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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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VALIDATING THE IMPLEMENTATION OF SUBSTANCE ABUSE POLICY IN SOUTH AFRICA: THE VOICES OF EAST LONDON CITIZENS

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ABSTRACT

This study employed a purposive sampling technique to examine the implementation of substance abuse policy in South Africa with the participation of East London citizens. The study applied a qualitative approach and paradigm that allowed for the description and exploration of the circumstances surrounding substance abuse as discussed by sixteen participants engaged in in-depth interviews and a focus group discussion. Demographically, the participants' age ranged from 42 to 59 years with a mean of 50.1. The gender distribution was skewed with eleven male and five female participants. Among the participants were fourteen blacks and only two whites. The participants were recruited through a purposive sampling technique. The data were analysed manually through thematic analysis. Inter alia, the study revealed the limited success of substance abuse policies; poor intergovernmental policy implementation; a paucity of qualified human resources and politics and corruption serving as stumbling blocks to proper policy implementation. This study revealed a need to strengthen the monitoring and evaluation of substance abuse policies in South Africa.

Keywords: Substance abuse, policy, government, politics, power dynamics.

INTRODUCTION

Despite a plethora of substance abuse policies globally, substance abuse continues to be one of the most devastating health risk factors facing mankind (United Nations Office on Drugs and Crime (UNODC), 2016). Diverse pieces of literature highlight that, despite international conventions, commissions and

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unprecedented measures implemented by researchers and governments, global trends in substance abuse increased from 5.3% to 5.5% between 2015 and 2017 (UNODC, 2017). African countries are particularly prone to this scourge, with alcohol abuse being the most prevalent (Dumbili, 2015; Tshitangano & Tosin, 2016). Statistically, alcohol is the most abused substance in South Africa with 31.5% of South Africans experiencing an alcohol-related problem.

After the advent of the 1994 democratic dispensation, the South African Government implemented national policies, Acts and legislation to stem the rising tide of substance abuse (Geyer & Lombard, 2014). These include the National Drug Master Plan (NDMP), which is a detailed policy document that was introduced as a holistic approach to building a drug-free community (Howell & Couzyn, 2015). The NDMP was composed by the country's Central Drug Authority and approved by parliament in line with the Prevention and Treatment of Drug Dependency Act (No. 20 of 1992) as amended, as well as the Prevention of and Treatment for Substance Abuse Act (No. 70 of 2008) as amended (Department of Social Development and Central Drug Authority, 2013). This document and its operationalisation have been revised four times in recognition of the responses set out by the UN conventions and other international bodies. The first National Drug Master Plan of 1999-2004 (NDMP1) was thinly concerned with reducing the illegal drug supply and demand through a community development approach and action-oriented programmes (Department of Social Development, 2013). The NDMP2 of 2006-2011 was committed to implementing a holistic approach to minimising drug abuse, harm and dependency, as recommended by the NDMP1.

The NDMP3 of 2013-2017 focused on regulating the reduction of harm, demand and the supply of drugs/substances. Functionally, the NDMP3 incorporated and appreciated the NDMP2's challenges, recommendations and outcomes. Many researchers believe that while the NDMPs 1 and 2 lacked a health and rights-based approach, the NDMP3 was a balanced and progressive plan, as it incorporated such an approach (Bala & Kang'ethe, 2021).

Primarily, the NDMP3 bridged governmental departments and other stakeholders to work synergistically and collaboratively against substance abuse (Pedersen, 2016). The NDMP3 emphasised the application of multiple integrated strategies rather than focusing on the criminalisation of substances and abusers. The NDMP3 sought to eliminate biological, psychological and economical collisions of substance abuse amongst South African citizens (Mokwena & Fernandes, 2014). In addition, the NDMP3 intensified the use of recreational and diversion programmes to eradicate and prevent substance abuse (Department of Social Development and CDA, 2013). This single plan also acknowledged the importance of creating job opportunities as an approach to reducing substance abuse. Most importantly, it harmonised and enforced laws and policies to govern drug and alcohol peddling.

The current National Drug Master Plan of 2019-2024 (NDMP4) acknowledges the recommendations made by the NDMP3 and emphasises seven strategic goals, which are to reduce the demand for and supply of drugs in communities and related measures; promote effective law enforcement response to drug-related crime; counter money laundering and

promote judicial cooperation; ensure the availability of and access to controlled substances exclusively for medical and scientific purposes and prevent the diversion thereof; identify and control new psychoactive substances; promote governance, leadership and accountability for an effective, coordinated and multisectoral response; strengthen data collection, monitoring, evaluation and research evidence to achieve the goals and to stimulate robust and sustainable economic growth aimed at reducing poverty, unemployment and inequality (Department of Social Development, 2020).

Although the NDMP4 seeks to prevent the criminalisation of drug-related crimes, the drug-related death toll increased from 205 164 in 2013 to 292 388 in 2017 (a 42% increase) (Shelly & Howell, 2018; Fellingham, Dhai, Guidozzi & Gardner, 2012). It is in this light that the Department of Planning, Monitoring and Evaluation (2019) highlights that the inadequate allocation of resources to address substance abuse threatens the effectiveness of the NDMP4. The majority of towns, particularly in the Eastern Cape, do not have NGOs that focus on addressing substance abuse (Bala & Kang'ethe, 2021) but the Department of Social Development offers such services to a large number of communities (Bala & Kang'ethe, 2020) but has insufficient professionals and offices to deal with the problem effectively.

The Drugs and Drug Trafficking Act of 1992 has long facilitated the restriction and interdiction of the illegal manufacture and supply of drugs (Western Cape Government Report, 2015). Operationally, this Act prohibits people from manufacturing substances unless for medical purposes and only if they are registered to do so. Even then, the drugs must not be dangerous or have undesirable consequences (Tshitangano & Tosin, 2016). Ironically, illegal drug manufacturing and trafficking have increased uncontrollably to unprecedented levels in South Africa with upper governmental echelons and policy facilitators complicit in the illegal manufacture and trafficking of drugs exacerbating the problem. In support of this contention, on 6 May 2019, Eyewitness News reported that several members of the South African Police Service (SAPS) were involved and that SAPS was one of the most corrupt institutions in Africa concerning drug dealings and trafficking (Clement, 2019). Cases of South African police officers collecting bribes from drug peddlers have been reported (Jordaan, 2020), which has implications for the effectiveness of SAPS in addressing substance abuse.

The National Liquor Act No. 10 of 2003 provides for measures to reduce the harmful outcomes of substance abuse in tandem with regulating the registration, distribution and social responsibility involved with liquor retail at all levels (Eastern Cape Liquor Board, 2015). Paradoxically, South Africa has more illegal or unlicensed taverns that serve liquor than licensed outlets (BusinessTech, 2017) and within every 10 metres in townships and rural areas, one is likely to find an illegal tavern that sells liquor (Bala, 2017). Apparently, these taverns do not adhere to the legal guidelines set by the government. Many of these taverns are suspected of selling alcohol to children under the age of eighteen and are open for business 24 hours a day, which negates the efficacy of law enforcement agents. Unfortunately, such uncontrolled alcohol sale facilitates children and youth in South Africa imbibing illegally (Tshitangano & Tosin,

2016). This has dire ramifications on the ethics and morality of society in general.

An array of NGOs such as the South African National Council on Alcoholism and Drug Dependence (SANCA) were instituted to supplement the government's efforts in the fight against substance abuse (Tshitangano & Tosin, 2016). Nevertheless, the government and these NGOs do not appear to be winning the war and new and more potent drugs such as nyaope/whoonga, "tik" and Flakka are increasingly available and ravaging South Africans (Bala, 2017). Ad hoc literature also highlights that in 2020 the new synthetic drug known as Wiz was found circulating in Durban and in 2018 a marijuana-like drug was found in Pretoria.

Political and power dynamics have been found to also serve as stumbling blocks to the success of the anti-substance abuse policies in South Africa (Fellingham, Dhai, Guidozzi & Gardner, 2012). Corruption and misuse of project funds among leaders and line managers have facilitated the increase in drug trafficking in South Africa. Diverse pieces of literature have revealed that South Africa is burdened by the prolific theft of project funds, which delays the progress and effectiveness of substance abuse policies (Hlongwane, 2018). This study sought to analyse and validate the implementation of substance abuse policies in South Africa.

Problem statement

Despite an overwhelming proliferation of illegal substance production, demand and abuse, countries have not relented in their campaign to tackle the challenges and international conventions, commissions and policy have been promulgated to fight global trends in substance abuse. Under the auspices of the African Union, various African countries have developed policies and implemented plans and strategies to address substance abuse (Nelson, 2016; West African Commission on Drugs, 2013). South Africa has developed various policies that have embraced the aforementioned broader policy scopes, inter alia, the National Drug Master Plan (NDMP) was produced as the major policy document to facilitate the fight against substance abuse in South Africa. This plan is supervised and facilitated by South Africa's Department of Social Development. Other policies and Acts include the Drugs and Drug Trafficking Act of 1992, the Prevention of and Treatment for Substance Abuse Act, No. 70 of 2008 and the National Liquor Act, No. 10 of 2003 that complement the NDMP. Despite numerous interventions, the challenge appears to be getting out of hand in South Africa (Bala, 2017), which implies that there are shortcomings in policy operationalisation and implementation. Therefore, this paper sought to evaluate the successes and failures of substance abuse policy in South Africa.

METHODS AND STUDY SETTINGS

Research approach and design

The study utilised a qualitative research approach to explore the implementation of substance abuse policies through participants' subjective understanding thereof (Brannen, 2016). The research approach allowed the researchers to collect data through close observation and interaction with the participants during meetings held by an anti-substance abuse committee (Silva, 2017). The researchers remained cognisant of human heterogeneity and valued everyone's opinions

about the implementation of substance abuse policies (Rubin & Babbie, 2016).

The case study design was employed to generate data about the implementation of substance abuse policies. The case study technique allowed the researchers to make direct observations about the phenomena under investigation and collect data from only a few participants. Practically, the case study allowed the researchers to analyse the information within a particular setting (Yin, 2018). The case study strategy focused on a small geographical area and participants whose number was determined by the saturation principle (Grinnell & Unrau, 2011).

Population and sampling

The research population for this study comprised selected government institutions and NGOs operating in the city of East London in the Eastern Cape Province of South Africa. The organisations were the Department of Social Development, Buffalo City Municipality (BCM), the Department of Education, the Department of Health (DoH), Masixole High School, Umtiza High School, BOSASA John X Merriman Child & Youth Care Centre, the Koinonia Recovery Centre, the South African National Council on Alcoholism and Drug Dependence (SANCA), the National Institute for Crime Prevention and the Reintegration of Offenders (NICRO), the Eastern Cape Department of Education (ECDoE) and the South African Police Service (SAPS). Participants were selected through a purposive sampling technique. Patton (2015) avers that purposive sampling is to select information-rich individuals, groups or organisations based on what is being studied (Gentles et al., 2015). In addition to selecting experienced and knowledgeable participants, it is crucial to select people that are available and willing and that meet the defined criteria (Bryman, 2016).

Data collection and instrument

The data were collected through in-depth interviews and a focus group discussion. In-depth interviews allowed the researchers to elicit the participants' experiences and opinions (Kumar, 2014). The one-on-one, in-depth interview technique with key informants was applied to gain detailed information from knowledgeable individuals. Brannen (2016) opines that in-depth interviews are the most efficient method of obtaining information when conducting a qualitative study because they are generally unstructured. The focus group discussion (FGD) allowed eight individuals to discuss the theme of the study while the researchers served as facilitators that guided the discussion with a prepared interview schedule (Kumar, 2014). The interview schedule contained unstructured questions to facilitate the collection of qualitative data from the participants (Rubin & Babbie, 2015). The interview schedule used appropriate language to explore the participants' in-depth insights.

Data collection procedure

The researchers requested permission from purposively selected organisation managers to conduct the study. These organisation managers assisted the researchers to recruit participants who were willing to share pertinent information. Specifically, employees working with substance abuse issues in the selected organisations were recruited. The various organisations accommodated the researchers with offices to conduct interviews while the FGD involved seven (7)

participants with two (2) researchers and one research assistant coordinating. The FGD were conducted in the South African Police Service boardroom in East London and involved members of the anti-substance abuse committee. The interviews were recorded with the permission of the participants and then transcribed.

Data analysis

The data generated for this study were analysed through thematic analysis. Nyumba, Wilson, Derrick and Mukherjee (2018) posit that thematic analysis seeks to unearth salient themes in a text at different levels while thematic networks aim to facilitate the structuring and depicting of those themes. The researcher facilitated the formation of themes and sub-themes through the application of codes. During the process, unnecessary data were eliminated to produce relevant patterns. The themes and sub-themes were validated by capturing the participants' verbatim responses to questions (Tshitangano & Tosin, 2016). The thematic analysis was strengthened by listening to the audio recordings and transcribing them to extract the relevant data. The themes were arranged to correspond to the study's objectives and questions. Braun and Clarke's (2006) six steps were followed in the formulation of the themes that were derived manually from the sentiments expressed by the participants. In doing so, the participants' views and opinions were interpreted by the researchers. The process of data coding and the analysis were performed manually.

Ethical considerations

The researchers adhered to protocols, rules and regulations to prevent any harm from befalling the participants. The researchers explained to the participants what their participation in the study would involve and their rights and how the information that was shared would be utilised. The participants were made aware of the nuances of the research. The data collection tool with relevant research questions was submitted to the University of Fort Hare Research Ethics Committee to facilitate the acquisition of an ethical clearance certificate. The research was approved and an ethical clearance certificate KANO41SBAL01 was issued.

FINDINGS

Participants' demographic data

The required data were collected from sixteen participants between the ages of 42 and 59 years, which is considered to be the middle-aged group. The findings revealed a skewed gender parity with males (11) outnumbering their female counterparts (5).

With regard to race, there were fourteen (14) black and two (2) white participants; a significant racial disparity. With regards to marital status, thirteen (13) participants were married and three (3) were single. With regards to education, fifteen (15) participants had tertiary level education and one (1) had secondary school education. With regards to occupation, the participants occupied various ranks in the different institutions.

Main themes

The limited success of substance abuse policies

The study established that the substance abuse policies in South Africa had achieved periods of only limited success.

The participants confirmed that the implementation of the NDMP2 and NDMP3 has stabilised alcohol consumption (Geyer & Lombard, 2014). The NDMP, in conjunction with the Department of Health, has facilitated free and accessible drug rehabilitation programmes. The participants shared the excerpts presented hereunder.

> *"Regardless of the endless fight against substance abuse and its increase, there are small achievements and successes that needs to be appreciated. As the Coordinator of School Health programme, we have implemented Care and Support for Teaching and Learning policy and tried to reduce substance abuse among learners in schools, as well as involving learners' parents" (KIP3: Department of Education, Senior Education Specialist).*

> *"It might not be appreciated and highlighted in literature but there is a progress and bits of achievements. We have worked with many rehabilitation centres to assist people abusing substances and we have achieved positive results" (KIP10: NICRO, Social Worker).*

These responses indicate some notable progress and achievements in addressing substance abuse. Different government institutions have worked separately to implement diverse programmes to reduce substance abuse.

Poor intergovernmental policy implementation

The findings indicated poor intergovernmental policy implementation to address substance abuse, with the participants lamenting the lack of collaboration among institutions. The participants attested that the policies encourage working synergy among government institutions but practically, the synergy is poorly conceptualised. The verbatim responses presented hereunder support the aforementioned findings.

> *"Appreciably, various governmental institutions have visited our local schools in trying to address substance abuse among the learners. However, these institutions enjoy weaker collaboration in the process of policy implementation. Sometimes different institutions would visit the same school on separate times to implement same or similar programmes".*

> *"Different institutions operate under different policies, hence there is poor intergovernmental policy implementation".*

These responses indicate weak collaboration between institutions that does not promise meaningful progress in the fight against substance abuse.

The paucity of qualified human resources

The data revealed a paucity of qualified human resources to effectively implement substance abuse policy. The participants revealed that the majority of the professionals who are responsible for implementing substance abuse policies are not specifically trained to deal with substance abuse issues. These results were corroborated by the sentiments expressed by the participants that are presented hereunder.

> *"There are few practitioners trained to specialise on substance abuse*

more especially among government institutions. Therefore, this poses a challenge of practicalising the policy. On the other hand, practitioners in governmental institutions are versatile in that they are inundated with implementing different policies which affect their concentration and effectiveness of substance abuse policy implementation".

"I have observed that there are a few professionals who are well equipped in substance abuse field. Many people who specialises in substance abuse are in the private sector and NGOs".

These sentiments reveal that substance abuse policy implementation suffers acute deficits on account of inadequate human resources to expedite its implementation.

Corruption in the management of substance abuse campaigns

Political and power dynamics were found to be significant stumbling blocks in the implementation of substance abuse policies in South Africa. Corruption and embezzlement among high-ranking officials in the government have allowed increased drug trafficking within South Africa. The power dynamics appear to have adversely affected the allocation of funds meant to address substance abuse. The participants' responses presented hereunder attest to the foregoing assertion.

"The level of corruption from national, provincial to local levels has a huge impact on the implementation of programmes against substance abuse. Despite budgetary allocation, the money never reaches where it is meant to be used".

"It is always easy to blame practitioners on the ground but honestly we operate without budget to deliver proper interventions, because we don't receive any funds. Hence, we just do unplanned awareness campaigns".

These responses indicate why South Africa is not winning the war against substance abuse and that corruption and the embezzlement of funds interfere with the allocation of funds to successfully implement substance abuse campaigns.

DISCUSSION

The findings revealed a paucity of success in implementing substance abuse policies in South Africa. This has placed pressure on law enforcement agencies to aggressively address the problem (Geyer & Lombard, 2014). To this end, the NDMP4 2019-2024 acknowledges several national strategies that include the Health Sector Drug Master Plan and the Anti-Substance Abuse Programme of Action that contributed to the success of the previous NDMP (Department of Social Development, 2019). The South Africa Police Service Annual Report 2018/2019 highlights that 236 clandestine drug laboratories were dismantled in South Africa in that year (South Africa Police Service, 2019). This was an appreciable effort to curb the emergence of new illegal drug operations. In the past years, drug seizures at international airports have increased, which calls for more vigilance and aggression by law enforcement agents. This implies a need

to strengthen interventions geared towards curbing drug entry into South Africa. The problem of the country's porous borders must be addressed (Department of Social Development, 2019). The School Safety Programme has contributed significantly to curbing substance abuse among the youth (South African Department of Basic Education, 2013).

This study also revealed poor intergovernmental policy implementation against substance abuse. The NDMP4 2019-2024 corroborates the abovementioned findings by indicating that success in the fight against substance abuse in South Africa is hindered by the lack of a multi-sectoral approach and collaboration among organisations that aim to address substance abuse (Tshitangano & Tosin, 2016).

The World Health Organisation (2003) has long lamented the limited collaboration among agencies responsible for substance abuse and drug peddling prevention. Protogerou, Flisher and Morojele (2012) posit that the lack of practical intergovernmental interventions has made South Africa a drug capital. Setlalentoa Ryke and Strydom (2015) posit that to control substance abuse, South Africa needs to build strong multidisciplinary collaboration at all levels. Various literature sources have highlighted the importance of improving collaboration among relevant entities to address substance use disorders (Goldstone, Bantjes & Dannatt, 2018).

