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Dangerous trend of methamphetamine use among youths in south-eastern Nigeria: A mini-review

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Abstract
South Eastern Nigeria in the recent times was in the news due to the increased reported cases of illicit use of methamphetamine known in the local dialect as 'mkpurumiri' or 'guzoro'. There were reported homicides and other forms of violence attributed to the increased illicit use of the substance by the young people. This work looked at the possible predisposing factors and solutions to this dangerous trend. The rapid technological innovations and advancement seems to aid the globalized market for the drug sellers and users, with reported unauthorized local production leading to increased availability and accessibility. As psychoactive substance use carries enormous negative consequences, the sudden rise in use of methamphetamine among the youth in the South Eastern part of Nigeria calls for concern, and all hands must be on deck to curb the menace.

Keywords: Methamphetamine use, youths, South-East Nigeria, dangerous trend

Introduction
"It is said that no one truly knows a nation until one has been inside its jails. A nation should not be judged by how it treats its highest citizens, but its lowest ones." - Nelson Mandela
More than 10.2 million people worldwide are held in prisons. As per the World Prison Population List-2013, there is a general trend of growth in prison population in majority of nations, including in India. As of 2017, the latest figures available for India, there are 4,11,992 prisoners. Majority of prisoners in India are uneducated, poor and belong to marginalized or socially disadvantaged groups and have limited knowledge about health and practice unhealthy lifestyles. Thus, they represent a distinct and vulnerable health group needing priority attention [1].

International Law
The media was recently awash with news of psychotic behavior, manslaughter, violence and attempted suicides among some young persons from different regions of South-Eastern part of Nigeria attributed to use of illicit methamphetamine popularly known as '*mkpurumiri*' or 'guzoro' in the local dialect (Igbo language) (literal translation of 'ice' or 'stand fit' respectively). Some of the media captions were: Mkpurumiri-the drug destroying Igbo youths; (Ujumadu, 2021) [17] How mkprumiri is destroying and killing Igbo youths; (Okolo *et al*., 2021) [17] How Mexican drug cartel brought Mkpurumiri to Nigeria; (Njoku *et al*., 2021) Nigeria-Mkpurumiri drug chaos in Igboland escalates; (Ojiego, 2021) [16] Psychologist warns South-East youths against consumption of mkpurumiri; (Aroh, 2021) [1] *etc.* The World Drug Report (WDR) of 2021 started with an opening statement by the Executive Director, United Nations Office on Drugs and Crime (UNODC) that 'drugs cost lives…' and reported that about 275 million persons used drugs in the previous year, with over 36 million suffering from drug use disorders (UNODC, 2021) [26]. The report further revealed that from 2010-2019, the number of people using drugs increased by 22%, with higher expectation by 2030. Africa on the other hand was projected to rise up to 40% due to the rapidly growing young population with the attendant dynamics. (UNODC, 2021) [26].
Nigeria was projected to have up to 20 million drug users by 2030 with consequent negative impacts on public health and public security if nothing concrete is done to change the trend.

The Nigerian Drug Law Enforcement Agency (NDLEA) boss described drug problem as a 'raging epidemic.' According to 2018 and 2019 National drug use survey, there were 14.3 million drug users in Nigeria, with close to 3 million suffered from drug use disorders. The survey showed that about 40% of Nigerian youths aged 18 and 35 years are involved in substance use disorder. The general prevalence of addictive drug use was 14.4%, while the global prevalence was 5%. About 11 million were misusing cannabis and other illicit drugs in Nigeria (a third of which are regular users and require drug counseling). (UNODC-Nigeria, 2021) [26] Other common drugs/substance of use include alcohol, cigarettes (tobacco), marijuana, inhalants, tramadol, codeine containing cough syrup (Raji *et al*., 2013) [18] and cocaine. It has been shown that psychoactive substance use has direct or indirect link with mental health disorders, physical health and socioeconomic problems.(Bhatt *et al*., 2016; Raji *et al*., 2013) [2, 18]

