		
Settlement			0.48	0.49			0.35	0.56
Rural	26(12.1)	188(87.9)			54(25.2)	160(74.8)		
Urban	48(14.2)	290(85.8)			93(27.5)	245(72.5)		
Marital status			1.94	0.34			1.63	0.44
Never married	47(14.9)	268(85.1)			81(25.7)	234(74.3)		
Married	23(12.4)	163(87.6)			55(29.6)	131(70.4)		
Sep/div/widow	4(7.8)	47(92.2)			11(21.6)	40(78.4)		
Job status			0.20	0.66			3.38	0.07
Unemployed	51(13.9)	317(86.1)			89(24.2)	279(75.8)		
Employed	23(12.5)	161(87.5)			58(31.5)	126(68.5)		
Education			1.93	0.16			1.50	0.22
None/pry	33(16.0)	173(84.0)			61(29.6)	145(70.4)		
Sec and above	41(11.8)	305(88.2)			86(24.9)	260(75.1)		
Type of offence			8.69	<0.01			13.55	<0.01
Non-violent	50(17.5)	235(82.5)			95(33.3)	190(66.7)		
Violent	24(9.0)	243(91.0)			52(19.5)	215(80.5)		
		Mean Rank	U			Mean Rank	U	
Age			12355	<0.01			28800	0.56
No	74	204.5			147	283.1		
Yes	478	287.7			405	274.1		

those that were unemployed (75.8) than those who were employed prior to incarceration (68.5%); the lifetime use was higher among the employed (87.5%) than the unemployed (86.1%).

Those that attended at least secondary school (88.2%) were more likely to have used any substance in their lifetime when compared to those that did not attend secondary school (84.0%). Those with lifetime use were significantly more likely to be older (mean rank = 287.7) than those without (mean rank = 204.5). U = 12355, Z = -4.18, p<0.001. Furthermore, of the 267 participants charged with violent offences, 215 (80.5%) of them had used psychoactive substance in the last 12 months prior to incarceration, while 190 (66.7%) of the 285 charged with non-violent offences had used psychoactive substance in the past 12 months. Lifetime psychoactive substance use was among 243 (91%) of those charged with violent offences, and among 235 (82.5%) of those charged with non-violent offences. These differences were statistically significant (p<0.01).

Table 5 shows that all the variables that were significantly associated with 12-month prevalence of psychoactive substance disorder on univariate analysis were also predictive of the presence

Table 5. Predictors of drug disorder using logistic regression

							95% C.I Exp(B)	
12 months prevalence of PS disorder	**B**	**S.E**	**Wald**	**df**	**Sig**	**Exp(B)**	**Lower**	**Higher**
Intercept	1.199	0.373	10.321	1	0.001	3.317		
Gender	-2.097	0.591	12.573	1	<0.001*	0.123	0.039	0.391
Job status	0.584	0.190	9.471	1	0.002*	1.794	1.236	2.602
Parental divorce	-1.240	0.360	11.851	1	0.001*	0.289	0.143	0.586
Parental drug	-0.572	0.185	9.581	1	0.002*	0.564	0.393	0.811
Lifetime prevalence of PS disorder								
Intercept	1.866	0.429	18.922	1	<0.001*	6.462		
Gender	-2.157	0.561	14.786	1	<0.001*	0.116	0.039	0.347
Job status	0.470	0.191	6.047	1	0.014*	1.599	1.100	2.325
Parental divorce	-1.464	0.414	12.518	1	<0.001*	0.231	0.103	0.520
Parental drug	-0.704	0.190	13.693	1	<0.001*	0.495	0.341	0.718

*=Significant value. df = Degree of freedom. C.I=Confidence interval. PS=psychoactive substance.

of psychoactive substance disorder 12 months prior to incarceration on further analysis using the logistic regression. Unemployment with an OR of 1.8(95% C.I: 1.24 – 2.60) puts the inmates at greater odds of having psychoactive substance disorder 12 months prior to incarceration. More so, the odds of this disorder in the 12 months preceding incarceration is less likely among female inmates (β=0.12, 95% [CI: 0.04, 0.39]); inmates without history of parental divorce (β=0.29, 95% (CI: 0.14, 0.59]); and those without history of parental drug use (β=0.56, 95% (CI: 0.39, 0.81]).

It also shows that, while unemployment with an OR of 1.6(95% C.I: 1.10 – 2.33) puts the inmates at greater odds of having psychoactive substance disorder in their lifetime, the odds of the prevalence of lifetime psychoactive substance disorder was less likely among female inmates (β=0.12, 95% [CI: 0.04, 0.35]); inmates without history of parental divorce (β=0.23, 95% [CI: 0.10, 0.52]); and those without history of parental drug use (β=0.5, 95% [CI: 0.34, 0.72]).

DISCUSSION

Our study explored the prevalence and pattern of psychoactive substance disorders or use, and the extent to which these are associated with socio-demographic characteristics, the type of offence, and family dysfunction and setting.

Globally (Bronson et al., 2017; Rowell-Cunsolo et al., 2016; Sahajian et al., 2006) and in Nigeria (Armiya'u et al., 2017), evidence from research has shown a high prevalence of psychoactive substance use and disorder in the prison population. Our result of a high rate of psychoactive substance use is consistent with these findings. While it was observed that our participants had stayed about 4 days in prison custody and as such our result may be likened to that of the general population, it is also noteworthy to emphasize the large difference between our rate and the rate of Nigeria's national survey. For example, our finding of 73.4% annual prevalence of any psychoactive substance use far exceeds the 14.4% annual prevalence of the 2017 national survey

in Nigeria (UNODC, Drug Use in Nigeria 2018). This implies that psychoactive substance use is increasing and this poses a serious challenge not only to the prison authority, but also to the other components of the justice system (the judiciary and the police), as well as to the society at large.