The analysed data revealed a paucity of qualified human resources to effectively implement substance abuse policies. The study conducted by Dwommoh, Sorsdahl, Myers, Asante, Naledi, Stein and Cleary (2018) also found a significant lack of qualified human resources to address substance abuse in South Africa. Goldstone, Bantjes and Dannatt (2018) recommended further training among practitioners who are responsible to prevent and address substance use disorders in South Africa. The South African Government needs to ensure relevant training and education for professionals working with substance abuse disorders (Oladeinde, Mabetha, Twine, Hove, Van Der Merwe, Byass, Witter, Kahn & D'Ambruoso, 2020). Scholars have emphasised the importance of substance abuse education among relevant practitioners (Polydorou, Gunderson & Levin, 2008). Several scholars have expressed the necessity of providing adequate resources if interventions to fight substance abuse are to yield significant results (Michaud, Bélanger, Mazur, Hadjipanayis & Ambresin, 2020).

Corruption in the management of substance abuse campaigns was found to be a significant stumbling block in the implementation of substance abuse policies in South Africa. Hlongwane (2018) asserts that corruption in South Africa has an adverse impact on the effectiveness and efficacy of policies that address substance abuse and several incidences of individuals in authority being involved in malpractices surrounding substance abuse and the misappropriation of funds have been identified. Perhaps this explains the unabated increase in drug trafficking, manufacture and peddling (Geyer & Lombard, 2014). Bala (2017) revealed that drug peddlers operate freely in South Africa because they can bribe law enforcement officials. This revelation has not escaped the media. For example, on 4th April 2019 at 22:11, News24 broadcasted that there was severe corruption and an interdependent link between the police and drug peddlers (Tshitangano & Tosin,

2016). Cases of the police being suspected of clandestinely visiting drug sales operations to collect bribes have been reported (News24, 2019). In 2010, South Africa's former national police commissioner was found guilty of bribery involving drug traffickers (Fox, 2015). In the same vein, on 21 November 2018, SABC News reported that a soccer legend and sports analyst was arrested for allegedly manufacturing drugs. News24 emphasised that these dynamics had influenced the intensive increase in the use and trade of heroin in the country.

IMPLICATIONS

Substance abuse continues to increase in South Africa despite the plethora of policies and programmes that are formulated. Diverse pieces of literature have evaluated and confirmed the potential of South Africa's substance abuse policy to be effective. This study explored the factors that prevent the effective and efficient implementation of substance abuse policies, and the government must therefore strengthen its methods of policy monitoring. The findings also imply the need to recruit qualified human resources who are trained on the effective implementation of substance abuse policies.

RECOMMENDATIONS

The government needs to strengthen the monitoring and surveillance of substance abuse in the country while also strengthening substance abuse policy implementation. Moreover, the government needs to recruit qualified and trained human resources to handle substance abuse if the proper operationalisation of policies is to yield the desired outcomes. Experts and researchers in the field of substance abuse should be involved in the process of policy development.

CONCLUSION

In conclusion, it is crucial to validate the implementation of substance abuse policies to acknowledge any positive achievements and identify shortcomings. This will help to strengthen the strategies and result in a reduction of substance abuse and reduced peddling. Identifying shortcomings will help when formulating relevant strategies. Further, the validation of policy implementation is necessary to provide data for future policies.

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DECLARATION OF INTEREST STATEMENT

We hereby declare that no financial or other interest could have raised a conflict.

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SOCIAL AND HEALTH IMPLICATIONS OF ALCOHOL CONSUMPTION AMONG WOMEN OF REPRODUCTIVE AGE IN ANAMBRA STATE, SOUTHEAST NIGERIA

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ABSTRACT

Much of the research concerning women's alcohol use and misuse has focused on biomedical issues associated with female drinking; In contrast, little attention has been paid to the social dimensions of maternal drinking. Using the Symbolic interactionist's paradigm, this paper interrogates the social and health consequences of drinking among women of reproductive age. Data were collected using a concurrent mixed research approach (quantitative and qualitative data) Three hundred and seventy-three (373) close-ended questionnaires were analysed, and in-depth interviews were conducted among 12 mothers randomly selected from different occupational backgrounds. Findings reveal that heavy alcohol intake can cause divorce in marriages, loss of social respect, stigmatisation for the children, and loss of social bonds within the family. The researcher concluded that health and social issues relating to alcohol use can only be understood within the social and cultural context. However, the paper recommends an all-encompassing approach which involves continuous sensitization of women (especially of reproductive age) on the dangers of maternal alcohol use and the need to implement policies to regulate the production, marketing, and consumption of alcohol.

Keywords: Alcohol, Mothers, Reproductive Age, Social, Health, Consequences

INTRODUCTION

Alcohol consumption is a symbolic feature of human life, and it is almost inevitable in the religious and social practices of many African societies (Oshodin, 1995). In the Nigerian context, alcohol consumption was originally reserved for men, and it played a crucial role in social gatherings, political, religious, and socio-economic relationships (Odejide, 2006). The impact of alcohol use on population

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health is nevertheless complex, as alcohol may both benefit and harm people. The moderate use of alcohol may have health and social benefits (Bray, 2005; Stampfer et al., 2005). However, Bresford (2015) stressed that despite the huge social importance of alcohol, its inappropriate use is now widely seen as a global problem.

According to the World Health Organisation (2018 WHO), hazardous alcohol intake is one of the principal risk factors for global health; it has a direct impact on many health-related targets of the Sustainable Development Goals (SDGs), including maternal and child health, infectious diseases (HIV, Viral hepatitis, Tuberculosis), non-communicable diseases such as mental health, injuries, and poisonings (WHO, 2018). The World Health Organisation (2018) reported that the harmful use of alcohol resulted in about three million deaths in 2016. They also revealed that women experienced 0.7 million deaths and 26.1 million DALYs (disability-adjusted life.) resulting from alcohol consumption. Alcohol-related mortalities exceeded those caused by diseases such as tuberculosis, HIV/AIDS, and diabetes. (WHO, 2018)

Generally, it is believed that women are more vulnerable than men to alcohol effects even after drinking smaller amounts. Nilsen et al. (2008) pointed out that even small amounts of alcohol can cause adverse neuro-behavioural effects on children. In pregnant women, effects of alcohol has been linked to miscarriages, premature births, stillbirths, low birth weight, prenatal or postnatal growth retardation, and other diagnoses that are encompassed by the umbrella term Fetal Alcohol Spectrum Disorders (FASD) (Peadon et al, 2010). Socially, children are the most severely affected since they cannot protect themselves from the direct or indirect consequences of parental drinking (Klingeman & Gmel, 2001). Additionally, children tend to suffer stigmatisation and other social abuses. As espoused by Ikuesan (1994), drinking of alcohol among women causes significant disruption to their families and results in stigmatisation by the community. Lyons and Willot (2008) argue that femininity equates to motherhood, and heavy drinking among women, especially mothers, is viewed as deviant, breaking traditional femininity codes. Heavy drinking can lead to an increased risk of health problems affecting the liver, brain damage, and breast cancer (Havard Health Publications, 2014). There are relatively more adverse effects of drinking on women than their male counterparts due to their biological composition. Scholars have also revealed that women are more likely not to enter into treatment programs for substance abuse problems, including those involving alcohol (Harvard Health Publications, 2014). This is due to issues concerning social expectation and social desirability in societies, especially in patriarchal societies.

Moreover, women may be unwilling to go for rehabilitation, especially those with younger children, because they might be worried about losing custody of their children when they disclose their alcohol status (Harvard Health Publications, 2014).

Despite all the health and social issues linked to alcohol misuse, much of the research has focused on male drinking. Fama et al. (2020) argued that the earliest reports of the consequences of alcohol concentrated on men and suffered from statistical weakness in trying to ascertain sex-related differences because of insignificant number of female participants

which makes generalisation to women difficult. Considerable research on women and alcohol consumption has paid relatively little attention to maternal drinking behaviour's social aspects. Klingeman and Gmel (2001) opined that research into the consequences of alcohol consumption has hitherto been concerned mainly with those that affect health or are more readily quantifiable. Additionally, most of the studies on female alcohol use are Western based. Relatedly, Kroll and Neri (2009) argue that when there is deficient information available in the literature, exploratory research is suggested. Therefore, this work interrogates the social and health consequences of alcohol among women of reproductive age in Anambra State.

Literature Review

Every society has specific behavioural patterns categorized as either masculine or feminine, which is often borne out of consensus (Dumbili, 2015). In the consumption of alcoholic beverages, drinking norms vary among different countries, ethnic groups, ages, and sex. According to Bennet et al. (1998), variations in drinking patterns include, for example, the types of beverages consumed preferentially, occasions in which consumption typically occurs, drinking levels that are considered normal, and population sub-groups for whom drinking is acceptable.

In traditional Nigerian society, there was no codified social justice system. Nevertheless, there was a general consciousness of the social control regulating all forms of behaviour (Ikuesan, 1994). Alcohol consumption was gender and age-based (Dumbili, 2013). It was absurd for women to drink, and intoxication among women was unheard of. There was however exceptions for events such as the traditional religious festivals, christenings, and related social functions, which were culturally suitable for all present to drink alcohol (Ikuesan, 1994). It was a consistent characteristic of the society that alcohol consumption among women was not widespread (Odejide et al., 1989, Dumbili 2013). For example, Ikuesan (1994, p.942) noted that:

> An alcoholic woman is usually stigmatized and insulted by the people; she would become an object of ridicule and gossip and would be socially distanced and would lose respect. It is likely that her sins would be visited on her children as they would be looked on as contaminated children of an alcoholic woman. Such an attitude may also create problems for the children in their social relationship; for instance, with marriage and friendship, they might be distanced, and this could, in turn, lead to adjustment difficulties for them.

In today's Nigeria, we have not observed striking changes. However, the womenfolk have taken on more social roles and are now more socially mobile, with society generally seeming tolerant, still traditional social control have not completely lost their grip (Ikuesan, 1994). However, according to Adelekan (1993), there is a new trend in alcohol consumption, which increases alcohol consumption by females in Nigeria. Ikuesan (1993) also emphasized a silent increase in female drinking that is believed to preserve some educated, westernised female city dwellers and female socialites. In more recent work, Adebowale and Bawo (2018) opined that psychoactive substance use

is now common among Nigeria women, not excluding those pregnant, and its use during pregnancy has been a major public health issue. There is an observable change in the pattern of psychoactive substance use that significant proportions of females that are involved in this act are of reproductive age group (Sulyman et al., 2021)

According to Obot (2007), the growing influence of globalisation and feminism has impacted in women that they began to challenge the status quo that relegated them to the background. This appears to have influenced their alcohol lifestyle. Dumbili (2013) further stressed that women challenge gender roles through alcohol consumption.

In recent years, reports of more women drinking what surpasses moderate drinking have been conveyed in Nigeria, South Africa, and Ethiopia (Obot, 2006). Women have acquired education and other skills that enabled them to gain access to paid work; consequently, many can afford to purchase and consume alcohol. These are some of the concerns that this work will provide answers.

Consequences associated with alcohol intake among Mothers of reproductive Age

A qualitative study by Muckle et al. (2011) in Nunavik Quebec, Canada revealed that women who drink during pregnancy are more likely to experience postpartum distress and violence. Elek et al. (2013), in a focus group study, indicated that the most frequently cited consequence opined by respondents includes brain damage, learning problems, developmental delays, miscarriage or premature birth, and low birth weight or growth problems. Again, Lekettey et al. (2017) conducted a survey among 250 pregnant women sampled from James Town, an urban community in the greater Accra region of Ghana. Data were collected through face-to-face interviews and descriptive statistics used for the analysis. The study revealed that majority of both current alcohol drinkers (78%) and non-current users (74%) were aware that prenatal alcohol consumption can lead to spontaneous abortion. Relatedly, Ibebuike et al. (2019) conducted a cross-sectional study of the knowledge of the effect of alcohol during pregnancy among women of reproductive age (18-45) in Owerri Ebiri community Orlu L.G.A Imo State, added that out of 112 respondents studied, the most possible effects of alcohol consumption on the unborn child is miscarriage, followed by stillbirth, then low birth weight, growth development, brain damage and mental disorder. The study also revealed that the least possible effect of alcohol consumption on the unborn child is an alcohol related neurodevelopmental disorder (ARND) which accounts about 0.89%. Furthermore, among women aged 20–24, 25–29 and 30–34, the proportion of disability adjusted life years (DALYs) attributable to alcohol were 9%, 9% and 11%, respectively, indicating a significant impact on morbidity in women of reproductive age (GBD 2016 Alcohol Collaborators, Scholin et al., 2019).

In the past, the rates of alcohol use disorder were higher in men than women, but over the past ten years, the difference between sexes in prevalence of alcohol use disorder and binge drinking has narrowed (Finn, 2020). White (2020) stressed that alcohol-related deaths were highest for males and females in the age range of 45 to 74. However, deaths related to injuries and overdoses increased significantly

for females ages 16 to 20 but did not change for males. Similarly, Fama et al. (2020) did a narrative review on alcohol's unique effect on cognition in women to envision future research and treatment. The study revealed that the rate of alcohol use disorder in women increased by 84% in the last ten years, compare to a 35% increase in men.

Socially, Wangeci (2011), adopted cross-sectional design in studying patterns and effects of women alcohol consumption on family cohesiveness in Kirinyaga Kenya, where respondents who fall within 19 to 45 years from each of the sampled villages were picked, the findings revealed that most of the marriages where women were regular alcohol consumers ended in divorce; 80% of the respondents observed that part of what led to this was the failure to perform some gender-based roles. The study observed that non-performance of gender based roles such as not feeding the husband, laziness, and discourtesy were common consequences associated with alcohol consumption among mothers who take alcohol. Furthermore, 55% of the respondents noted that families where mothers consume alcohol lost social reputation; they are also labelled as rough, rude, and insulting and could not easily escape quarrels and fights are common in their homes. Wangeci (2011), in a study, further revealed that alcohol consumption makes women vulnerable to risky sexual behavior or immorality. Chukwunonye et al. (2013), in a rural and urban cross-sectional study of alcohol consumption among adult Nigerians in Abia state, discovered that heavy alcohol consumption impacts the relationship between those who do so and their close relatives and friends. These disclosures remind us that the consequences associated with heavy alcohol use go beyond the bio-medical effects and are inclusive of social and psychological impacts.

Theoretical Framework: Symbolic interactionism

Symbolic interactionism is one of the offshoots of the Social Action Perspective; it is a micro theoretical view of society (Nnonyelu, 2009). The theory is a distinctly American branch of sociology (Haralambos et al, 2008) that offers a wide range of interesting and important ideas. It was advanced from the work of a group of American theorists who included John Dewey (1859-1952) William I Thomas (1863 1947) George Herbert Mead, (1863-1931) Charles Horton Cooley (1864-1929), Herbert Blumer (1900-1987) and Erving Goltman (1922-1982). George Herbert Mead is considered the major proponent of symbolic interactionism (Haralambos et al. 2008). This idea is also supported by Chriss (2005), Joas (2001), Ritzer and Stepnisky (2008); who opined that Mead is the most important thinker in the history of Symbolic Interactionism and his book Mind, Self, and Society is the most critical work in that tradition. Symbolic interactionists maintain that social reality is constructed on a micro-level by individuals interacting with one another on the basis of shared symbolic meanings. Human beings were seen to possess the capacity to think, define situations, and construct their behaviour on the basis of their definitions and interpretations

This theory provides the best explanation for the subject of discourse because alcohol consumption is a symbolic characteristic of human behaviour. It is cultural, universal and almost unavoidable in our

social and traditional activities. Alcohol consumption is a symbolic tool in our everyday life that is essential in nearly all our social or religious activities. In Nigeria, the symbolic significance of alcohol cannot be understated. Despite the multiethnic nature of the society, alcohol is an essential part of the social system and in social and economic relationships (Bennet et al., 1998).

The meanings we attach to a woman's status are borne out of social interaction. Those connotations can be modified to fit into the ever-evolving social system. The status of women especially a mother is also symbolic; it depicts love, virtue, responsibility, and maturity for the conformist mothers. It also depicts irresponsibility, immaturity, or selfishness among women who are alcohol addicts or heavy consumers. It was considered an absurdity for a woman to drink, and female alcoholic intoxication was unheard of (Ikuesan 1994). With the rising influence of globalisation and the rise of feminism in the country, the meanings attached to the status of a woman have changed. Women in recent times have started challenging the status quo that relegated them to the background, and this seems to have been extended to drinking (Obot, 2007).

Furthermore, whether it is taking away from fighting gender imbalance, deriving pleasure, celebrations, or manipulations, alcohol's symbolic importance should not be undermined. The meanings individuals attach to taking alcohol, ultimately stem from social interaction. The beliefs women attached to alcohol consumption that influence them in drinking are also borne out of the social interaction and the meanings attached to it by society. The level of support dedicated to a specific social action is influenced by society's language and the meaning that the people attach to such action. Symbolic interaction made us to understand that women and their immediate society construct and live in a world of meaning which the society offers and which they create by themselves; the social and health consequences associated with alcohol intake are borne out of symbolic definitions and meaning an individual gives to action and the language of the society. Whether alcohol consumption will be regulated, reduced or eradicated, it will be influenced by the level of importance attached to it by the society and the meaning attached to a woman's symbolic status.

METHOD

The study adopted a concurrent mixed research approach (Kroll & Neri 2009), where quantitative and qualitative data collection methods are used simultaneously to gather information. This approach is adopted because much of the research on women's alcohol consumption has focused on biomedical issues associated with female drinking. In contrast, little attention has been paid to the social aspects. These methods helped in gaining deeper insights while interrogating the social and health issues associated with female drinking.

The study location is Anambra State, Southeast Nigeria. Through the multistage sampling procedure that involves successive random sampling complemented by cluster techniques, Anambra State was grouped into her three Senatorial Districts (South, North, and Central), then two local governments were selected to represent each senatorial district; Nnewi North and Ihiala representing Anambra

South, Onitsha North and Anambra East for Anambra North, and Awka South and Idemili North for Anambra Central.) Towns and Communities were selected to ensure equal representation of women from all walks of life. The study targeted women within their reproductive age because; it is believed that women are more vulnerable than men to alcohol effect even after drinking smaller amounts; moreover, it appears that the "stigma" attached to female alcohol may be fading among younger women. Neve et al. (1996) revealed that modifications associated with women's education, employment, social status, and economic independence had impacted the convergence of male and female drinking patterns. In Anambra State, for instance, it is logical to conclude that younger women are more educated and has a diversity of lifestyles and experiences. This might influence their disposition towards alcohol intake, the socio-psychological influence women can have on their children and their families, which will ultimately extend to the social system. Data were collected between May and July 2019, and a sample size of 400 was drawn from the projected population (1,036,251) of married women using Taro Yamane's (1967) guideline. The instruments were pre-tested to ensure that all forms of ambiguity were removed and to improve the research's validity and certainty. Four hundred structured(close-ended) questionnaire schedules were shared through proportionate sampling of women groups in different churches, hospitals, civil service ministries, markets and teachers who fall within the reproductive age (the age between menarche and menopause roughly from age 12 to 49) and 373 questionnaires were correctly filled and returned. These were considered valid for the analysis and data presentation. The quantitative data was processed with the help of the Statistical Package for Social Sciences (SPSS). The data were analysed with descriptive statistics such as frequency distribution tables and percentages. The qualitative data gave room for women of reproductive age, female medical practitioners, teachers, and other informed persons (12 in number) who were randomly selected and who fall within the target respondents' category to express their opinions. The in-depth interview guide (IDI) aided in gaining deeper insights into issues associated with women's alcohol intake. Some of the specific questions are: do you think alcohol consumption among women of reproductive age has negative effect? What do you think are the consequences? How does it affect women of reproductive age? Does alcohol consumption affect the stability of your marriage? Have you experienced sexual abuse because of alcohol intake? How does alcohol consumption affect your child/children of the woman taking alcohol? Who are those being abused? What is the most significant effect of a woman's alcohol consumption on her child/children? What implications do you think it has on the society if women (mothers) especially those of reproductive age, consume alcohol?