The 2021 WDR also showed low global prevalence of the use of amphetamine-type stimulants (ATS) as 0.5% of the global population (27 million users in 2019) with highest prevalence of 2.3% reported in North America and lowest prevalence of 0.4% in Africa.(UNODC, 2021) [26]. The ATS include substances like amphetamine, methamphetamine, 'ecstasy', etc. The observed trends in South Eastern Nigeria who are mainly of Igbo ethnic origin call for concern. This is also in line with the 2021 theme of the International Day against Drug Abuse and illicit trafficking which is "share facts on drugs. Save lives." (UNODC-Nigeria, 2021) [26] This work aims to raise public awareness on illicit use of methamphetamine in South-Eastern Nigeria, so that International community, government, civil society, families and young persons can make informed decision to tackle illicit use of methamphetamine and other related substances.

What is methamphetamine?

Methamphetamine is a highly addictive stimulant, affecting the central nervous system (CNS). It is a derivative of amphetamine and both are enantiomers of ephedrine (Koohsar *et al*., 2022) [9]. It produces euphoric effects ('high') hence called 'guzoro' meaning 'standing fit' by some local users. It is highly lipid-soluble, which helps to be transferred relatively fast across the blood-brain barrier and has an immediate effect on the CNS. Methamphetamine is a man-made drug developed in 1919 in Japan, during the World War II and it was used by soldiers to stay awake or carry out dangerous suicidal mission (known as 'kamikaze').(M Chiu & O Schenk, 2012) [12] It is odorless, with bitter taste. Occasionally, the color may look blue or as white chalk crystals. Like amphetamine, methamphetamine is also a recreational drug, and may be used as second line treatment of attention-deficit hyperactive disorder and obesity.(Editors, 2018) [4]

In 1970s, methamphetamine was added to the schedule II list of controlled drugs/substances by International Drug Control Convention. Schedule II drugs are substances with high potential of abuse, and potentially leading to severe psychological or physical dependence.(Galbraith, 2015; Yasaei & Saadabadi, 2021) [5, 28] Their use became illegal except when prescribed by a physician for very limited number of medical conditions. Some of the administrative routes of methamphetamine misuse includes: smoking, swallowing, snorting, and injecting the powder dissolved in water or alcohol.

Mechanism of action of methamphetamine

It leads to release of dopamine (a natural chemical in the brain) involved in body movement, motivation and reinforcement of rewarding behavior. Natural rewards such as food, sex, and drug rewards like cocaine, amphetamine, dextroamphetamine and methamphetamine, provide transient positive reinforcement so that the behavior is repeated. This reward pathway, known as the mesocorticolimbic dopamine system begins at the ventral tegmental area (VTA), is a dopamine-rich nucleus in the midbrain and projects dopaminergic action potentials to another area of the brain called the nucleus accumbens (NA). It is here in the nucleus accumbens, where dopamine primarily mediates feelings of pleasure and reward.(Koohsar *et al*., 2022) [9] In summary, methamphetamine, like other psycho-stimulants cause alterations in the dopaminergic reward pathway leading to drug addiction, and other components of monoamine cascade such as increase in serotonin, and norepinephrine concentrations have also been implicated.(Bhatt *et al*., 2016) [2]

Effects of methamphetamine

The impact of its misuse can be grouped into:- psychological, physical and socio-economic harms.