Specifically, the pattern of psychoactive substance use among new prison inmates (Sahajian et al.,2006), other prison inmates (Armiya'u & Perez, 2016; Ugwuoke & Ifeanyichukwu, 2016), and the general population in Nigeria (Ani, 2014; Babalola et al., 2014; Gureje et al., 2007) found tobacco, cannabis, and alcohol as the most commonly used drugs. Our study replicates this pattern, and this reflects the ease of access of these psychoactive substances. The vital social roles and acceptance of alcohol, the few laws in Nigeria governing the use and restriction of alcohol and cigarette, and the low cost of cigarette and cannabis further explain the high prevalence of these specific substances.

Previous studies found that males were more likely than females to report psychoactive substance use and disorder (Tsekane & Amone-P'Olak, 2019; Ugwuoke & Ifeanyichukwu, 2016). In one study to determine the factors contributing to psychoactive substance use among medical students in Nigeria, men were found to be more likely than women to have psychoactive substance use (Babalola et al., 2014). Other studies (Becker & Hu, 2008; Eggen, 1994) echoed similar report of a higher prevalence of disorder among men compared to women. Our finding in which males were three times as likely as females to have psychoactive substance disorders lend more support to the literature findings. This was unsurprising given that the society frowns at the use of drugs such as alcohol and cigarette by a female, while it accommodates such act by a male; and that more males than females have access and opportunity to drug availability.

Previously, it has been established that increasing age (Eggen, 1994) and unemployment (Lee et al., 2015) were associated with psychoactive substance disorder. Our result corroborates the findings of a previous study in which unemployment was a predictor of drug use (Henkel, 2011), and also agrees with the report of another study in which there was a positive correlation between psychoactive substance use and age (Ugwuoke & Ifeanyichukwu, 2016). Given the youthful age of our participants, the explanation for our result may not be unconnected to the fact that drug use increases with age at initial stage, then peaks at early adulthood before declining. A possible reason for high drug prevalence among the unemployed in our study can be attributed to the fact that employed individuals are more likely to be occupied with their jobs and as such, dedicate little or no time to drug use; the reverse could be inferred for those unemployed. Our study further contributes to the stress hypothesis of unemployment as a cause of drug use in which unemployment, through worsening of stress, predisposes an individual to the use of drug as a way of coping with the stress (Nagelhout et al., 2017; Wills, 1986; Wills & Hirky, 1996).

This implies that while the design of a drug treatment program in the prison should focus more on the youth, all prison inmates especially those with a history of drug use, should be equipped with vocational skills so that upon discharge from prison custody they can be meaningfully engaged.

Previous research findings (Armiya'u et al., 2017; Armiya'u & Adole, 2015) have also associated psychoactive substance use and violent offence. This was confirmed in our study in which the use of psychoactive substance was commoner among those charged with violent offences. This finding is not unexpected given that substance abuse can impair cognitive, social and psychological functions such that emotional and intellectual abilities are compromised (Jiloha, 2009). In the presence of this impairment, there is also impaired ability to assess risk, which further increases impulsivity, with violence as its resultant effect (Armiya'u et al., 2017).

More so, the complications of psychoactive substance use such as craving, intoxication, and psychosis, may drive an individual to violence and other criminal behaviors as was reported in the U.S study in which 30% of drug users were found to have committed violent crimes under the influence of alcohol (Daderman et al, 2002).

Finally, we observed that psychoactive substance disorder was predicted by exposure to parental drug use and divorce. This is in tandem with several reports in the literature (Akanni & Adayonfo, 2015; Anderson, 2014; Hemovich & Crano, 2009; Lander et al., 2013). The interaction between risk (parental divorce and parental drug use) and protective (parental affection, monitoring, and reward) factors in the family are pivotal in predicting psychoactive substance use in adult life (Muchiri & dos Santos). Therefore, if this interplay between protective and risk family factors is understood, interventions should be tailored to address it. Thus, policies and awareness programs aimed at preventing or reducing drug use should consider the promotion of positive child rearing practices, friendly family environment, and other protective factors in the family.

Our study which has the potential to contribute to the body of knowledge in forensic psychiatry is not without limitations. Therefore, the interpretation of our results should be guided by the following limitations. First, reports from our participants on family dysfunctions may raise concern about response bias as they may not want to present themselves in negative light before the correctional officers. Second, participants for the study were recruited from just one prison in Nigeria; therefore, the results cannot be generalized as representative of all new prison inmates in Nigeria. Third, caution should be applied while interpreting the relationship between gender and psychoactive substance use since the number of males outnumbers that of the females. Finally, the retrospective nature of the responses to questions that assessed family dysfunction raises concern about recall bias.

CONCLUSION

This study has shown a high rate of psychoactive substance use among newly admitted prison inmates; with the pattern showing that tobacco is the most used followed by cannabis and alcohol. This study has also elaborated the sociodemographic distribution of psychoactive substance among the study population. This information will help prison administrators and policy makers to incorporate and institute psychoactive substance use assessment as well as treatment programs for newly admitted prisoners.

RECOMMENDATION

Authors recommend that for efficient rehabilitation and reformation of prison inmates, screening of new inmates for history of drug use or disorder should be routinely done. Also, inmates should be equipped with vocational skills as this will keep them engaged after they are released from prison; thus, preventing recidivism, relapse of drug use/disorder, and violent offences.

Finally, future studies should consider a national survey in which the data obtained can be a representation of the nation's drug use history among new prison inmates.

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CONFLICT OF INTEREST

There is no conflict of interest in the work.

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