The recordings were transcribed, the transcripts derived from the In-depth interviews were thoroughly read, coded, and manually analysed thematically. It is expected that the manual thematic analysis will help provide rich, detailed simplified information on the complex nature of the mixed research approach. Welsh (2002) argued that in some instances, it might be better but not always to use manual analysis rather than computer-based methods,

stressing that software might not prove as helpful as one may expect, especially in terms of addressing problems of validity and reliability in thematic ideas that may arise during the data analysis process and this is due to the fluid and creative way in which these themes emerge.

FINDINGS

The Findings are presented as they relate to the structure of the questionnaire and the objectives of this work; which is to provide answers to issues on social and health consequences of alcohol consumption among mothers of reproductive age.

As observed in table 1, the majority of the respondents 67.8% are of the view that alcohol consumption among women of reproductive age has adverse effects, 16.6% said they don't think so, in comparison, 15.5% of the women said they don't know if women's alcohol consumption has negative consequences. These opinions expressed by the respondents left the researcher wondering who are those encouraging alcohol consumption. If most of the respondents agree that alcohol consumption has negative consequences, why is the level of consumption increasing? Why are contemporary women of reproductive age increasingly embracing alcohol consumption as part of their social lives and social activities? The answer lays in the fact that social change and education has impacted in the social dimensions of alcohol.

Figure 1 clearly shows that majority (59.0%) of the respondents believe that miscarriage/ premature birth or low birth weight among pregnant women is a significant health consequence, this is followed by 19.0% who posited that growth or developmental delay of the baby is the health challenge 16.1% said it is brain damage of the woman, whereas 5.6% said the women would be vulnerable to sexually transmitted disease.

Respondents from the in depth interview expressed concern and revealed some of the health dangers of women's alcohol consumption. One of the respondents reiterated that alcohol intake could be detrimental, she expressed that the local dry gin can be dangerous to health. In her words;

> Fat people drink local gin (kai-kai) believing that it will burn fats for them and make them slim, it does not make people lean it however, sucks blood and causes problem for the woman taking it. It makes the person to be shaking and shrink the person's skin by then; the person has no blood in her system all the time. For instance, if you bring fresh meat and pour "kai kai" on it, you will see what it will do to the raw meat, compare

Table 1. Do you think consumption of alcohol among women of reproductive age has negative consequences?

Variables	Frequency	Percent
I think so	253	67.8
I don't think so	62	16.6
I don't know	58	15.5
Total	**373**	**100.0**

it with you as a human being who drinks it and how hot you feel inside whenever you drink it.(42-year-old trader in Aguleri)

Another respondent added: "You know alcohol is made with so much sugar, it can cause rise of sugar in the body of which you know can lead to diabetes". (44 year old nurse in Nnewi)

Respondents expressed different view on the social consequences of alcohol consumption among women of reproductive age as 37.8% believe that it can cause

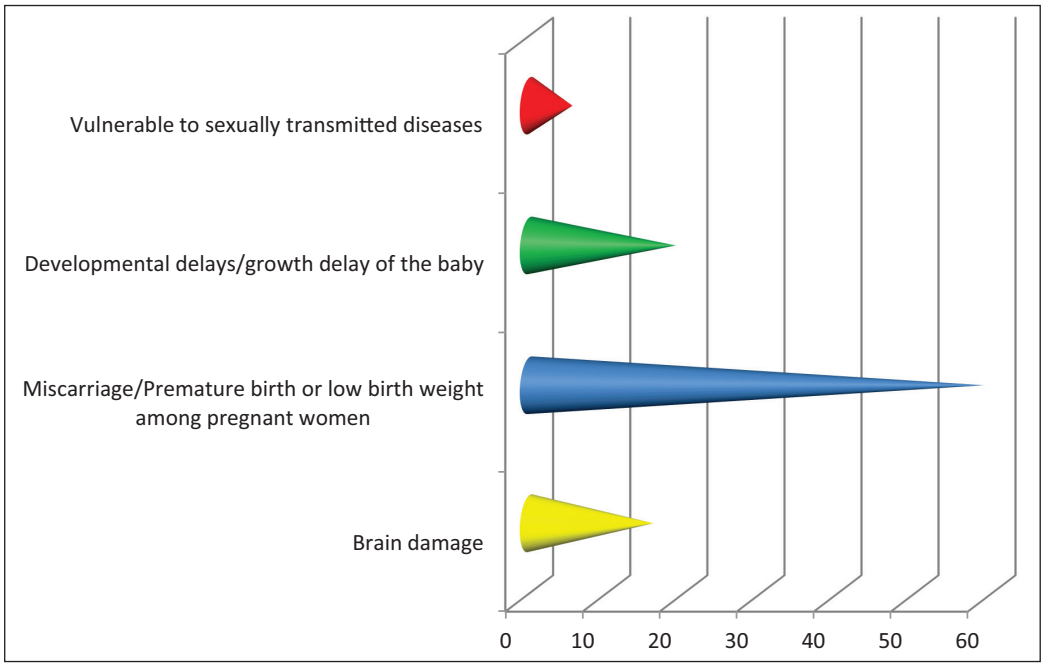

Figure 1. Showing health consequence of alcohol consumption among women of reproductive age

Table 2. Respondents views on social consequences of alcohol consumption among women of reproductive age

Variables	Responses		Percent of Cases
	N	Percent	
It could cause divorce in marriage	127	26.3%	37.8%
It could lead to non-performance of gender roles	57	11.8%	17.0%
Loss of social respect/prestige for the woman	156	32.4%	46.4%
Stigmatisation/Labelling of the woman	71	14.7%	21.1%
Loss of social bond/closeness between partners and between mothers and their children	32	6.6%	9.5%
Vulnerability to sexual immorality	39	8.1%	11.6%
Total	**482**	**100.0%**	**143.5%**

a. Dichotomy group tabulated at value 1.

divorce in marriage, 32.4% said it could lead to loss of social respect/ prestige when she drinks regularly or gets drunk, another 11..8% stressed that it can lead to non-performance of gender roles 14.7% believe that it would lead to stigmatisation of the woman. Also 6.6% of the respondents opined that it would cause loss of social bonds between spouses and between the woman and her child/ children; 8.1% said it would expose the woman to sexually transmitted disease.

Respondents in the IDI expressed different views on the social consequences of alcohol consumption among women of reproductive age**.** One of the respondents revealed that;

> Drinking too much can make a woman do what she is not expected to; if you begin to join your peers to drink, you will start keeping lousy company that can lure you into promiscuity or adultery because men have a way of interpreting women who drink as people who know "what's up" sometimes even if it's not what you want to do, in order not to be considered weak or out of pride you may do what you are not expected to do. Some of them, after drinking, they might go home and beat their house help mercilessly, which you know is child abuse. (30-year-old teacher in Onitsha)

Another interviewee added

> Drinking excessively can make women have low self-esteem, you know women like assessing each other, if you are someone that drinks and after drinking you start misbehaving, because you are drunk, it can make people not to regard you, even when you are saying something important or making sense, people will be making cajole of you, and stigmatisation sets in, thereby leading to an inferiority complex, but when they know that you don't drink excessively and don't misbehave nobody will disrespect you**.** (29-year-old businesswoman in Nnewi)

Respondents expressed different views on whether alcohol consumption affects the stability of their marriage. In table 3, majority of the respondents, 66.5% said alcohol consumption does not affect the stability of their marriages while 33.2% said alcohol intake does affect the stability of their marriages. However, the question is why are there inconsistencies in the responses of the respondents? A larger proportion of the research participants believe that women's alcohol intake has adverse effects and also aligning with the options in the social and health consequences, they are however, saying it does

Table 3. Respondents views on whether alcohol consumption affects the stability of their marriage

Variables	Frequency	Percent
Yes	124	33.2
No	248	66.5
Total	372	99.7
No response	1	.3
Total	**373**	**100.0**

not affect the stability of their marriages, maybe because the question of affecting peace and stability is more direct and sensitive. Some of them are avoiding disclosing personal details; the qualitative data will tell us more.

The interviewees expressed their views on whether alcohol consumption affects the stability of their marriage. One of the respondents added:

> Drinking can make a woman challenge her husband at home; it can make her not to play her role as a mother. You will see a woman saying the things she is not supposed to say in the family due to heavy alcohol consumption. (40-year-old trader in Aguleri)

More than half of the respondents 82.6% said they had never been sexually abused as a result of their alcohol intake. In comparison, 16.6% admitted that they had been sexually abused because of their alcohol consumption.

Participants from the IDI session did not admit being sexually abuse. They however revealed they have heard or witness cases of abuse resulting from alcohol intoxication.

Qualitative responses reveal that mothers who are habitual drinkers are vulnerable to sexual vices/immoralities.

A critical look at table 4 above indicate that respondents expressed diverse views on the most significant effects of a woman's alcohol consumption on her children as 67(18.0%) of the respondents opined that it will affect mental development of the child/children, 44(11.8%) believe it will affect social development of the child/children, 70(18.8%) said it will cause wrong labelling of the children, another significant proportion of the respondents131(35.1%) posited that woman's alcohol intake can expose the child/children to early alcohol consumption that can make them to become addicts, another 32(8.6%), aligned with the view that it can expose the children to sexual violence and sexual immoralities, 28(7.5%) believe that it will affect family social/bond between mother and child.

Participants from the interview further reveal the most significant effect of a woman's alcohol consumption on her children**.** Most of the respondents virtually pointed their attention towards the impact a woman's alcohol consumption will have on their offspring.

One of the respondents argued that; "If a pregnant woman is drinking alcohol, the baby will have a dull brain; it will affect the foetus brain," (44-year-old nurse in Nnewi).

Another interviewee revealed, "The children will start disrespecting their

Table 4. Respondents views on whether they have experienced sexual abuse as a result of their alcohol intake

Variables	Frequency	Percent
Yes	62	16.6
No	308	82.6
Total	370	99.2
No response	3	.8
Total	**373**	**100.0**

Table 5. Respondents views on the most significant effect of a woman's alcohol consumption on her children

Variables	Frequency	Percent
It would affect the mental development of the child/children	67	18.0
It would affect the social development/socialisation of the child/children	44	11.8
It could cause social stigmatisation/wrong labelling of the child/children	70	18.8
It would expose the child/children to early alcohol consumption or becoming addicts	131	35.1
It could expose them to danger such as becoming vulnerable to violence and sexual immoralities	32	8.6
It could affect family/social bond between mother and child	28	7.5
Total	372	99.7
No response	1	.3
Total	**373**	**100.0**

mother, I have seen a situation where children of a woman who drinks alcohol do not have much regards for the woman" (46-year-old public servant in Onitsha)

Another respondent added;

> It will make the children to start drinking at a tender age, because children are there to copy anything they see their parents doing including the good and bad ones, if you are doing the bad one, they are learning, if you are doing the good one they are copying it too. For how long will you hide while drinking in your house? (29-year-old businesswoman in Nkpor)

However another respondent argued that it is wrong for a woman to drink before her children. In her words:

> How will a woman be drinking in her children's presence? Is something wrong with the person, I drink but not in my children's presence, sometimes I pour it in a different container that they don't know what I am taking, except my house help, so my children cannot drink because I am drinking(38-year-old trader in Onitsha).

DISCUSSION

The research revealed women's varied opinions about the consequences associated with their alcohol intake. The findings indicate that it can cause loss of social bond/closeness between partners and between women and their children. This view is consistent with Chukwunonye et al.'s (2013) study of alcohol consumption among Nigerian adults in Abia state, which revealed that heavy alcohol consumption impacts the relationship between alcohol consumers and their close relatives/friends.

Findings further show that a woman's steady drinking can lead to non-performance of gender roles and divorce in marriage. This view is in line with Wangeci's (2011) report from a cross-sectional study in Kirinyaga, Kenya, which revealed that most marriages where women were regular alcohol consumers ended in divorce; with 80% of the respondents

observing that part of what led to this was the failure to perform some gender-based roles. It is also in agreement with Mamman, Brieger, and Oshiname's (1994) survey where respondents identified issues associated with drinking alcohol such as illnesses, mental problems, children learning to drink, and child neglect. This implies that a woman who cannot take care of her children is not performing a traditional gender role; this could cause disunity in families and may lead to divorce. One may wonder why alcohol, which is supposedly an agent of social cohesion and social integration, is causing problems and influencing divorce. The answer lies in the fact that the outcome of alcohol intake yields different results for different people, so also is the motivation for drinking, which is subjective and is influenced by personal idiosyncrasies and social dynamics. This also explains why the symbolic interactionist perspective was adopted as the theoretical framework.

The research further reveals that stigmatization and loss of social respect for the woman will set in, especially when a woman drinks in excess. This view supports Wangeci's (2011) finding where 55% of her respondents noted families where mothers consume alcohol and lose social reputation.

Again, the findings reveal that women who are habitual drinkers become vulnerable to sexual vices/immorality. This view corroborates Mamman, Brieger, and Oshiname's (1994) survey, where respondents revealed that alcohol consumption among women might expose them to rape or tarnish their image. The problem is not just in the physical and psychological harm; it may cause the victim and in the societal label.

The findings also identified some of the bio-medical issues associated with mothers' alcohol consumption; such as causing miscarriage for the pregnant ones, hampering foetus growth and development as well as deterring the mental development of the offspring. These views were supported by Elek et al.'s (2013) study of women's knowledge, views and experiences regarding alcohol use and pregnancy, and Ibebuike et al's. (2019) cross-sectional descriptive survey of the knowledge of the effect of alcohol during pregnancy among women of reproductive age where the possible effects of women's alcohol consumption are miscarriage, premature birth, low birth weight, developmental delays, brain damage (learning problem) and mental disorder.

Interestingly, this research revealed that women are aware of the dangers of alcohol consumption and agreed with findings that it leads to serious health problems, violence, and family problems such as divorce and stigmatization. Respondents are also aware that drinking during reproductive age is unsafe. This is consistent with Lekettey et al.'s (2017) survey conducted among 250 pregnant women, where the study reveals that majority of both current alcohol drinkers and non-current alcohol drinkers were aware that drinking alcohol during pregnancy could lead to unplanned abortion. Still, it is perplexing to find that current drinkers appeared not to perceive such as dangerous despite the obvious consequences. Apparently, issues relating to alcohol use, social definitions, or stigmatisation across age and gender are borne out of the consumers' social environment. In this research, the respondents' opinions are culturally-based; how women alcohol consumption is defined, understood, or

misunderstood mirrors how the larger society is structured.

CONCLUSION

The complex nature of alcohol is in a significant position it occupies in social and religious activities despite its negative impact on health and social situations. Issues relating to alcohol intake can only be understood within the consumer's social and cultural contexts. This study's central theme was to interrogate social and health consequences emanating from alcohol consumption among women of reproductive age in Anambra State, Southeast Nigeria. The study became necessary because women's exposure to alcohol has become increasingly common, while health consequences have dominated discussions on alcohol-related problems. Comparatively, less attention is given to the social dimensions, which can impact the morbidity and mortality rate from individuals to society at large. The need to bridge the gap created by the dearth of studies and literature on social dimensions became of paramount importance. The study succeeded in bridging the gap created by the lack of studies and literature on the issue of maternal alcohol consumption. The study yielded important findings, ranging from bio-medical consequences such as low birth weight, brain damage for the child, developmental delay for the foetus or the child, miscarriage, and other vulnerabilities, especially as it relates to the implication for women. Some of the social consequences espoused by the respondents includes; divorce in marriages, loss of social prestige, and stigmatization of the woman or her children. The findings have further added to our understanding of the social and health consequences of alcohol consumption among women of reproductive age. The study has clear implications for future research, policymakers, and society at large.

RECOMMENDATIONS

This study recommends an all-encompassing approach. The need for the government and non-governmental organizations to sensitize women and people across all age and gender against heavy alcohol consumption is of paramount importance. Women need to be abreast with the dangers of alcohol lifestyle, which may affect their health and that of their children. Health practitioners who are likely to meet women of reproductive age during ante-natal and post-natal years should help in ensuring that alcohol lifestyle among mothers of reproductive age is regulated and reduced to its barest minimum. Other social institutions (Church, Media), social groups, and family members need to be informed on the dangers of maternal alcohol consumption, which can help sensitize, regulate, and monitor pregnant women and nursing mothers' lifestyle.

The social implications associated with alcohol use and misuse has far-reaching consequences that might not be easily predictable. Therefore, production, distribution, sale, and alcohol consumption should be monitored and regulated effectively, especially during social and religious gatherings. The government and Nongovernmental Organisations can partner to provide alternative means of handling emotional stress and other psycho-social issues, such as providing

accessible medical and psychotherapeutic services.

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SUBSTANCE USE, SOCIAL SUPPORT AND SOCIO-DEMOGRAPHIC FACTORS AMONG COMMERCIAL DRIVERS IN IBADAN

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ABSTRACT

Commercial drivers often engage in long and irregular working hours, and as such suffer back pain, fatigue, stress and thereafter use some psychoactive substance to cope with their job. Even though most studies on substance use have been on general population, limited information is available on the use of substance and roles of socio-demographic factors among commercial drivers. This study therefore examined the roles of socio-demographic factors (age, years of driving, gender and social support) in substance use among commercial drivers in Ibadan, Nigeria.

The study employed a cross-sectional design and purposive sampling technique to recruit 250 commercial drivers. A structured questionnaire was used to gather information on socio-demographic information, social support and substance use from the participants. Data were analyzed using descriptive statistics, correlation, Analysis of Variance and Independent t-test analysis.

Results showed that years of driving significantly have a positive correlation with substance use. However, duration and hours spent on the driving did not have a significant independent relationship with substance use. Younger participants significantly engage more in substance use than older individuals. Similarly, female participants significantly engage more in substance use than male drivers. Additionally, participants with high social support mostly engage in substance use than participants with low social support.

The study concluded that years of driving, age, gender and social support network of the drivers significantly plays an influencing roles in substance usage among commercial drivers in Ibadan. The study recommends that, in the organized substance use and abuse preventive program for drivers, the consideration for drivers' socio-demographics

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factors is quite imperative, especially as more females and younger individuals with more social support are getting more involved in substance use.

Keywords: Age, Years of Driving, Gender, Social Support, Substance Use

INTRODUCTION

Commercial drivers are important stakeholders within the transport sector. Commercial drivers commute passengers from one location to another, often times, they assist passengers with their luggage's and ensure proper maintenance of their vehicle. Commercial drivers often drive for long hours without taking a break or rest (Hisam, 2006). As a result of these long and irregular working hours, commercial drivers often suffer from back pain, fatigue, stress to mention but few (Girotto, Mesas, deAndrade & Birolim, 2014). Few studies have shown that some commercial drivers use and abuse psychoactive substances, in other to cope with their job and the need to keep awake, suppression of fatigue (Alti, Muazu & Aliyu, 2008; Toyosi, 2020; Oridota, et al., 2013; Makanjuola, Aina & Onigbogi, 2014).