Psychological harm of methamphetamine misuse

Methamphetamine being a highly addictive central nervous system stimulant has serious harmful effect on health of individuals using the substance. The increasing use and rise in level of its dependence have consequentially led to upsurge of psychiatric symptoms and disorders. (Hadizade Asar *et al*., 2018) [6] Its health problems can arise at any stage of use be it in the acute or chronic use, binge use and withdrawal stage. The preference from its powder to a more purified crystalline form of use is being associated to severity of psychiatric complications.(Lappin *et al*., 2016; STUART, 2003) [10, 24] Several psychiatric symptoms especially paranoia, hallucinations, suicidality, anxiety, irritability, distractibility, motor hyperactivity and depressive symptoms have been reported among individuals abusing methamphetamine.(Hadizade Asar *et al*., 2018; Scott *et al*., 2015) [6] Euphoria, alertness, insomnia, increase energy level, loss of appetite, talkativeness, disinhibition and violent behaviors are commonly seen in acute intoxicated stage, and in the withdrawal period, the individual may become moody, somnolence, intensively craving for the drug, and irritable as well.(Harro, 2015a; Liu *et al*., 2017a; McKetin *et al*., 2016a) [11, 7, 13] Approximately, one in three is at risk of developing mental health problem.(McKetin *et al*., 2016a) [13].

Specifically, more than one-third of 106 persons misusing methamphetamine in a study done in US experienced auditory hallucinations from familiar persons predominantly of derogatory and commanding themes.(Liu *et al*., 2017b) [11] Therefore, it will not be surprising why evidences have shown that those who use addictive substances are violent against themselves, others and properties.(Harro, 2015b; Sommers *et al*., 2006) [7, 23] The physical aggression committed under the effect of methamphetamine use far supersedes that reported among non-drug related mental disorders. In fact, the quantity of methamphetamine use, psychotic symptoms and cognitive dysfunction associated with methamphetamine use are the major determinants for violence. (Harro, 2015b) [7].

Increase in concentration, self-confidence, wakefulness, physical strength and enhance sexual performance are some of the positive effects of initial regular use of methamphteamine, though such gains are not sustainable. (Chang *et al*., 2018) [3] However, it is worthy of note that the relationship between methamphetamine use and psychiatric illness could be bidirectional. Psychopathology and prognosis of schizophrenia, and methamphetamine-induced psychosis are overlapping (McKetin *et al*., 2016; Scott *et al*., 2015) [13, 10, 22]. Hence, researchers (Scott *et al*., 2015) [22] have opined for a validated symptom profile for methamphetamine-induced psychological symptoms to ensure adequate management of other comorbid psychiatric disorders that might be missing among this population.

Physical harm of methamphetamine use

Besides psychosocial effects of substance use, its deleterious physical consequences are overwhelming. (Raji *et al*., 2013) [18]. Prolong use of methamphetamine result in marked weight loss, via its appetite reduction mechanism. Also evidence has shown that it is this weight loss effect that usually attracts females who desire to maintain slim shape, to misuse of methamphetamine.(Chang *et al*., 2018b; Yoosefi Lebni *et al*., 2020) [3]. Several other medical and physical consequences of methamphetamine use are seizure/convulsion, dehydration, skin itches, rotten teeth and bleeding gum.(Liu *et al*., 2017b) [11].

Chronic methamphetamine users are prone to having dry mouth or xerostomia, bruxism and increase risk for dental caries, periodontal injuries, recurrent temporomandibular joint ache and trismus. (He *et al*., 2013; Rommel *et al*., 2015) [19]. An age and gender-matched case-control study showed that those using methamphetamine significantly had lower saliva rate and buffer capacity, and higher bruxism.(Rommel *et al*., 2015) [19].

Some cardio-respiratory diseases have been reported among individuals using methamphetamine, such as hypertension, tachycardia, and recurrent upper respiratory tract infection and lung cancer. A ten-year-study in California reported a sky-rocketed increase in age-adjusted methamphetamine-induced heart failure of 4.1% in 2008 to 28.1% in 2018.(Rommel *et al*., 2016) [19] Methamphetamine users who inject the drug and share needles are at risk of acquiring hepatitis, HIV, and septicemia secondary to phlebitis.(Salamanca *et al*., 2015) [21].