According to the United Nations Office on Drugs and Crime (2019), nearly a third of the world's population aged 15years and above uses psychoactive substance at least once. Statistically, the National Drug Law Enforcement Agency (2018) revealed that between July 2017 and June 2018, that about 63 suspected drug dealers and traffickers were arrested with a total of 3,683kg of suspected hard drugs. Additionally, substance abuse among commercial drivers has become a global challenge. The World Health Organization (2007) studies from low-middle income countries revealed 4% to 69% of injured drivers having alcohol in their blood. Though several studies have studied the prevalence of substance abuse and have reported a high prevalence among commercial drivers (Abiona, Aloba & Fatoye, 2006; Omolase et al. 2012).

Ethan, (2017) and Ibrahim, (2016) stated that though substance use or drug consumption pattern in the Metropolis differs, smoking, drinking, and injection are common and depending on the type of drugs involved. Substance use and abuse often have an adverse effect not just on the physical wellbeing but on every aspect of human existence including the social, economic, political, and psychosocial lives, to mention but few (Rather, Bashir, Sheikh, Amin & Zahgeer, 2013). The problems arising from substance use is not restricted to an individual/drug user alone but affects the user's interaction with family and society (Arturo, 1990).

Substance abuse has not just become a major public health concern in Nigeria but the world in general. Severer psychological factors have been found to influence psychoactive substance use in Nigeria drugs (Abikoye, 2012; Adebowale, et al., 2013), as some mostly across general population (Obot, 1990, 1993; Gureje, et al., 2007; Ibeh & Ele, 2003; Agaba, Agaba, & Wigwe, 2004), others are based on students sample and hospital patients (Abdulfatai & Balarabe, 2016; Abiodun,

Adelekan, Ogunremi, Oni, & Obayan, 1994; Adamson & Akindele, 1994; Rockville, 2005; Lafinhan & Arowolo, 2002; Ajala, & Odunyemi, 2018; Unaogu, Onu, Iteke, Tukur, & Oka, 2017). Very little is known about substance use among commercial drivers even though drivers have been found to engage in hours of driving, and no previous published studies assessed a broad range of substance usage and some influencing factors among commercial drivers in Ibadan.

In an epidemiological study conducted by Gureje, et al., (2007) using Nigerian sample, it was specifically revealed that alcohol was the most commonly used substance, with 56% ever users and about 14% recent (past year) users at the time of their study. The authors further indicated that 3% were recent smokers, while 4% mostly used sedatives and 0.4% were cannabis smokers. Interestingly, Gureje, et al., (2007) discovered that males mostly use substance especially cannabis than females, while among middle-aged adults, both alcohol and tobacco use was the highest; based on religion, Moslems participants were much less likely alcohol users than persons of other faiths, although no such association was found for other substance including tobacco, non-prescription drug use, or illegal drug use. From Gureje et al's results, substance abuse and dependence were most common at the population level for alcohol while among users; abuse and dependence were likely to be experienced by alcohol users as they were by other drug users.

Substance abuse is a patterned use of a drug in which the user consumes the substance in amounts or with methods which are harmful to themselves or others (Nutt, King, Saulsbury & Blakemore, 2010). In Olowu, and Olusola, (2010), substance abuse is the use of drugs with psychoactive effect, with classifications like marijuana, alcohol, tobacco, cannabis, cocaine, benzodiazepines, heroin, and many more, usually consumed by adolescents and youths especially to gain a momentary escape from reality and boost their excitement, curiosity and self-concept (Ubangha, Bassey, Idowu & Ogunyemi, 2013). Some of the most common psychoactive substances commercial driver abuse includes nicotine, marijuana, heroin, cocaine, ogogoro and herbal mixture such as opa eyin, burukutu, palm wine to mention but few (Ajibade & Adefolaju, 2017), with alcohol and marijuana are mostly abused psychoactive substance (Adegboro, 2014).

Substance abuse has been associated with various medical problems such as cancer of the lungs, liver and kidney problem, respiratory and other cardiac problems (Unackwukwu & Nwankwo, 2003). Ajibade and Adefolaju (2017) reported that the use of psychoactive substances among drivers in Nigeria sometime alter their moods and emotional state; which adversely affect their health physically, psychologically and socially. Nigeria has the highest accident fatality rate in Africa at 33.7 per 100, 000 population (WHO, 2013). According to Welcome and Pereverzev (2010), approximately 50% of road traffic accidents on are linked to alcohol consumption. This is because a high percentage of commercial drivers use psychoactive drugs to keep awake and relieve fatigue during their long work schedules (Ajibade & Adefolaju, 2017; Abikoye, 2012). Also, commercial drivers who abuse psychoactive substances may engage in criminal/violent behaviour, risky sexual behaviour, driving under the

influence of a substance, rape, fighting, robbery or dispossessing commuters of their valuables. Similarly, there have been cases in which these drivers connived with the *ritualists* and armed robbers on the high way to supply them innocent commuters who eventually became the victims of crimes. They molest or beat up their spouses at the slightest provocation whenever they have either ingested or injected strong substances. Hence they exhibit disorderly behaviour in both their private and public lives.

Theoretically, the social cognitive theory by Bandura (1977), humans learns new behaviors from others. People learn by observing others, within their environment, behaviour and cognition all as the chief factors in influencing development in a reciprocal triadic relationship. Based on this social cognitive theory, a new non-substance-abuse-commercial driver may learn to use substance from other commercial drivers who are using substances in the parks because the tendency to learn how to abuse substances is very strong in such an environment. Hence, this environment coupled with other forms of reinforcements encourages substance abuse.

In a systematic review as documented by Adeloye, et al.,(2019), there was an established high prevalence of substance use in Nigeria with harmful use of alcohol twice among men compared to women. The authors showed that harmful alcohol use was higher in rural than urban settings, meanwhile, most individual were 15years and above as the users increased from 24 to 34 million between 1995 to 2015. In Green (2006), gender differences were found in substance use treatment outcomes, as women are more likely to face multiple barriers to accessing substance use treatment than men; this makes women fare better on treatment than men. Similarly, women are less likely than men to use illicit drugs and develop drug-related problems (Greenfield, Manwani, & Nargiso, 2003a) especially when they have family members, friends, and partners who use substance and support their use of their substance (Bendtsen, Dahlstrom, & Bjurulf, 2002; Wu &Ringwalt, 2004; Brady & Ashley 2005; Dawson, Grant & Stinson, 2005). In developing countries like Nigeria, availability and misuse of illicit substances among the youth (both male and female) have remained a serious social problem confronting societies (Fareo, 2012; Emmanuel, 2013; Yunusa, 2016).

Oshikoya and Alli (2006) identified that there have been consistent rapid increases in the incidence of substance use and abuse in Nigeria with early onset at age 10. Age has been revealed to influence substance use (Kuruma, 2020; Oni, 2013). Furthermore, United Nations, Department of Economic and Social Affairs (2007) discovered in 2016 that, more than 4per cent individuals across the globe were younger than 25 years old, and about 26 per cent were aged 0–14 years while 16 per cent were aged 15–24 years. Specifically, in Africa, there are the highest proportions (60 per cent) of young vibrant individuals, whereby 2050, all continents have projected decline in the proportion of the population aged 15–24. Though, studies across the population continually show that substance use among older people is lower compare to younger people. Interestingly, Kenyan National Authority for the Campaign Against Alcohol and Drug Abuse, (2012) discovered older individuals reported higher use of established substances such

as cannabis (*bhang* and hashish), while drugs like cocaine and heroin are reportedly used more frequently among those aged 18–24; while in a general population, cannabis and khat continue to be two most commonly used substances especially among those aged 25–35.

Using Nigerian sample, Atilola, Ayinde and Adeitan's (2013) revealed in their study among young individuals with an average mean age of 15years, that about 46% of the student participants reportedly use alcohol or any other substance, while older age, parental alcohol and substance were independently associated with a year use of alcohol or any other substance. Onyinye, Anyanwu, Ibekwe, and Ojinnaka, (2016) documented frequent use and abuse of substance abuse was about 33% particularly alcohol being the most abuse substance amongst older students, males, persons from divorced home and orphans. More so, mostly Nigerian studies on substance use were either hospital or community based with main focus on secondary school students or undergraduates (Johnson, Akpanekpo, Okonna, Adeboye, & Udoh, 2017). Falaye, & Oluwole, 2002; Oshikoya & Alli, 2006; Olatoye, & Afuwape, 2003; Omage, & Omage, 2012). It was however less amongst those who frequently participated in daily routine job unlike commercial drivers especially in Ibadan city.

Subsequently, literature has shown low frequent use of substance were discovered among young individuals (Chan, Kelly, Hides, Quinn and Williams 2016; Jorge, Ferreira, Ferreira, Kawachi, Zarzar, and Pordeu, 2018). Abikoye, Sholarin, and Adekoya (2014) discovered average usage of substance among young persons, meanwhile, in Adebiyi, Faseru, Sangowawa and Owoaje (2010), and Oni (2013), high prevalence among older adults were documented especially in females (Chan, et al., 2016). Additionally, Oshodi, Aina and Onajole (2010), emphasized that despite worldwide concern and education about substances with psychoactive content, many individuals especially youths have limited awareness of their adverse consequences of these substances.

Oshodi et al., (2010) further explained that curiosity, social pressure, and support influence are found to be the primary reasons for substance use and abuse (Aina & Olorunsola, 2008). Studies have established a negative relationship between social support and lifetime use of substances (Brick, Nugent, Kahana, Bruce, Tanney, Fernandez, & Bauermeister, 2018; Buttram, Kurtz, & Surratt, 2013; Alexander, 2012; Anetor, & Oyekan-Thomas, 2018) especially cannabis, alcohol and tobacco and about month use of methamphetamine (Rapiera, McKernanc & Stauffer, 2019). However, some authors have revealed a positive relationship between substance use and social support (Bullers, Cooper, & Russell, 2001; Valente, Gallaher & Mouttapa, 2004; Abdu-Raheem, 2013; Idowu, Aremu, Olumide, & Ogunlaja, 2018; Nwoke, Ogba & Ugwu, 2012; Mokoena 2002; Adebiyi, & Owoaje, 2008; Adebowale, Olatona, Abiola, Oridota, Goodman & Onajole, 2013) and the motivation to change from the use of psychoactive substances with a real enhancement motives substance use (Moon, Mathias, Mullen, Karns-Wright, Hill-Kapturczak, Roache, & Dougherty, 2020); while others have discovered some mixed results between social support and substance use (Spohr, Suzuki, Marshall, Taxman, & Walters, 2016; Zywiak, Neighbors, Martin, Johnson, Eaton, & Rohsenow, 2009).

While associations are found among social support, demographic factors and substance use in general, the direction of the relationship is still inconsistent. More so, few published studies have established substance use among commercial drivers, none has been documented among commercial drivers specifically in Ibadan. Thus, to bridge the gap in the literature, the present study aims at investigating the influence of socio-demographic factors on substance use among commercial drivers in Ibadan.

From the review of literature, two research questions were identified and were raised which include:

- Will socio-demographic factors (years of driving, duration of taking and hours spent on the job, age, gender) and social support correlate with substance use among commercial drivers?
- Will socio-demographic factors including years of driving, duration of taking and hours spent on the job, age, gender and social support significantly independently and jointly predict substance use among commercial drivers?

From the research questions, the following research hypotheses were formulated.

- Socio-demographic factors (years of driving, duration of taking, hours spent on the job, age and gender) and social support will significantly correlate with substance use among commercial drivers
- Socio-demographic factors (years of driving, duration of taking, hours spent on the job, age and gender) and social support will significantly, independently and jointly predict substance use among commercial drivers

METHOD

Design

The study adopted a cross sectional survey design. Socio-demographic factors (years of driving, duration of taking, hours spent on the job, age and gender) and social support were the independent variables, while the dependent variable was substance use.

Setting and Sampling Technique

This study employed purposive sampling technique in the selection of participants into the study. The commercial drivers whose daily tour revolve around the major Universities' community in Ibadan, and can read and write in English language involved in this study. This was due to the fact most of the educated or experienced drivers ply around universities community's routes by the nature of their passengers (the students).

Participants

The total of two hundred and fifty (250) commercial drivers participated in the study. Their age ranged between 18 years and 60 Years ($\bar{X}$= 33.86; SD= 8.86). Specifically, 156 (60.8%) were young drivers (18-35years) while 98 (39.2%) were old drivers (36 and above); 200(80%) males and 50 (20%) females involved in the study.

Based on marital status, 132(52.8%) were single, 86(34.4%) were married, 18(7.2%) were divorced and 14(5.6%) were separated at the time of the study. Moreover, years of driving ranges between 1-35years (($\bar{X}$= 8.92; SD= 6.48). Based on duration of driving, 29(11.6%) drivers have spent less than 6months, 190(76%) have spent between 7-12months while 31 (12.4%) have spent more than one

year in driving. About 15(6%) drivers do spend between 1-5hours in driving per day, 148(58.2%) drivers do spend between 6-10hours of driving per day, while, 87(34.8%) drivers do spend about 11hours and above per day in driving per day.

Research Instruments

A structured questionnaire was employed to source for information from the participants of the study, with segment consists of section A, B and C.

In section A of the questionnaire, the items address the participant's demographics profile including age (young[18-35years] and old [36years and above]), gender (male coded as 1 and female coded as 2), marital status (single, married, divorced and separated), years of driving, duration of taking drug, hours spent on driving per day.

Section B: Social support was measured using multidimensional perceived social support scale developed by Zimet, et al., (1988). This scale consist of 12 items in a 7-point likert type response format, that ranges from very strongly disagree (1) to very strongly agree (7). The scale contains three sub-dimensions including: family(items 3,4,8, and 11), friends (items 6,7,9 and 12) and significant others(items 1,2,5, and 10) The summation of items can be done by subdomains or obtain a composite social support scores. The scale is scored directly with the scores of the scale ranges from 12 to 84 total scores, those who scored below the mean of 58.36 were classified as having low social support, while those above the mean score were classified as having high social support. The scale has been used widely, found to have strong internal consistency of 0.71 (Dambi, eta l., 2018). In this study, the reported Cronbach's alpha reliability of the scale was 0.80.

The Section C of the questionnaire was for substance use. The Drug Abuse Screening Scale Questionnaire (DAST-20) was used to measure substance use. The scale was developed by Skinner (1982). The 20-items scale has unidirectional measure, with Yes and No response format. The DAST-20 scores ranges between 0-20, higher score scores denote tendency to use more substance and abuse drugs. The scale has been reported to be highly valid with the reliability scores ranges between 0.70 through 0.90 (Skinner, 2001; Yudko, et al., 2007). The documented Cronbach alpha for this scale in this study was 0.90.

Setting

The study took place in the commercial motor parks around Universities' (Lead City University and University of Ibadan; Ibadan, Oyo-State) community in Ibadan, Oyo State. Nigeria.

Procedure for data gathering and ethical considerations

Upon the arrival of the researchers at the research settings, the researchers sought the research approval of the motor park managers. After clear description of the purposes and aims of the study, research approval was given by the motor park management. Then the research assistants approach consented participants present at the motor park at the time of the study. Considering the inclusion criteria (drivers who speak and write in English Language, who have reside and be driving for the past three years in the university community, drivers with driving license and authorized tag given by the affiliated academic institution), trained research assistants approach each participant,

explain the purpose of the study and sought their permission to participate in the study. For those who consented to participate, questionnaire was administered to them. Strict ethical research principles were followed in the course of the research including the data collection. The participants were also given the opportunity to withdraw or ask questions when they feel like doing so. Participants and setting were purposively selected due to literature; the recent increase in the substance use in the Nigerian communities and the proximity to the researchers.

The participants were assured of their confidentiality in participating in the study. This procedure was adopted in all the settings. After two weeks of data collection, 260 questionnaires were administered while 250 were good for analysis. The response rate was about 96%.

Statistical Analysis

The collated data were subjected to statistical analysis using Statistical Package for the Social Sciences (SPSS™ 20). The statistical tool used for data analysis in this study included, Zero Order correlation was adopted for hypothesis one this was due to the fact that the interested variables including years of driving, duration of taking substance, hours spent on the job, age, gender, social support and substance use were measured on the interval or continuous scale, also the researcher was interested in the inter-correlation among the variables. Additionally, multiple regression was adopted for hypothesis two because the researcher is interested in the prediction of years of driving, duration of taking substance, hours spent on the job, age, gender, social support on substance use. More so, the variables are all measured on continuous scale.

RESULTS

Hypothesis one states that socio-demographic factors (years of driving, duration of taking, hours spent on the job, age and gender) and social support will significantly correlate with substance use among commercial drivers, this was analyzed using Pearson Product Moment Correlation as shown in Table 1

From the table 1 above, the result revealed that years of driving (r {250} = .138 P<.05), age (r {250} = .176, P<.01) gender

Table 1. Summary of Multiple Correlation showing relationships among years of driving, duration of taking, hours spent on the job, age and gender) and social support and substance use

Variables	1	2	3	4	5	6	7	$\bar{X}$	SD
1. Year Of Driving	1							8.92	6.49
2. Duration Of Taking	.111	1						2.01	0.49
3. Hours Spent On Job	.228**	.164**	1					2.29	0.57
4. Age	.598**	.185**	.009	1				33.86	8.87
5. Gender	-.174**	-.069	-.165**	-.235**	1			1.20	0.40
6. Social Support	.128*	.018	.158*	-.052	-.080	1		58.36	14.51
7. Substance Use	.138*	.006	-.034	-.176**	.197**	.164**	1	30.51	4.09

**. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed). N=250*

(r {250} = .197, P<.01) and social support (r {250} = .164, P<.01) significantly related with substance use. The result depicts that drivers' years of driving positively related with their use of substance, the more years of driving subsequently results to higher substance use. Similarly, drivers' age significantly and negatively related with their usage of substance, the younger drivers mostly use substance than the older drivers. Additionally, more females use substance than male drivers. Likewise, drivers who experience more social support have the higher tendency to use substance

However, duration of taking substance [r{250}=.006; p>.05] and drivers' hours spend on the job/driving [r{250}=-.03; p>.05] of the participants did not have a significant relationship with substance use. The results supported the hypothesis.

In hypothesis two, socio-demographic factors (years of driving, duration of taking, hours spent on the job, age and gender) and social support will significantly, independently and jointly predict substance use among commercial drivers; this was analyzed using multiple regression analysis as shown in Table 2

From the result in table 2 using regression model, drivers years of driving (β =.05, t=.31, P>.05), duration of taking substance (β=-.02, t=-.35, P>.05) and hours spend on the driving (β =-.02, t=-.40, P>.05) did not independently predict substance use. Even, drivers' years of driving significantly related with their use of substance in the correlation analysis, in the regression model the factors (years of driving, duration of taking substance and hours spend on driving) did not predict substance use.

Conversely, drivers age (β=-.24, t=3.01, P<.05), gender (β=.26, t=4.27, P<.05) and social support (β=.19, t=3.23, P<.05) independently predict substance use. As drivers' age made about -.24 indirect impact on the their use of substance, drivers' gender contributed about .26 impact on substance, also drivers' social support added about .19 amount of impact on their use of substance.

Interestingly, years of driving, duration of taking, hours spent on the job, age, gender and social support (R=.36, R^2=.13, F=6.13, P<.01) jointly predicted substance use. This result depicts that drivers' years of driving, duration of taking, hours spent on the job, age, gender and social support showed about 13% variance observed in their substance use as explained by the joint relationship of

Table 2. Summary of Multiple Regression analysis showing the independent and joint of years of driving, duration of taking, hours spent on the job, age and gender) and social support on substance use

Predictors	β	t	P	R	R^2	F	P
Years of Driving	.05	.31	>.05				
Duration of Taking Substance	-.02	-.35	>.05				
Hours spent on the Driving Job	-.02	-.40	>.05	.36	.13	6.13	<.01
Age	-.24	3.01	<.05				
Gender	.26	4.27	<.05				
Social Support	.19	3.23	<.05				

Dependent Variable: Substance Use

the variables. Meanwhile, these variables showed about .36 degree of relationship and strength with the use of substance. Therefore, hypothesis two is accepted.

DISCUSSION

This study explored the influence of socio-demographic factors (years of driving, hours spent on driving and duration of taking substance, age and gender) and social support on substance use among commercial drivers within Ibadan city. The findings of this study indicated that each of the socio-demographic factors (years of driving, hours spent on driving and duration of taking substance, age and gender) and social support had a significant influence on substance use among commercial drivers. Specifically, the study revealed that years of driving significantly related with the use of substance, the older drivers use more of substance. This simply implies that the years of driving positively interrelated with substance use. Drivers tend to have few friends amongst themselves at the onset of their job, they understudy each other, to know which and others to adopt as friends and support group and lean towards having more friends and socialize as they progresses in their job. This also occurs with the usage of substance, the drivers engage in controlled substance use or possibly don't, but as they further associate with friends, spend more years on the job and have support groups among themselves they progressively adopt the use of substance and increase its usage, as stated in the theory of social learning. This outcome is connected with the findings of Kuruma, (2020) and Oni, (2013) who both emphasized the earlier usage of substance among Nigerians, and individual's age positively contribute to the usage of substance. The positive association between years of driving with substance use is established on the adoption of substance among young people as one of the coping mechanisms against possible psychological distress arising from driving work schedules (Ajibade & Adefolaju, 2017; Abikoye, 2012) and these individuals advance in the use of substance which could later result of problematic substance use.

Furthermore, the result vividly showed that the age of the commercial drivers serves as a significant factor that influence substance use, the findings of this study revealed that younger commercial drivers' use substance than the older commercial drivers. Often time's youth have a greater tendency of being influenced by their contemporaries because they are at still try to figure out their identity. This outcome supported the discoveries of Ubangha, et al, (2013) who stated that young individuals tend to resort to smoking, drinking and other substances to gain a momentary escape from reality and to increase and boost their excitement, curiosity and self-concept. Similarly, young individuals have their attitudes and behaviors reinforced through substance use with are one of the negative ways (Ackerman, 2003). More so as confirmed in Olatinwo (2016) who reported drug use and involvement among youths in Oyo State are facilitated by their peer influence.

Furthermore, the regression model revealed that drivers' age significantly predicts substance use. Explicitly, drivers who are younger in age significantly reported more usage of substance than those who are older in age. This outcome showed that young drivers significantly engage more in substance use than older

participants of study. Young people are pleasure driven, experiment behaviors even though such is risk behaviour, they associate and are articulate in speaking. Young individuals tend to look out for those of like attributes to them; Young individuals are curiosity and possibly desire for adventure progressively contribute to their experimentation with substance especially drugs. This this due to the fact these substances give them a feeling of excitement as such they may find it difficult to do without them substance. This outcome is similar to Vernic, Ursoniu and Vlaicu (2010) where it was reiterated that young people are mostly still malleable to issues especially in their job and life circumstances, which makes them more predisposed to lifestyle modifications than older adults. This outcome confirmed the principles of human development as young individuals tend to experiment and get more involved in risky behaviors including the use of substance due to their curiosity, social pressure and support influence found to predominantly reasons for substance use and abuse (Oshodi et al.,2010; Aina & Olorunsola, 2008). The result supported the projections of UNDES, (2007) where it was reiterated that some reasonable numbers of individuals across the globe who were younger than 35 years old, engages in substance use more than older people, subsequently across population, older people participation in substance use is lower compare to younger people (Atilola, et al., 2013; Chan, et al., 2016; Jorge, et al., 2018; Abikoye, et al., 2014). Although, the result negate the findings of NACAADA, (2012) and Onyinye, et al.,(2016) that older individuals reported a higher use of some specific substances like cannabis and cigarette; the differences in outcomes are not unconnected with the fact participants of study and location of study are quite different; their findings were mostly among student population while the present study was among commercial drivers.

Likewise, the result revealed through the analysis of variance, that gender significantly influenced substance use among commercial drivers, and specifically in both the correlation and regression models, female commercial drivers significantly engaged more in substance use than their male counterpart despite few individuals were female. The African perspective that women engage in commercial driving which is mainly for men could motivate their involvement in the use of substance in other to cope with the arising circumstances and possible stress. This outcome specified that female participants significantly participated more in substance use than male which reinforced the findings Green (2006) and Fareo, (2012), that gender differences significantly predicted and influenced substance use. Consequentially, women remain higher frequent users of substance (Chan, et al., 2016) and the availability and misuse of illicit substances among the females youth which has continue to post a serious social problem confronting societies (Emmanuel, 2013; Yunusa, 2016). However, the result disconfirmed the findings of Obikeze and Obi, (2013) and Oshodi, et al., (2010) who stated that males' students involved in substance use than female especially in alcohol and/or illicit drugs. Their findings established these contrary results among student sample in tertiary schools whereas this present study confirmed diverse result among commercial drivers.

Furthermore, the outcome of this study confirmed that social support significantly

related and predicted substance use among commercial drivers. Specifically through the regression model, social support significantly predicted the use of substance. This results revealed that the extent of perceived support from friends, relatives and significant other people in interpersonal daily activities had a significant influence on the use of substance among commercial drivers, such that drivers who perceived that they have low support from significant others or friends use less of substance than those who perceived high support from their significant others or colleagues. The outcome seconded the previous studies on positive association between social support and substance abuse (Bullers, et al., 2001; Valente, et al., 2004; Nwoke, et al., 2012; Mokoena 2002; Adebiyi, & Owoaje, 2008; Adebowale, et al.,2013), as individuals with more social support network or system reported more of substance use. This result also buttressed the findings of Abdu-Raheem, (2013) and Idowu, et al., (2018), the authors reported that perceived social support especially from friends, influences frequent use of substance among selected populations. This is because most times when individual is supported by friends from their social group, they are more likely to behave like them, adjust and imitate their behaviors especially when in terms of substance use, which may later help in managing life stressors (Osmany, et al., 2014).

CONCLUSION

From the findings of this study, social-demographic factors (years of driving, duration of driving, hours spent on driving, age, gender) and social support are significant factors that contribute to the use of substances among commercial drivers in Ibadan. It was established that years of driving positively contributed to subsequent use of substance; as young commercial drivers use substance more than old commercial drivers. Also social support had positive impact on commercial driver's involvement in substance.

Some limitations have been identified in the course of the research, due to limited sample size and variables of the study, the study was technically underpowered (Hulley, et al, 2013); as such, more socio-psychological variables with large sample size are needed to study with substance use. More so, further longitudinal and experimental studies are required to examine the changes, and causal effect in participant's substance use.

DECLARATION OF COMPETING INTEREST

The authors declared that there are no conflicts of interest.

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CROSS-SECTIONAL STUDY OF ALCOHOL PREFERENCES AND EXPENDITURES ON FOOD INSECURITY BETWEEN URBAN AND RURAL SETTINGS IN ZAMBIA

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ABSTRACT

This study investigated potential differences in rural and urban alcohol expenditures and the relationship between alcohol and food insecurity. The 2015 Zambia Living Conditions Monitoring Survey was used with a sample of 12,260 households. Bivariate analyses and logistical regression evaluated the differences in rural/urban alcohol preferences and the relationship between alcohol and food insecurity. Traditional brew consumption was found to be significantly higher in rural areas ($p<0.001$). Rural households with alcohol expenditures had 23 percent lower odds (OR: 0.770, $p<0.01$) of eating three or more meals a day compared to households without alcohol expenditures. Rural characteristics around alcohol consumption need to be taken into consideration when determining food security and nutrition policies. Alcohol assessments and services should be adapted to rural conditions in Zambia to increase the effectiveness of prevention programs.

INTRODUCTION

Global alcohol consumption is increasing, and the alcohol industry is investing heavily in sub-Saharan Africa to capitalize on this increasing demand (McCall, 2017). Data from the World Health Organization (WHO) African Region shows that alcohol use has been attributed to 4.7 percent of all disability-adjusted life years (DALYs) and 6.5 percent of all deaths (Ferreira-Borges et al., 2016). Alcohol consumption

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is common among the population in central Africa including Zambia. Prevalence of alcohol use disorders among Zambians 15+ years was 5.5 percent, which is larger than the prevalence across the WHO African region (3.7 percent) (World Health Organization, 2019).

Consumption of alcohol has been and continues to be a part of the social structure including many traditions and ceremonies in Zambia (Colson & Scudder, 1988). As such, over 13.5 percent of Zambians 15+ years engaged in heavy episodic drinking in 2016 (World Health Organization, 2019). It is critical to address the prevalence of alcohol use in Zambia, as it contributes to many adverse health and social problems at the individual and societal levels (Zambia Ministry of Health, 2021).[5] Alcohol use is associated with unsafe sex, increased spread of STDs and HIV/AIDS, unplanned pregnancy, mental illness, vehicle accidents, violence, chronic diseases, gender-based violence (GBV), reduced workplace productivity, and work absenteeism, and truancy among students (Taylor & Paltzer, 2019).

Furthermore, a growing number of studies have begun to document links between food insecurity (defined as limited access to enough and nutritious food to everyone) and alcohol use. Several studies have shown significant associations between alcohol use and food insecurity in sub-Saharan Africa (Dewing et al., 2013; Eaton, Cain, et al., 2014; Eaton, Pitpitan, et al., 2014; Regassa & Stoecker, 2012; Wainberg et al., 2018). In rural Mozambique, being food insecure increased the risk of hazardous alcohol use among female heads of households (Wainberg et al., 2018). Nearly half (46.7 percent) of the Zambian population was undernourished between 2016-2018 (Food and Agriculture Organization of the United Nations et al., 2019). This number is already increasing due to the Sars-Cov-2 pandemic (Jafri et al., 2021). Among adults, food insecurity is associated with increased mental health problems, diabetes, hypertension, poor sleep outcomes and overall poor health (Ding et al., 2015; Gucciardi et al., 2014; Jones, 2017).

Access to food in Zambia is limited due to high poverty and unemployment, income inequality, and high food prices in urban areas and low farm revenues in rural areas (World Food Programme, 2019). Rural households specifically, are less food secure with 43.7 percent of households having at least three meals a day compared to 67.8 percent of urban households (Bulawayo et al., 2019). Food insecurity disparities among rural areas may be related to disparities in poverty, with 58 percent of Zambians in rural areas being extremely impoverished compared to 13 percent in urban areas (United Nations Children's Fund, 2015). Absolute poverty and relative rural-urban disparities are determinants of alcohol use in Zambia (Crane et al., 2018; Taylor et al., 2020).

Despite lower levels of disposable income, consumption rates can reach heavy episodic drinking levels in rural areas given the different types of alcohol available, specifically traditional and opaque beer whether home-brewed or commercially produced. There is little information regarding the influence of such alcohol types, mainly because they are often unrecorded (Lachenmeier et al., 2011). These types of alcohol are of specific concern to food insecurity because the staple cash crop, maize, is often used as the main ingredient. Individuals may assume drinking the thicker opaque beer is

a substitute for food without understanding the harms associated with daily, heavy alcohol consumption. Understanding the differences between rural and urban alcohol consumption and types on health outcomes remain a gap in the research. Understanding this nuance in alcohol consumption is necessary in order to have an accurate understanding of the burden related to alcohol as well as developing appropriate and valid diagnostic tools to evaluate alcohol use disorders. Therefore, the objective of this analysis was two-fold; 1) to understand the variation in most common alcohol types consumed between rural and urban consumption and 2) to determine the association between any alcohol expenditures with food insecurity among participants in the Zambian LCMS household expenditure survey in 2015. We hypothesized that 1) traditional and opaque beer consumption will be higher in rural areas compared to urban areas and 2) alcohol use will be associated with reduced odds of eating three or more meals per day and reduced odds of consuming meat, with profound impacts in rural regions compared to urban regions.

METHODS

Study Population

This study used data from the cross-sectional, nationally representative Zambia Living Conditions Monitoring Survey (LCMS) 2015 (Phase VII) covering the time period between April 2015 and May 2015. Strength of the survey is the ability to assess household-level expenditure differences by region (rural and urban). The total sample included 12,260 households from all ten Zambian provinces. LCMS survey topics included housing conditions and amenities, access to services, healthcare expenditures, food and beverage expenditures, other household expenditures, poverty and community development indicators, and household events. Individuals under the age of 18 and with missing data regarding alcohol expenditures were excluded from the analysis resulting in a total sample size of (N=12,246). This study used a deidentified data set received from the Zambia Central Statistics Office. Ethics review of the analysis and publication were reviewed and approved by the Zambia Central Statistics Agency. No ethical issues were identified or reported.

Independent variable

The primary independent variable was alcohol consumption reported by the head of households reporting one or more Kwacha (Zambian currency) for household alcohol expenditures, alcohol received, or alcohol produced across all seven alcohol types. Alcohol types included clear beer, traditional beer, opaque beer, wine, cider, spirits, and others. The question asked how many units of each alcohol type was purchased, consumed, and received (asked as three separate questions) in the past two weeks. Answers were reported in units and values in Kwacha and summary measures created combining all three questions into a single measure of alcohol use.

Dependent variable

The dependent variable of food security was measured with two questions asking how many meals per day on average and servings of meat eaten per week. For the purpose of this study, eating less than three meals a day or less than four

servings of meat per week were considered indicators of not achieving adequate levels of food security. Meals per day are considered an indicator of quantity and meat servings are an indicator of quality (protein intake) of food intake.

Data Analysis

We used frequencies and percentages to describe the populations' sociodemographic characteristics including alcohol expenditures and type. Logistic regression models stratified by region (rural and urban) were used to assess the association between household alcohol consumption and food security (three plus meals per day and four-plus meat servings per week). Self-reported poverty status, sex of head of household, age of head of household, education level of head of household, and household size were included as covariates in the models. Coefficients are reported as odds ratios.

RESULTS

Sample characteristics are described in Table 1 showing statistically significant differences in age, household size, total alcohol expenditures, meals per day, and meat servings per week between urban and rural households. Approximately a quarter of respondents were female with a mean age of 43 years. Households reporting 3+ meals per day and 4+ meat servings per week were 57 and 52 percent, respectively, with significant differences between urban and rural households.

The first hypothesis states opaque beer and traditional brew consumption are higher in rural areas compared to urban. Table 2 shows household expenditures by alcohol type and region. Among the total sample, mean annual alcohol expenditure was US$33.90 (2020 dollars). For commercial types of alcohol including spirits, wine, cider, and clear beer, urban households have a higher level of expenditures compared to rural households. However, opaque beer and traditional brew were higher in rural areas with a significant difference in traditional brew, which leads us to reject the null hypothesis that consumption of traditional brew was the same between urban and rural households. Table 3 shows alcohol expenditures among those who reported any alcohol expenditure within the three categories of alcohol purchased, received, and produced. Given the likely pattern of high episodic drinking among drinkers compared to those who abstain, the mean annual expenditure among drinkers is US$279 (2020 dollars) with urban drinkers spending approximately three times as much on alcohol

Table 1. Sample characteristics by region (N=12,246)

	Total	Urban (n=5,702)	Rural (n=6,544)	p-value
Female, n (%)	2,903 (23.7)	1,387 (24.3)	1,516 (23.2)	0.133
Age, mean (SD)	43.0 (14.4)	41.9 (12.9)	44.0 (15.5)	<0.001*
Household Size, mean (SD)	5.13 (2.6)	5.04 (2.5)	5.21 (2.7)	<0.001*
Meals 3+ per day, n (%)	7,034 (57.4)	4,218 (74.0)	2,816 (43.0)	<0.001*
Meat 4+ per week, n (%)	6,337 (51.8)	3,824 (67.1)	2,514 (38.4)	<0.001*

*Note: Significant p-values (< .05) are indicated with an **

compared to rural drinkers. Traditional brew is preferred in rural areas and is also the source of significant unrecorded consumption suggesting the available alcohol consumption data primarily reflects urban consumption.

Figure 1 displays the proportion of annual alcohol purchasing by most preferred type inclusive of alcohol received and produced between rural and urban areas highlighting the difference in alcohol type preferences.

Table 4 shows any alcohol expenditures in rural areas is associated with 23 percent lower odds of eating 3+ meals per day (OR: 0.770; 95% CI: 0.654, 0.906; p<0.01) and 29 percent greater odds of eating 4+ meat servings a week (95% CI: 1.099, 1.507; p<0.01). Among urban households, alcohol expenditure was not significantly associated with skipping meals but was significantly associated with greater odds of eating 4+ meat servings a week (aOR=1.269; 95% CI: 1.052, 1.531; p<0.05). The results partially support the hypothesis that among rural households, alcohol expenditures were associated with a reduced likelihood of eating 3+ meals per day but no association among urban households.

Table 2. Mean annual alcohol expenditures by type and region among total sample (N=12,246) (2020 USD)

	Total, Mean (95% CI)	Urban, Mean (95% CI)	Rural, Mean (95% CI)	p-value
Spirits	3.9 (2.6, 5.3)	6.7 (3.9, 9.5)	1.5 (0.8, 1.2)	<0.001*
Wine	5.2 (3.9, 6.4)	9.3 (6.9, 11.6)	1.6 (0.5, 2.7)	<0.001*
Cider	4.1 (2.8, 5.5)	8.3 (5.4, 11.2)	0.5 (0.2, 0.8)	<0.001*
Clear beer	11.0 (8.4, 13.6)	21.2 (15.8, 26.6)	2.1 (1.2, 3.0)	<0.001*
Opaque beer	4.7 (4.0, 5.5)	4.6 (3.7, 5.6)	4.9 (3.7, 6.02)	0.78
Traditional brew	2.8 (2.4, 3.3)	1.4 (0.7, 2.1)	4.0 (3.5, 4.6)	<0.001*
Other alcohol	2.1 (1.4, 2.7)	2.9 (1.9, 3.9)	1.4 (0.6, 2.2)	0.02*
All types (total)	33.9 (30.0, 7.8)	54.4 (46.6, 62.2)	16.0 (13.5, 18.5)	<0.001*

Note: Significant p-values (< .05) are indicated with an *

Table 3. Mean annual alcohol expenditures by type and region among those who purchased alcohol (N=1,473) (2020 USD)

	Total, Mean (95% CI)	Urban, Mean (95% CI)	Rural, Mean (95% CI)	p-value
Spirits	32.6 (21.3, 43.8)	52.9 (31.0, 74.8)	12.9 (6.8, 19.0)	<0.001*
Wine	42.7 (32.5, 52.9)	72.1 (54.2, 90.1)	14.2 (4.5, 23.8)	<0.001*
Cider	34.3 (23.1, 45.6)	65.2 (42.7, 87.8)	4.4 (1.5, 7.4)	<0.001*
Clear beer	91.2 (70.4, 112.0)	165.9 (125.0, 206.8)	18.7 (10.9, 26.5)	<0.001*
Opaque beer	39.2 (33.1, 45.3)	36.4 (29.4, 43.5)	41.9 (32.1, 51.8)	0.37
Traditional brew	21.7 (18.2, 25.2)	10.6 (5.0, 16.1)	32.6 (28.3, 36.8)	<0.001*
Other alcohol	17.2 (12.0, 22.5)	22.6 (14.6, 30.6)	12.1 (5.1, 19.0)	0.051
All types	279.0 (249.5, 308.5)	425.8 (371.5, 480.1)	136.7 (116.8, 156.6)	<0.001*

*Note: Significant p-values (< .05) are indicated with an **

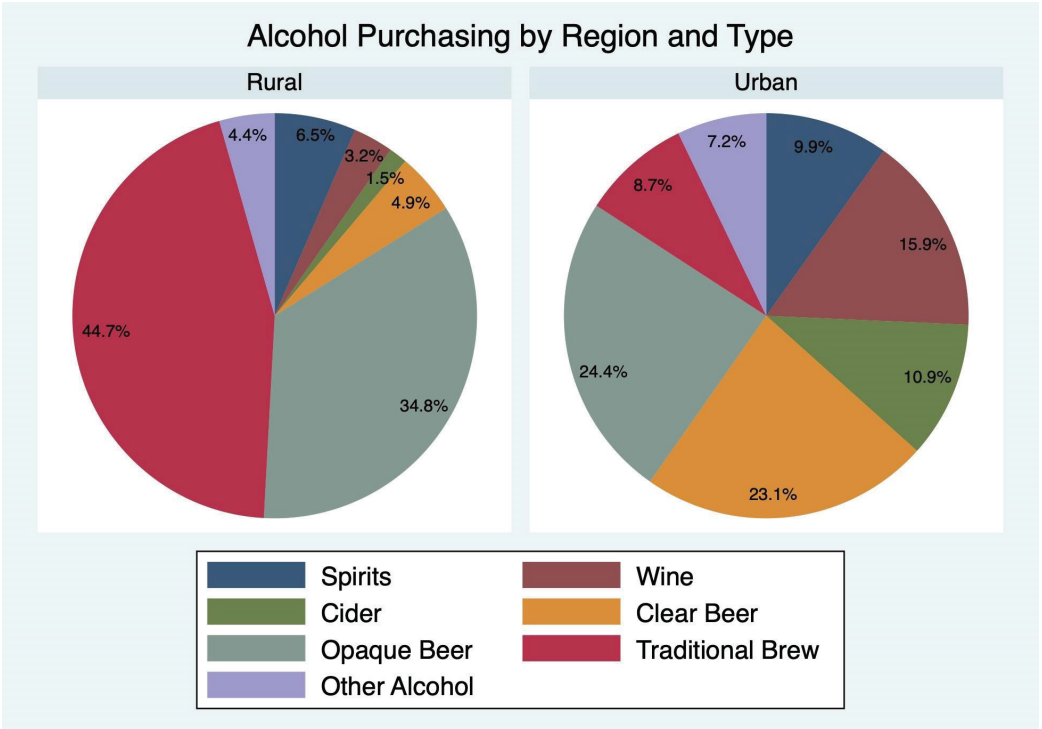

Figure 1. Alcohol type preference based on greatest household expenditure by region.

DISCUSSION

This study sought to better understand the rural/urban differences in alcohol consumption in Zambia and related association with measures of food insecurity. Our results show that mean alcohol expenditure is significantly higher in urban versus rural regions of Zambia. Further, whereas, urban residents had significantly higher expenditures on spirits, wine, cider, and clear beer (than rural residents), rural residents spent more on traditional and opaque beer (than urban residents). This partially supports the hypothesis that traditional brew is higher in rural areas compared to urban in Zambia, but similar preferences exist for opaque beer. The observed preferences for clear beer, wine, cider, and spirits in the urban areas represents the higher economic status of urban drinkers relative to rural drinkers but may not indicate lower absolute levels of alcohol consumed. Unrecorded alcohol consumption is a major gap in the global alcohol data, which creates a bias in understanding the true burden of alcohol use disorders and related health outcomes (Lachenmeier et al., 2011). Traditional brew is often produced in the home or "shabeens" and is a major source of unrecorded consumption. The results show that traditional brew is preferred in the rural areas and provides evidence that the burden of rural alcohol consumption in Zambia may not be getting the attention it deserves because of its unrecorded nature. Standardized drink units of traditional brew and opaque beer preferred in rural areas of Zambia have

Table 4. Logistic regression of food insecurity on any alcohol expenditures by region (rural and urban)

	3 or more meals per day		4 or more meat servings per week	
Urban	**Odds Ratio**	**95% CI**	**Odds Ratio**	**95% CI**
Alcohol Expenditures (Yes/No)	0.861	0.706, 1.051	1.269*	1.052, 1.531
Female	0.975	0.836, 1.136	0.994	0.860, 1.142
Education				
College or post-secondary	Ref	Ref	Ref	Ref
High school	0.447***	0.382, 0.521	0.531***	0.461, 0.612
Grade 7 or below	0.333***	0.278, 0.398	0.405***	0.342, 0.480
Poverty				
Non-poor	Ref	Ref	Ref	Ref
Moderately poor	0.3***	0.246, 0.366	0.383***	0.327, 0.450
Very poor	0.092***	0.074, 0.115	0.149***	0.123, 0.180
Household size	1.09***	1.059, 1.121	1.037**	1.011, 1.064
Age	0.987***	0.982, 0.992	0.990***	0.985, 0.995
Rural				
Alcohol Expenditures (Yes/No)	0.770**	0.654, 0.906	1.287**	1.099, 1.507
Female	0.923	0.807, 1.055	0.804**	0.702, 0.921
Education				
College or post-secondary	Ref	Ref	Ref	Ref
High school	0.797**	0.684, 0.929	0.809**	0.695, 0.940
Grade 7 or below	0.622***	0.545, 0.711	0.637***	0.558, 0.726
Poverty				
Non-poor	Ref	Ref	Ref	Ref
Moderately poor	0.456***	0.374, 0.556	0.423***	0.350, 0.511
Very poor	0.153***	0.126, 0.187	0.190***	0.158, 0.230
Household size	1.095***	1.073, 1.118	1.059***	1.037, 1.081
Age	0.989***	0.986, 0.993	0.994**	0.990, 0.997

*, **, *** p<0.05, 0.01, and 0.001, respectively.

not been established making it difficult to accurately compare alcohol use disorders based current quantity-frequency measures. In sub-Saharan Africa, the commercial alcohol industry is promoting these types of traditional and opaque alcohol in rural areas creating even greater availability and affordability of these products (McCall, 2017).

The literature also shows that lower-income households may not consume alcohol as much as higher-income households but experience greater alcohol-related economic and physical health burden (Eaton, Cain, et al., 2014; Eaton, Pitpitan, et al., 2014; Regassa & Stoecker, 2012; Wainberg et al., 2018). Food insecurity remains a growing concern for global health and development. Pandemics and climate-related shocks are issues that influence food availability but also stress and associated substance use. Natural disasters on top of existing levels of poverty create acute-on-chronic events putting countries

like Zambia at significant risk for reversing positive movement toward development. Food security is the foundation for improving health and economic stability. Alcohol use can undermine the nutritional status of families. Skipping meals (quantity) and meat servings (quality) are two indicators of nutritional status and food security. According to the Zambia National Food and Nutrition Policy, food security is defined as "access by all households to food needed for a healthy life for all its members (adequate in terms of quality, quantity, safety and culturally acceptable) and when it is not at undue risk of losing such access" (Zambia Ministry of Health, 2006).

The second hypothesis tested in this study was the association of alcohol use with food insecurity. Region (rural and urban status) is important to consider as rural areas have a higher prevalence of malnutrition and lower availability of healthcare to manage subsequent disease related to malnutrition. The role of alcohol in exacerbating the burden of disease in rural areas is largely unknown in sub-Saharan Africa due to the inability to accurately record consumption and diagnose alcohol-related conditions. The results of this study support the alternative hypothesis that alcohol expenditure is associated with lower odds of eating 3+ meals per day among rural households. This estimate is likely underestimated given the consistent underreporting in measures of self-reported alcohol use. Interestingly, this study also finds that alcohol use is associated with greater odds of eating 4+ meat servings in a week compared to those not purchasing alcohol in both rural and urban regions. In many parts of sub-Saharan Africa, alcohol is consumed in a social setting with different types of meat servings, which could explain this positive finding. If this is correct, only some members of the household are likely eating meat 4+ times per week but not all. Future research is needed to explore this finding as it could suggest a potential economic benefit of alcohol use either through social networks related to alcohol use, economic status gained through consumption, or the benefit of reciprocity associated with alcohol use often observed in central Africa (Colson & Scudder, 1988).

This study confirms the need to investigate alcohol use, specifically among rural Zambian households. National alcohol policies target urban alcohol environmental and physical contexts, and some policies have lower standards when it comes to traditional brew versus clear beer and spirits (16 years versus 18 years). When considering the lack of safety nets and behavioral health services in rural areas, alcohol policies should consider the unique circumstances and opportunities to control alcohol use in rural and urban areas, especially when minimizing the harm associated with alcohol use. Rural drinkers have a much higher likelihood of experiencing food insecurity and therefore, negative health outcomes because of alcohol use yet lower access to healthcare, especially behavioral health services. This leads to higher healthcare costs, family burden, and social costs limiting the development opportunities and programs already in place.

Other alcohol use like homemade spirits was not included as a specific alcohol type in the LCMS survey. "Other alcohol" was listed as a type, but it is not defined as homemade spirits often found in rural or lower-income urban areas. Known as kachasu or changaa in some areas, this

type of alcohol also needs to be taken into consideration when measuring the health outcomes associated with alcohol in countries like Zambia. Using expenditures may not be the best approach to measure consumption given the variation in costs and social drinking patterns found in Zambia. The cost of and production method (commercial versus home-brew) for each type of alcohol needs to be taken into consideration as costs per drink are not representative of the amount of alcohol consumed. One suggestion might be to measure the time spent at a drinking venue and the type consumed during that event. Individuals share the responsibility of paying for alcohol and networks are often based on reciprocity or cost-sharing models. The communal style of drinking traditional beer also makes it difficult to measure individual drinks and, therefore, alcohol use disorders based on existing quantity-frequency screening tools. Without being able to measure the burden of alcohol use disorders in communities, it often goes unaddressed as it is assumed the burden is relatively low compared to other health behaviors and problems. Alcohol use is often associated with risky sexual behaviors connected with HIV and sexually transmitted diseases, but it is also necessary to understand the role and impact of alcohol use associated with other health outcomes such as nutrition and food insecurity.

Strengths of this study include the use of a nationally representative data set incorporating measures of various alcohol expenditures by type among rural and urban households. The large sample size allowed for a stratified analysis to assess differences by region. The study is generalizability to Zambia given the population-based survey used in the analysis.

Limitations of the study include the use of expenditures as an indicator of consumption. Even though this is common in the alcohol literature, expenditures can be a biased measure given the significant differences in cost of the same alcohol type between rural and urban contexts particularly if the alcohol is a type of home-brew. The household level data was also limited in differentiating the effects between the individual drinker and the rest of the family regarding food security measures.

Further research is needed to better understand the role of traditional brew and opaque beer in the development of alcohol use disorders and individual, family, and community health impacts. Given the variation in alcohol purchasing between rural and urban areas, specific screening tools should be developed to help diagnose and address such disorders to treat and prevent the continued harm related to alcohol use among families with limited safety nets. Further research is also needed to understand the context within which alcohol consumed given the finding of increased odds of eating meat among those consuming alcohol. Future epidemiologic or economic studies should include measures of alcohol consumption for all members of the family to build a more robust alcohol data base.

CONCLUSION

This study used the Zambian Living Conditions Monitoring Survey to investigate the difference in alcohol expenditures and associated impacts on food security between rural and urban drinkers. The results show that alcohol use is not only different between urban and rural settings but that rural Zambian families experience

a greater chance of skipping meals if a member of the household consumes alcohol. Future research needs to incorporate traditional brew and opaque beer as specific alcohol measures in order to capture better estimates of alcohol use in rural areas. Identifying better measures to incorporate unrecorded and commercially produced alcohol would also strengthen the ability to diagnose problems associated with alcohol use. The study highlights the importance of alcohol use on food security concerns and evidence to support behavioral health treatment services specific for urban and rural settings.

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JP and KT conceptualized the study. KT organized and cleaned the data. JP conducted the analysis and drafted the initial manuscript. BC assisted in obtaining the data and study approvals from the Zambia Statistics Agency. JP, KT, EO, and BC designed the analysis, interpreted the results, and revised the manuscript.

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USE OF KHAT AND ASSOCIATED SUBSTANCES DURING COVID-19 PANDEMIC: POTENTIAL ADVERSE CONSEQUENCES

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ABSTRACT

The epidemic of COVID-19 has become a major public health challenge globally. There are concerns that an increased number of individuals who abuse substances could encounter greater risks of experiencing the effects of COVID-19. The present paper reviews the potential health risks that can be associated with using the commonly abused stimulant plant, khat and associated substances during the COVID-19 pandemic. The literature indicates that khat chewing, as practiced by most chewers, can facilitate SARS-CoV-2 virus transmission and spread. Chewers with compromised health due to khat could be at greater risks of being affected by COVID-19, and these effects may include worsening of respiratory, cardiovascular, CNS, renal, gastrointestinal, hepatic, hemostatic and immune dysfunctions. Furthermore, tobacco smoking and alcohol drinking in association with khat use has the potential to intensify most of these disorders. The review suggests that healthcare providers and khat chewers should take appropriate precautionary measures when khat and/or the associated substances are used during COVID-19 epidemic. The research community should also conduct further studies to provide additional and more specific information on the topic.

Keywords: COVID-19; coronavirus; khat; tobacco; alcohol; drug abuse

INTRODUCTION

Since the end of 2019, the world has encountered a pandemic of a novel coronavirus disease 2019 (COVID-19) which has cast a major threat to public health worldwide. With no effective treatment and slow vaccine development, the virus has caused millions of infections and deaths globally (McIntosh, 2020; Meng

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et al., 2020; World Health Organization, 2020a; Yuki et al., 2020). So far, the primary approach for handling COVID-19 has been to control viral infection and transmission and preform recovery care for affected individuals. As an infectious disease, COVID-19 causes symptoms that can vary in severity of illness, depending upon such factors as viral load, duration of infection and condition of the patient. Although COVID-19 is considered a respiratory disease, the symptoms diagnosed include multiple illnesses, which are described below under background. Conditions that mimic or enhance these symptoms have the potential to worsen the effects of COVID-19. In this regard, some classes of abused psychoactive substances are reported to produce overlapping effects with those caused by COVID-19, thereby worsening the outcomes (Dubey et al., 2020; Nishiga et al., 2020; Vital Strategies, 2020; Volkow, 2020; Wang et al., 2020; Wei & Shah, 2020). While the commonly reported such substances include opioids, alcohol, tobacco/nicotine, amphetamines, marijuana/cannabis and cocaine, others with the potential to cause similar effects remain to be identified and reviewed.

OBJECTIVE AND METHOD

The present paper reviews the potential consequences of interactions between COVID-19 and the widely abused stimulant plant drug, khat (Catha edulis) and substances commonly used in association with it (Abebe, 2013; Abebe, 2014; Cox & Rampes, 2003; Odenwald & Al-Absi, 2017; World Health Organization, 2006). This review is the first of its kind and has the potential to provide useful information for healthcare providers, khat chewers and researchers. Most of the information was collected by systematically searching articles written in English in PubMed, Medline, Scopus, and Google Scholar databases until December 2020. Search terms used were COVID-19, SARS-CoV-2, pandemic, infection, epidemiology, pathogenesis, disease, transmission, diagnosis, treatment, khat, Catha edulis, alcohol, cigarette smoking, substance abuse, substance misuse, substance use disorders, addiction, adverse health effect, and adverse interaction. Full texts of relevant cross references were retrieved from the search results. Other available scientific literature and recommendations were also accessed in authoritative books and in the WHO and CDC websites. Some leading newspaper reports related to COVID-19 and substance use have been added where deemed appropriate. Excluded in the review were case reports, duplicate studies, corresponding pieces, and retracted papers.

BACKGROUND

SARS-CoV-2 transmission and symptoms of COVID-19

In humans, SARS-CoV-2 is transmitted mostly from person to person by direct or indirect contact. Accordingly, people who are in close proximity/contact with COVID-19 patients are at higher risks for getting viral infection (Nishiga et al., 2020; Wei & Shah, 2020). In a newly infected person, SARS-CoV-2 requires binding to angiotensin converting enzyme 2 (ACE2) receptor in order to enter a host cell. Once inside, the virus hijacks the cell's machinery and makes innumerable copies of itself, which then invades other cells

to continue the cycle. As the virus multiplies, an infected person may shade abundant amounts of it, particularly during the first week or so (McIntosh, 2019; Meng et al., 2020; Nishiga et al., 2020; Yuki et al., 2020; Wei & Shah, 2020).

Whereas the severity of COVID-19 illness can range from mild to severe/critical, the symptoms developed in most cases are the consequences of host immune reactions to the presence of the virus. These reactions may include multiple target cells and steps, and are manifested by different responses, mainly involving inflammatory reactions. In rare cases, the immune response becomes overzealous and may result in what is known as cytokine storm, with massive inflammatory reactions that can potentially be life-threatening. However, most patients with COVID-19 represent only mild cases (Hussain et al., 2020; McIntosh, 2019; Meng et al., 2020; Nishiga et al., 2020; Yuki et al., 2020; Wei & Shah, 2020).

In Table 1 are listed the commonly reported effects of COVID-19 on various organs/systems under different levels of severity (Garland et al., 2020; Hussain et al., 2020; McIntosh, 2019; Meng et al., 2020; Nishiga et al., 2020; Yuki et al., 2020;; Wei & Shah, 2020). It should be noted that while the nature and intensity of the effects can vary with the severity of the disease, there are also overlapping effects among the various categories. From the information in the table, the respiratory

Table 1. Summary of commonly reported effects of COVID-19 on various organ systems under different levels of severity. Note that while the nature and intensity of the effects observed can vary with the severity of the disease, there are also many cases of overlapping effects (see references in text)

Severity of Disease	Effects
Mild	Respiratory • Mild pneumonia (majority), cough (dry), sore throat, runny nose (congestion), sneezing Gastrointestinal • Gastritis, nausea, vomiting, abdominal pain, diarrhoea Others (brain/CNS, muscle) • Fever, fatigue, headache, myalgia, loss of smell and/or taste
Moderate	Respiratory • Pneumonia with frequent fever and cough, shortness of breath (difficulty in breathing), tachypnoea (mainly in children)
Severe/critical	Respiratory • Pneumonia with hypoxia, dyspnoea, tachypnoea, respiratory distress/acute respiratory distress syndrome, pulmonary edema, persistent pressure in chest, respiratory impairment Cardiovascular • Shock (septic), myocardial inflammation/injury, heart failure, plummeting blood pressure, coagulopathy/blood clotting Brain (CNS) • Encephalopathy/inflammation, confusion, stroke, seizures Others • Metabolic abnormalities, high fever, acute kidney injury/failure, liver damage, other organ dysfunctions, conjunctivitis/inflammation

effect of COVID-19 is more prominent, while its other effects appear to be less consistent and these include the gastrointestinal (GI), cardiovascular (CV), nervous/brain, renal, hepatic, immune and hematologic/hemostatic dysfunctions (Garland et al., 2020; McIntosh, 2019; Meng et al., 2020; Nishiga et al., 2020; Yuki et al., 2020; Wei & Shah, 2020).

Epidemiology of khat use and associated practices

Khat is a psychoactive shrub *predominantly* grown and used in East Africa and the Arabian Peninsula regions (Abebe, 2013, Abebe, 2014, Cox & Rampes, 2003; Odenwald & Al-Absi, 2017; World Health Organization, 2008). More recently, its use has expanded to other surrounding and far flung places including Europe, North America and Australia (Abebe, 2018; Ageely, 2008; Al-Hebshi, 2005; Odenwald & Al-Absi, 2017). The fresh leaves of khat are commonly chewed for recreational, medical, event celebration and several other purposes, primarily due to their stimulant and euphoric effects. Globally, over 20 million people are estimated to be habitual khat chewers (Abebe, 2018; Cox & Rampes, 2003; Odenwald & Al-Absi, 2017; World Health Organization, 2008).

During the past several decades, there has been a consistent rise in the use of khat in most places. Previous studies in East Africa and Yemen have reported a use prevalence ranging from 30% to 90% (Abebe, 2014; Abebe, 2018; World Health Organization, 2008). In most cases, habitual chewers consume khat almost every day (4-6 hours) for many years, as long as 20 or so years. Consequently, the practice of khat chewing is considered a public health concern, not only locally but also nationally, regionally, and even internationally (Abebe, 2018; World Health Organization, 2008).

The leaves of khat are typically chewed without much of a concern for cleanness and contamination safety. Every step involved in the harvesting, packaging, transport and delivery of khat could be associated with viral exposure risks (Ageely, 2008; Hassan, 2018). In almost all cases, khat chewing is also an intimate communal activity (usually involving 6-20 people) that creates fertile ground for viral transmission and spread. In such settings, tobacco is also smoked from cigarettes and waterpipes which are often shared among chewers, potentially serving as media of SARS-CoV-2 transmission (Ageely, 2008; Hassan, 2018).

Besides smoking tobacco along with khat chewing, some chewers also indulge in heavy drinking of alcoholic beverages after khat sessions to terminate the stimulant (insomnia) effect of the herb. This behavior thus makes these khat chewers venerable to the additional effects of alcohol (Abebe, 2014; Abebe, 2018).

With regard to the use of other substances with khat, the literature indicates that khat serves as a gateway drug to others, more commonly to nicotine/tobacco and alcohol. Another possible reason for combination use is previous exposure to these substances before starting chewing khat (Abebe, 2014; Ageely, 2008; Al-Maweri, 2017).

Medical effects of khat and associated substances

Fresh leaves of khat contain a number of bioactive compounds, and of these, cathinone, cathine and tannins contribute to their major effects (Abebe, 2014;

Ageely, 2008; Al-Motarreb, 2010). While both cathinone and cathine produce central and sympathetic stimulation and euphoria, cathinone is by far more potent. Being structurally related to amphetamine, cathinone has similar effects as amphetamine (Abebe, 2014 Abebe; Ageely, 2008; Al-Motarreb, 2010; Dhaifalah & Santavy, 2004).

The effect of cathinone on brain's dopaminergic pathways is linked to the euphoric effect of khat (Abebe, 2014; Abebe, 2018; Ageely, 2008; Al-Maweri et al., 2018; Odenwald & Absi. 2017). This effect is associated with moderate psychological dependence without clear physical dependence. However, physical dependence of khat can be important in susceptible individuals. Signs of withdrawal are also reported with discontinuation of khat after chronic use. Coupled with the psychological dependence, the withdrawal effects could be one more reason for continued use of khat. Tolerance to khat has also been documented (Abebe, 2018). Overall, due to its central nervous system (CNS) stimulation, depending upon several other factors, khat consumption may also result in anxiety, aggression, insomnia, anorexia, malaise, depression, mania, psychotic reactions, and hallucinations. Peripherally, the sympathomimetic effect of khat causes stimulation of certain target organs, such as the heart and blood vessels, while inhibiting others like the gastrointestinal (GI) system.

Tannins in khat produce major adverse effects as astringents in the GI tract and oral cavity, and the effects on the GI tract further slows its motility, thereby contributing to khat's constipating effect (Abebe, 2018; Al-Alimi et al., 2017; Al-Motarreb, et al., 2010; Ridder et al, 2007; Staurung et al., 2018). Tannins also cause hepatotoxicity, and at high enough concentrations they can promote blood coagulation and thrombus formation (Al-Alimi et al., 2017; Alkadi et al., 2008; Staurung et al., 2018).

Some constituents of khat, especially flavonoids and polyphenols at high concentrations, have been shown to be pro-inflammatory (Naji et al., 2015) and this effect, together with those of tannins, are linked to free radical generation (Kennedy et al., 2020). These mechanisms of action are implicated in khat-induced oral and GI cancer.

Resulting from its central anorexic and GI effects, khat has the potential to cause nutritional deficiency. These effects, together with khat's direct immune-modulatory activity, play a role in the weakening of the immune system, predisposing chewers to increased susceptibility to infectious diseases, such as TB (Abebe, 2018; Al-Motarreb et al., 2010; Alvi et al., 2015; Hassan, 2018; Ketema et al., 2015; Naji, et al., 2015; The Economist, 2018). The adverse effects of khat on other organ systems, such as the respiratory system and kidneys, are linked to such multidimensional factors as free radical generation, inflammation and circulatory dysfunctions induced by khat components (Alvi et al., 2015; Ketema et al., 2015; Naji, et al., 2015; Woldeamanuel & Geta, 2019; Al-Mamary el al., 2002).

Table 2 summarizes the effects of khat that are potentially linked to the symptoms of COVID-19 listed in Table 1.

As noted above, the use of khat is associated with heavy consumption of tobacco/nicotine and/or alcohol. The effects of these substances on the human body are amply discussed in the literature, and broadly these include adverse effects the

Table 2. Summary of commonly reported relevant effects of khat chewing on various organ systems. Note that while the nature and intensity of effects can vary with the amount of khat chewed, the duration of chewing and the condition of the chewer, most of the short- or intermediate-term effects may persist during the long-term consumption of the herb (see references in text)

Systems Affected	Effects Produced
Central nervous system	Short/intermediate-term effects • Mild euphoria, excitement, alertness, insomnia, talkativeness, lethargy, depression, headache/migraine, psychotic reaction (high doses), hallucinations, inability to concentrate, irritability, fine tremor and depression (post-khat use), anorexia, nausea and vomiting, polydipsia, hyperthermia, perspiration Long-term effects • Psychosis, depressive reactions, impaired cognitive functioning, increased tremor, seizures, withdrawal effect
Respiratory system	Short/intermediate-term effects • Tachypnea Long-term effects • Pulmonary edema, bronchitis
Cardiovascular system and kidneys	Short/intermediate-term effects • Tachycardia/palpitation, arrhythmia, vasoconstriction, increased blood pressure • Procoagulant Long-term effects • Increased cardiovascular disorders, myocardial infarction, heart attack, cerebral haemorrhage/stroke • Urinary retention, kidney damage
Gastrointestinal and hepatic system	Short/intermediate-term effects • Gastrointestinal inhibition, constipation, gastritis Long-term effects • Upper gastrointestinal disorders (eg., stomach/duodenal inflammation, irritation, ulcers, reduced nutrient absorption), severe constipation, risk for upper gastrointestinal tumours, haemorrhoids, liver cirrhosis/ hepatotoxicity, liver cancer and liver fibrosis
Oro-dental effects	Short/intermediate-term effects • Dry mouth, oro-dental lesions (eg., dry mouth, caries, periodontal diseases), multiple other moderate oral disorders Long-term effects • Severe oro-dental disorders; oral mucosal keratosis, oral cancer
Metabolic and endocrine systems	Long-term effects • Multiple hormonal disorders, malnutrition, weight loss, hyperglycemia
Inflammation, oxidative stress, immune modulation	Short/intermediate-term effects • Antiinflammatory Long-term effects • Proinflammatory, oxidative damage • Immune modulation

cardiovascular, CNS, respiratory, and hepato-intestinal systems. Additionally, both substances cause nutrient deficiencies and immune suppression by different mechanisms (Abebe, 2014; Abebe, 2018; Wang et al., 2020; Wei & Shah, 2020).

USE OF KHAT AND ASSOCIATED SUBSTANCES AS RISK FACTORS FOR INCREASED SARS-COV-2 EXPOSURE AND COVID-19 COMPLICATIONS

Increased risk for SARS-CoV-2 exposure and transmission

SARS-CoV-2 is a highly contagious virus which is mostly transmitted from person to person by direct or indirect contact (Hassan, 2018; Meng et al., 2020; McIntosh, 2020; Yuki et al., 2020). As mentioned earlier, khat chewing is likely to increase exposure to the virus by either one of the ways or both ways (Ageely, 2008). In this regard, besides the role of khat per se, tobacco smoking can be a contributory factor during khat session. Related to this problem, it is documented that khat chewing is commonly associated with the spread of TB among Somali chewers (Hassan, 2018).

Moreover, khat and alcohol, due to their CNS effects, can cause altered thoughts and judgements of chewers, potentially making them less concerned about self-protection. In addition, all the three substances chewers consume can inhibit the immune system, particularly with chronic use, further predisposing the chewers to greater susceptibility to viral infection (Abebe, 2013; Abebe, 2014; Sopori, 2002; Watson & Darban, 1988).

INCREASED RISK FOR COVID-19 COMPLICATIONS

Respiratory disorders

COVID-19 is considered to be a respiratory disease, although it also affects different other organs. Normally, relatively a small amount of khat is not expected to produce toxic effects on the respiratory system. However, with prolonged use, it can cause respiratory disorders that may be manifested by conditions such as tachypnea, pulmonary edema, bronchitis and pneumonia (Cox & Rampes, 2003; Woldeamanuel and Geta, 2019). Since the majority of khat chewers are chronic consumers, these effects provide added challenge to the respiratory health of COVID-19 patients who chew khat, putting them at a higher risk of respiratory/pulmonary abnormalities. Consistent with this, similar respiratory problems have been reported with amphetamine and methamphetamine (Canadian Center on Substance Use and Addiction, 2020; Dubey et al., 2020; Vital Strategies, 2020; Volkow, 2020).

Respiratory problem that might be caused by tobacco smoking by khat chewers could be another issue for consideration (Dubey et al., 2020; Volkow, 2020). Tobacco smoking has previously been shown to diminish the ability of the lungs to respond to SARS-CoV-2 infection and increase fatality rates in COVID-19 patients (Wang et al., 2020a; Wong et al., 2020b; Wei & Shah, 2020). It is thus reasonable to expect that the damaging effect of tobacco smoking on the respiratory system can even be greater if patients also chew khat. However, alcohol consumption per se has not been reported to have significant respiratory effects.

Cardiovascular (CV) disorders

Among patients with the risk of becoming severely ill with COVID-19 are those with CV issues, which can be worsened by chronic khat use as noted above (Abebe, 2018; Ageely, 2008; Ali et al., 2010; Alkadi et al., 2008; Cox & Rampes, 2003; Mozes, 2011). The effect of khat on the CV system is multifactorial, and this includes increased blood pressure, pulmonary

hypertension, cardiac hyperactivity, arrhythmias, coronary artery diseases and even heart failure. Such CV conditions being also caused by a severe form of COVID-19, khat chewing is likely to aggravate them (Dubey et al., 2020; Meng et al., 2010; McIntosh, 2020; Vital Strategies, 2020; Volkow, 2020; Yuki et al., 2020). Being associated with CV adverse effects, tobacco smoking and alcohol consumption by khat chewers can also have the potential to intensify the CV disorders caused by both khat and COVID-19 (Dubey et al., 2020; Vital Strategies, 2020; Volkow, 2020; Wang et al., 2020a; Wei & Shah, 2020; World Health Organization, 2020b).

Central nervous system (CNS) disorders

As part of its multiple overlapping effects that involve neuronal, hormonal and circulatory mechanisms, chronic khat consumption can result in generalized CNS effects manifested by stimulation, confusion, fatigue, and depression, hallucinations, psychosis, and even stroke, among others, (Abebe, 2014; Abebe, 2018; Ageely, 2008; Ali, et al., 2010; Mozes, 2011). As with methamphetamine, there is a high possibility that at least some of these effects can exacerbate those of COVID-19 (Dubey et al., 2020; Vital Strategies, 2020; Volkow, 2020). The CNS effects of tobacco and/or alcohol are also likely to cause even a more severe state of mental disturbances with khat and COVID-19, although the mechanism is unclear (Dubey et al., 2020; Volkow, 2020; Wang et al., 2020b; Wei & Shah, 2020; World Health Organization, 2020b; World Health Organization, 2020c).

Kidney damage

It has been reported that in susceptible individuals, prolonged khat consumption can cause kidney damage in different forms (Cox & Rampes, 2003; Kennedy et al., 2020). This effect has the potential to worsen the abnormal conditions of the kidneys that occur in severe COVID-19 (Dubey et al., 2020; McIntosh, 2020; Yuki et al., 2020). While the effect of tobacco smoking on the kidneys is insignificant, chronic alcohol use has also been reported to result in changes in kidney function as manifested by impairment of sodium handling, and fluid and blood filiation (Epstein, 1997). This effect of alcohol can cause further damage to kidneys already affected by khat and COVID-19.

Gastrointestinal (GI) disorders

While constipation, as a major GI effects of khat, does not seem to relate to COVID-19, there are concerns that other GI effects of the shrub can intensify at least some of the common GI effects of COVID-19. In this respect, among other things, khat has been reported to cause gastritis, gastric ulcers, and even upper GI tumors/malignancy in some chewers (Abebe, 2018; Al-Alimi et al., 2017; Cox & Rampes, 2003; Odenwald & Al-Absi, 2017). These effects of khat can enhance the overlapping GI effects caused by COVID-19 shown in Table 2 (Dubey et al., 2020; Wei & Shah, 2020).

In the GI system, tobacco smoking has been documented to cause harmful effects that contribute to such common disorders as heartburn and peptic ulcers, as seen with COVID-19 and khat (El-Zayadi, 2006; Garland et al, 2020). Consumption of alcohol, on the other hand, produces more serious GI disturbances that could at least lead to diarrhea, gastritis, heartburn and impairment of nutrition absorption (Bishehsari et al., 2017; Bode & Bode, 1997). These overlapping effects of

alcohol with those of khat and tobacco can further worsen the GI effects of COVID-19.

Liver damage

It has been shown that some constituents of khat, including tannins and cathinone, cause liver toxicity with prolonged khat use (Cox & Rampes, 2003; Kennedy et al., 2020; Staurung et al., 2018). This toxic effect can add to the harmful hepatic effects seen with severe COVID-19 (Garland et al., 2020). Further, the consumption of alcoholic beverages by khat users can potentially lead to alcohol-induced liver toxicity (cirrhosis), further raising the risk of liver damage (Dubey et al., 2020; World Health Organization 2020c). The effect of tobacco smoking on the liver, however, is not well defined, although some studies indicate immune and oncogene-related mechanisms (El-Zayadi, 2006). Therefore, the role of tobacco in liver disease as related to COVID-19 awaits further investigation.

Blood clotting

Studies have revealed that tannins in khat and, to some extent serotonin and epinephrine released by cathinone, promote the acceleration of blood clotting and thrombus formation (Abebe, 2018; Al-Alimi et al., 2017; Alkadi et al., 2008). Chronic use of alcohol (as opposed to mild and short-term use), and tobacco smoking have also been reported to cause blood clotting (Dimmitt et al., 1998; Tapson, 2005). Coagulopathy and blood clotting are also known to be among the major pathologies of severe COVID-19 (Dubey et al., 2020; McIntosh, 2020; Vital Strategies, 2020). Thus, the prolonged use of khat, tobacco and alcohol could be a contributing factor for worsening these complications of COVID-19.

Nutritional deficiency and immune suppression

As noted earlier, due to their combined effects of appetite suppression, hepato-GI disturbances and immune modulation, khat, tobacco and alcohol have the potential to cause nutritional deficiency and immune suppression with chronic use (Abebe, 2013; Alvi et al., 2015; Ketema et al., 2015; Wei & Shah, 2020). This situation again enhances the susceptibility of the users to SARS-CoV-2 infection, which in turn leads to greater risks for COVID-19-related complications.

SUMMARY AND CONCLUSION

Given the current global epidemic of substance abuse, there are concerns that individuals who abuse substances could be at greater risks of being affected by the ongoing COVID-19 pandemic. Khat being one of the commonly abused substances, the consequences of its interactions with COVID-19 are reviewed in this paper, along with review of the effects of tobacco and alcohol, which are very often used along with khat. It is likely that the practice of khat chewing can facilitate increased exposure to SARS-CoV-2 and its transmission among chewers. Khat chewers experiencing the adverse consequences of the herb can be at greater risks of being affected by COVID-19 complications, and these risks include the worsening of respiratory, cardiovascular, CNS, renal, GI, hepatic, hemostasis and immune dysfunctions. Similarly, tobacco smoking and alcohol consumption by khat chewers can further facilitate the spread of SARS-CoV-2 and intensify of most of the disorders noted, adding to the burden of COVID-19-related health challenges. Besides

these major observations, the following aspects should also be given due considerations when dealing with this issue.

1. The severity of the effects of khat and the associated substances discussed may depend on various factors, including the type and amounts of substances used, the duration of use, other possible substances consumed and the condition of the user.
2. In tackling SARS-CoV-2 infection and COVID-19 in khat chewers, emphasis should be placed not only on diagnosis and treatment of the infection but also on environmental intervention to control exposure and transmission of the virus.
3. While the literature reviewed deals with the effects of interactions of the substances with COVID-19 on an individual basis, there is no information regarding the effects of combination interactions. Also, in some instances, the literature is limited in providing more specific interaction information, in addition to reflecting general limitations of scope. Therefore, some portion of the reported information is based on indirect evidence from previously published data on specific areas.

Despite the shortcomings noted, it is prudent for healthcare providers and khat chewers to take into account what is currently known and reported in order to appropriately prevent and/or treat the possible harmful effects that could arise due to interactions between COVID-19, and khat and the associated substances mentioned. The research community should also conduct further studies on this important area in order to generate additional and more specific information for increased understanding of the issue and to help make better informed decision. This review is partly intended to help researchers contribute to this effort.

CONFLICT OF INTEREST

The author declares no conflict of interest in relation to the present work.

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METHAMPHETAMINE (MKPULUMMIRI) USE IN EASTERN NIGERIA: A NEW ADDITION TO DRUG USERS' REPERTOIRE

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ABSTRACT

Media reports indicate that methamphetamine (mkpulummiri) use is growing among young people in Eastern Nigeria, but empirical research has not been conducted. This article reviews the recent media reportage of methamphetamine use in Eastern Nigeria, presents an empirical account of a methamphetamine user, and synthesizes the available evidence, showing the factors facilitating its use. Available evidence shows that drug trafficking and illegal laboratories are the two main factors encouraging current methamphetamine availability and use in Eastern Nigeria. The NDLEA has discovered illegal laboratories where methamphetamine is produced in Enugu and Asaba. These laboratories were established by drug barons from Eastern Nigeria and their foreign counterparts. Therefore, it is logical to conclude that these local laboratories have largely contributed to the growing methamphetamine epidemic. Media reports indicate that youth organizations and vigilante groups apply corporal punishment by flogging identified users in public but do not highlight how effective this sanction is. While empirical data show that weight control motivates methamphetamine use, the grey literature has blamed youth unemployment. There is an urgent need to conduct empirical research to determine methamphetamine prevalence, the sources, motivations for use, and consequences in Eastern Nigeria. This will facilitate the design of effective interventions to reduce the growing trend. Efforts to discover and dismantle illegal laboratories should not only focus on cities because laboratories set up to evade detection may exist in rural settings. It is vital that the government work with all stakeholders to increase public awareness of the dangers of methamphetamine use in

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Nigeria and develop mechanisms to support addiction treatment and rehabilitation to prevent social stigma users may face.

Keywords: Methamphetamine, Mkpulummiri, Drug Use, Drug trafficking, Eastern Nigeria

INTRODUCTION

Drug use is a serious public health problem in contemporary Nigeria. Aside from using cannabis (Dumbili, 2020a; Nelson, 2021), many young Nigerians also use prescription drugs such as tramadol and codeine for nonmedical purposes (Dumbili, 2020b). Based on multiple recent media reports (e.g., News Agency of Nigeria, 2021; Njoku et al., 2021; Ulasi, 2021), many young people in Eastern Nigeria have added methamphetamine to their drug repertoire. This article synthesizes the recent media reportage of methamphetamine use in Eastern Nigeria and highlights the available evidence, showing the factors facilitating its use. The remainder of the article is divided into four sections. First, we present an overview (a brief history) of methamphetamine, tracing its origin and describing the factors that motivate its use and the consequences for users. Second, we summarise methamphetamine use in Sub-Saharan Africa and present empirical data from an interview with a crystal methamphetamine user in Eastern Nigeria. The next section is a summary of how local production of methamphetamine and drug trafficking may be responsible for the current widespread use in Eastern Nigeria. The last section then recommends possible solutions to the growing methamphetamine use prevalence and suggests areas for future research.

History of Methamphetamine, Motivations for Use, and Consequences

Methamphetamine- a derivative of amphetamine - is a central nervous system chemical stimulant that can be ingested orally, injected, snorted, or smoked (Anglin et al., 2000). Methamphetamine's street names include crank, crystal meth, ice, and speed (Sato, 2008), amongst others. Methamphetamine was discovered in 1893 by *Nagayoshi Nagai*- a Japanese pharmacologist who synthesized it from ephedrine - while his compatriot, *Akira Ogata,* further synthesized the drug into a crystallized format in 1919 (Sato, 2008). Methamphetamine use was unpopular until World War II (1939-1945) when countries like Germany, Japan, and the United States of America (USA) supplied their soldiers with the substance to enhance their "endurance and performance" (Anglin et al., 2000, p.138).

The misuse of the drug was first recorded in Japan after the war (1945-195), and this was because the surplus from military supplies "flooded the market" (Anglin et al., 2000, p.138). Since then, methamphetamine use has become a global phenomenon. Several countries such as Australia (Degenhardt et al., 2017), the USA (Sommers et al., 2006) and Thailand (German et al., 2006), amongst others, have reported methamphetamine use and its associated harms. Currently, methamphetamine is an internationally controlled, Schedule II or illegal substance in most countries. However, its use is still

widespread worldwide, primarily due to the activities of drug traffickers and illegal manufacturers/laboratories (United Nations Office on Drugs and Crime [henceforth, UNODC], 2017). According to the 2021 World Drug Report, 27 million people used methamphetamine and amphetamine in 2019 globally (UNODC, 2021). Furthermore, the UNODC (2021, p.48) noted that:

> the number of countries and territories reporting seizures of methamphetamine rose from 79 in the period 2005–2009 to 111 in the period 2015–2019, suggesting a significant increase in the geographical spread of methamphetamine trafficking at the global level.

Studies have shown the multifaceted factors that influence or motivate methamphetamine use and the drug's effects on users. For example, methamphetamine use can trigger the brain and central nervous system, increasing heart rate and blood pressure; it is also believed to enhance heightened alertness, energy, and concentration (Parsons, 2014). Sensation-seeking, pleasure, or fun motivate methamphetamine use (Brecht et al., 2004). According to Anglin et al. (2000, p.137), "the alertness, euphoria, and sense of wellbeing" that methamphetamine use generates "last considerably longer than similar effects resulting from cocaine use and the drug is metabolized by the body at a much slower rate". Among Malaysian men, the main motivations for using methamphetamine include, to enhance "sexual capacity, heighten sexual pleasure and enhance sexual exploration and adventurism", although they also use it to enhance their energy for work performance (Lim et al., 2018, p.1). In the USA, studies have reported that enhancing sexual urge and pleasure motivate methamphetamine use (Sexton et al., 2006), while the drug's easy availability and affordability have been described as the drivers among those who use the substance to self-treat chronic pain and emotional problems (Hansen et al., 2021).

Aside from being highly addictive, methamphetamine use is associated with many negative outcomes, including anxiety, cardiac arrhythmia, hallucinations, insomnia, paranoia, stomach cramps, and stroke (Anglin et al., 2000; Brecht et al., 2004). Other consequences are depression, convulsions, seizures (Sommers et al., 2006), violent/aggressive behaviour, crime (Degenhardt et al., 2008; Sexton et al., 2006) and financial and work-related problems (Brecht et al., 2004), amongst others.

Methamphetamine Use in Sub-Saharan Africa

Methamphetamine use and its consequences have also been reported in Sub-Saharan Africa. For example, the results of the Global School-based Student Health Survey (GSHS) conducted in Benin (2012), Ghana (2016), and Liberia (2017) show that in addition to cannabis, and other drugs, both male and female adolescents in these counties use methamphetamine (Onyeaka et al., 2020). The study further indicated that methamphetamine use resulted in truancy amongst adolescents in three West African countries (Onyeaka et al., 2020). In South Africa, several previous and recent studies have reported methamphetamine use and the associated adverse effects such as aggression and mental health disorders in young people and adults (Okafor et al., 2020; Plüddemann et al., 2010).

Although methamphetamine use has not attracted much scholarly attention in Nigeria, the available evidence shows that the substance is available in the country (Uzuegbu-Wilson, 2019). For example, the UNODC's (2018) National Drug Survey found that in the past 12 months, the estimated prevalence of methamphetamine use was 0.1% (i.e., 89000 users). The survey further reported that the Eastern region had a 0.06% (6700 users) methamphetamine use prevalence (UNODC, 2018). While the national and regional prevalence rates were relatively low, the UNODC also reported the misuse of pharmaceutical amphetamines, confirming other studies highlighting amphetamines and other drug use by young Nigerians (Dumbili et al., 2020; Dumbili et al., 2021; Famuyiwa et al., 2011). One study examining access to treatment by female drug users in Southern Nigeria shows that while 12 participants had used methamphetamine (crystal or powder), two had used methamphetamine tablets in their lifetime (Akpabio et al., 2019). A recent clinical case study of a methamphetamine user in Western Nigeria reported that he had acute urinary retention issues following brief usage of the substance to reduce weight (Ojo et al., 2021).

Using methamphetamine for weight reduction purposes was reported by a female interviewee in a fairly recent study of *drug use patterns in Eastern Nigeria.*[1] The interviewee, who also used codeine and cannabis, narrated how she took crystal meth and discovered that it could help her control her eating habits and weight loss. Following that first experience, she made crystal meth a regular drug of choice for weight control. As she claims in the account below, taking crystal meth facilitated her weight loss:

> It helps control my weight**…** I am on the fat side [she is fat]. I have this early morning hunger pangs that once I feel it, I must eat something, and if I eat, I will eat much. So, I took crystal meth; I didn't remember food throughout that day till the next day… I didn't notice the early morning hunger pang for a week. After that [first time taking crystal meth], I noticed that I shed my weight… I used to be fatter than this, but I am trimming down (Female, 24 years).

She was convinced that the use of methamphetamine had enabled her to lose weight and improve her physical appearance. When she was probed to unpack how she was certain that the use of methamphetamine was facilitating her weight loss, she smiled and noted that she was "100 percent sure". Although she was the only interviewee that used methamphetamine in that study, some male interviewees corroborated her opinion, stating that individuals use the drug to reduce their weight.

Is Local Production Driving Current Mkpulummiri Use in Eastern Nigeria?

According to recent media reports, Eastern Nigeria is facing an epidemic of crystal methamphetamine use among youths. Eastern Nigeria is made up of five states (Abia, Anambra, Ebonyi, Enugu, and Imo). The main ethnic group/language is *Igbo*. Methamphetamine is popularly called Mkpulummiri (Igbo name for ice)

1 The interview was conducted in 2019. For further details of the study, including ethical approval and methodology, see Dumbili (2020a) and Dumbili et al. (2020).

in Eastern Nigeria (Declan, 2021; National Daily Newspaper, 2021). Between October and December 2021, different media outlets framed the use of crystal meth diversely, and many reasons were suggested as influencing factors (National Daily Newspaper, 2021; Njoku et al., 2021). For example, a national newspaper reported that:

> 'Mkpulummiri' is the Igbo slang for a very dangerous hard drug called Methamphetamine or Crystal Meth. It is also known as 'Ice'. Nowadays, thousands of Igbo youths are addicted to Mkpulummiri, and it has become a serious issue. If nothing is done to curb this menace, it will lead many more youths astray as it does to the present drug users (National Daily Newspaper, 2021).

In a report published in the Guardian Newspaper, Crystal meth use was attributed to youth unemployment and the associated disenchantment:

> Of late, in a bid to evade the burden of joblessness and frustrating lifestyle, some young people treat themselves to celestial ecstasy by consuming Crystalline, Methamphetamine generally nicknamed in Igbo dialect as Mkpulummiri (Ozah, 2021).

Furthermore, investigative journalists with the Guardian Newspaper, who interviewed a former user, drug experts, youth and vigilante leaders, and some inhabitants of Eastern Nigerian communities, reported that Crystal meth use is becoming widespread in the region (Njoku et al., 2021). One common theme in the media reports is that methamphetamine use is framed as a new phenomenon, and they also highlighted the consequences. For example, one of the interviewees of Njoku and colleagues pointed out a young man who was facing a mental disorder, which they attributed to methamphetamine use:

> He was a bus conductor. But he has sold himself to taking the deadly substance called Mkpurummiri (Methamphetamine or Crystal Meth). See what it has turned him into (Njoku et al., 2021).

Another national newspaper also reported the harms associated with methamphetamine use in Eastern Nigeria:

> Viral videos are circulated on a daily basis from various communities in the South-East, of victims of Mkpurummiri, with their attendant abnormal behaviours. Some of them were reported to have killed their parents, siblings or burnt their houses under the influence of the drug (Okoli et al., 2021).

Media reports also show that, in many communities, youth associations and vigilante groups are applying corporal punishment to users. Media analysis of several videos posted on social media indicates that public caning of users is the most common punishment that users receive. That is, when users are identified and apprehended by the vigilantes or youth associations, they are tied to a pillar or held by other youths and publicly beaten with canes (Njoku et al., 2021). The public sanction is videoed and posted on social media to deter others

(Chukwuleta, 2021; National Daily Newspaper, 2021). Although corporal punishment is popular in Nigeria, research has not examined its effectiveness in reducing drug use. Unfortunately, one beaten user was reported dead after receiving the sanction in Awka, Anambra state (Chukwuleta, 2021).

In a media briefing, the Ebonyi state Commander of the National Drug Law Enforcement Agency (NDLEA- a government agency responsible for drug law enforcement in Nigeria) stated that between January and December 2021, "we have seized 196 pinches of methamphetamines, including the loose quantity of meth socked with a beverage, and these bring it to 0.506kgs" (News Agency of Nigeria, 2021). Drug use attracts heightened social stigma in Nigeria (Ugwu & Dumbili, 2021); thus, most users disguise their drug use. For instance, Dumbili et al. (2020) reported that young people in Eastern Nigeria mix codeine with soft drinks to avoid stigma. Given the public caning/flogging that methamphetamine use attracts and the associated stigma of being videoed, users will most likely conceal its use from the public eye, which poses a severe threat to public health.

In regard to the supply of methamphetamine, factors such as drug trafficking and increased local production of the drug in illegal laboratories are largely responsible for the growing use. While Njoku et al. (2021) reported that the drug is sourced from northern Nigeria, and it "is far cheaper than other illicit drugs; *thus,* many youths are embracing it", a UNODC (2013) report casts light on other factors that may be responsible. First, the report shows the route of drug trafficking in West Africa, stating that:

> Nigerians, particularly those from the southeast *(i.e., the Igbo people)* of the country, have traditionally shuttled cocaine and heroin from diaspora communities near production areas (such as Karachi, Sao Paulo, and Bangkok) to diaspora communities in consumer countries (UNODC, 2013, p. 19).

Given the severe punishment and other risks involved in trafficking cocaine and heroin, drug dealers started to set up methamphetamine production sites in West Africa in 2010 (UNODC, 2013). The following excerpts from the UNODC report shed more light on the history of local production of methamphetamine in Nigeria, and the involvement of people from the Eastern region:

> In July of 2011, the first operational facility was detected. The Nigerian Drug Law Enforcement Agency discovered a site with the capacity to manufacture 25 to 50-kilogram batches of methamphetamine just outside Lagos. Two men were arrested, both from southeast Nigeria (UNODC, 2013, p. 19).

> Eight months later, a second facility was identified in Satellite Town, Lagos. Some 41 kg of ephedrine and almost 5 kg of finished methamphetamine were seized. Three Bolivians and one Nigerian, an Igbo, were arrested (UNODC, 2013, p. 19).

The latest World Drug Report further strengthens the evidence that while the production of methamphetamine is reducing in Asian and American continents, "the number of dismantled

methamphetamine laboratories actually increased in… Africa over the period 2010–2019" (UNODC, 2021, p.52). Furthermore, the UNODC highlighted that in Africa, "most of the methamphetamine laboratories reported in the period 2015–2019 were dismantled in South Africa, followed by Nigeria" (UNODC, 2021, p.59). Again, the report illustrated that the reason for the increase in the production of methamphetamine in Nigeria is because drug traffickers export the drug to Asian countries, where drug enforcement agents have dismantled many laboratories, and Cape Town, where demands exceed local supplies (UNODC, 2021). Similarly, Njoku et al. (2021) reported that the spokesperson of the NDLEA that they contacted revealed that "since the 1990s, the production of Crystal meth has been hijacked by Mexican drug cartels and they came into Nigeria to set up laboratories in 2016" with the help of their local allies.

On November 24, 2021, the Vanguard Newspaper reported that:

> In March 2019, the NDLEA discovered a residential building *in Enugu* that turned into a drug factory…. where Methamphetamine (Mkpurummiri) was being produced in commercial quantities for export overseas, particularly to South Africa (Okoli et al., 2021).

On November 27, 2021, another news outlet reported that the NDLEA in Enugu state had uncovered illegal laboratories and arrested three suspects (Ulasi, 2021). Announcing the arrest to journalists, the Enugu state Commander of the NDLEA stated:

> Following intelligence report, the Command on Saturday arrested two suspects with 100kg of Ephedrine, which is used in the production of Methamphetamine. Subsequent follow-up operation led the team to the location of the laboratory at Zion Avenue Phase 6 Trans Ekulu in Enugu East Local Government Area, Enugu, where the third suspect was arrested (Ulasi, 2021).

Again, on December 10, 2021, the Daily Times Newspaper reported that the NDLEA had dismantled a laboratory in Asaba (a boundary city with Eastern Nigeria), arresting eight suspects:

> Operatives of the NDLEA have uncovered a huge methamphetamine-making laboratory in Asaba.... Officials of the agency's Special Enforcement Team (SET) also busted the masterminds of the major drug trafficking organization when they arrested eight suspects, four of them Mexican nationals, four Nigerians. The NDLEA stated that the suspects behind the syndicate were arrested in simultaneous operations in Lagos, Obosi, a town near Onitsha in Anambra State, and at the location of the lab in Asaba (Akenzua, 2021).

Based on the extant evidence reviewed above, it is reasonable to conclude that the local laboratories in Nigeria, particularly those set up by drug traffickers in the Eastern region and neighbouring states, may be responsible for the current rise in methamphetamine use in the region. This is primarily because drug availability encourages consumption and associated harms (Dumbili, 2020a).

Conclusion and Recommendations for Future Research

This paper synthesized the available evidence regarding methamphetamine production, use, and associated harm in Eastern Nigeria. The article has shown abundant evidence of how illegal laboratories set up by drug traffickers may be driving the availability of the substance, which encourages consumption. According to the UNODC (2013, p.19-20), the "manufacturing of methamphetamine requires no advanced technology. Addicts have been known to synthesize the drug in their own kitchens using common decongestants". Therefore, the NDLEA should not only focus on uncovering large laboratories in cities but should also focus on rural communities because drug producers may hide smaller laboratories in rural settings to evade detection. To curtail the production and easy availability of methamphetamine from its roots, the NDLEA and other regulatory bodies should focus on eradicating the importation of, and access to the "precursor chemicals (primarily ephedrine)" used in producing the substance (UNODC 2013, 19-20).

While the dissemination of information regarding the effects of the drug is urgently needed, different communities should focus more on reorienting youths to stop those who have not initiated methamphetamine use and encourage cessation amongst current users. It is vital that the government work with all stakeholders to increase public awareness of the dangers of methamphetamine use in Nigeria and develop mechanisms to support addiction treatment and rehabilitation services (Chikezie et al., 2021). Also, it is essential that the use of punitive measures by vigilante groups be discouraged as there is no evidence that such measures are effective. This will also help to prevent the stigma faced by affected individuals who are flogged in public. A South African study found that the factors that encourage the initiation of methamphetamine use include lack of employment opportunities, peer influence, easy accessibility, the popularity of the drug, and coping with stress and trauma (Hobkirk et al., 2016). As stated above, a media report in Nigeria also attributed methamphetamine use to joblessness (Ozah, 2021). Indeed, youth unemployment is high in Nigeria, which may be a reason for the growing drug epidemic. While research into this is warranted, the government should also create jobs for the unemployed youths.

Importantly, drug regulations in Nigeria have often followed the draconian- war on drugs - approach (i.e., arrest and imprisonment), but this has not reduced illicit drug availability and use in the country (Ugwu & Dumbili, 2021). Therefore, the government should not focus on applying such methods in regulating methamphetamine use. An evidence-based, multi-stakeholder (e.g., individuals who use the drug, community leaders, mental healthcare providers, policymakers, etc.) approach should be designed and implemented not just in this region but in the whole country. There is an urgent need to conduct studies in all the states in this region to provide empirical evidence on the availability, sources, prevalence, users' profile, motivations, and consequences of methamphetamine use. While quantitative studies are necessary to determine the prevalence, qualitative studies that will help map out the *real reason* or motivations for using methamphetamine and the social practices (e.g., the sources, cultures, etc.) around its use should not be neglected. In the main, youths should

be encouraged to channel their energy to other harmless recreational activities.

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