Socioeconomic burden of methamphetamine misuse

There is lower socio-economic status among methamphetamine users than individuals that do not use the substance. (Chang *et al*., 2018) [3] Compared with non-methamphetamine-induced heart failure, methamphetamine-induced heart failure was associated with higher hospitalization charges, longer length of hospitalization, and more procedures performed despite a younger demographic.(Rommel *et al*., 2016) [19] The enormous financial cost and lost in methamphetamine use leads to huge socio-economic burden for the individuals, family and the entire society. (Sommers *et al*., 2006) [23] The World Drug Report evaluated this type of cost to society as disability-adjusted life years (years of healthy living lost due to drug-related disability and years lost to premature death). The direct monetary value for disability-adjusted life years is not feasible to quantify, however the opportunity cost is expected to be immense. In USA, approximately $390 million was spent on methamphetamine heart-related disease admissions in 2018. (Rommel *et al*., 2016) [19] Earlier, a holistic healthcare expenditure associated with methamphetamine use was estimated between $16.2 and 48.3 billion.(Salamanca *et al*., 2015) [21].

Methamphetamine misuse may lead to heightened criminal-justice problems due to its disinhibiting feature, impulsivity, cognitive impairment, psychotic effect. Consequently, self-harm, assault, accident-prone drugged driving, stealing and robbery, gender-based violence often occur among methamphetamine abusers. (Harro, 2015) [7]. Methamphetamine users are prone to insolvency leading to selling of possessions or stealing and other anti-social behaviors.

Why is methamphetamine use on the rise in South-East Nigeria?

The rapid technological innovations and advancement seems to aid the globalized market for the drug sellers and users. The adaptability with which some uncontrolled precursors are used to produce methamphetamine makes it more accessible and available to the users and more difficult to be controlled by concerned agencies (UNODC, 2021) [26].

The demand and supply chain need be properly understood, as well as other promoting factors like unemployment (stressful life experiences), eroding societal values. Lack of parental supervision, influence of peers and impact of social media seem to be contributory. There are reports that political instability and attendant insecurity are linked to the use of illicit drugs.

While the first methamphetamine was produced in Japan, recent evidence showed that some are locally produced in addition to the imported. (Njoku *et al*., 2021) Report has it that since 1990s Mexican drug cartels hijacked production of Methamphetamine and came to Nigeria in 2016. (Nicosia *et al*., 2009; Rommel *et al*., 2015) [19]. Methamphetamine seems to be cheaper compared to cocaine and heroin since it can be easily produced locally.

Some of the users consider indian-hemp (cannabis) as lower class (‘kindergatten’), hence desire higher effects in methamphetamine. Many of the users of drugs seem to lack insight of the dangers associated to methamphetamine use.

Way-out to methamphetamine menace in South-East Nigeria

This will involve families, schools, communities, religious organizations, media and government at all levels.

1. There is need for Government (at all levels) to address the issue of unemployment among the young persons, as an improved socioeconomic status will reduce the incidence.
2. There is need to engage young adults meaningfully to avoid being idle and be used as instruments of violence within the political circle.
3. For those already having methamphetamine and other addictive drugs, there is need to build effective rehabilitation centers in the country especially in the South East Nigeria. Currently, there seems to be no functional standard drug rehabilitation facility in the entire South-East and South-South regions of the country.
4. The Nigeria Drug Law and Enforcement Agency (NDLEA) need to be more active, with the support of the general public in breaking the supply and demand

chain of methamphetamine. The public trust need to be won by continuous confidence building ensuring the masses of their safety when such information is given.
5. There is need to strengthen already existing structures in Igbo Communities in the South-East to combat the menace of methamphetamine use, among other addictive substances. These structures include Town Union leadership, Women and Youth Advocacy Groups, among others. These groups can help in banning sale and use of illicit drugs in our communities, and extract commitment on abstinence among the users. These structures have helped in the past in other areas of socioeconomic development of the region.
6. It is important to note that shaming, flogging in the public and even killing (as some Communities in Igbo land have adopted) are not the best options, since these individuals having substance use disorder need psychological and medical help.
7. There is need for strategic sensitization of the public on the dangers of illicit drugs including methamphetamine by the media industries, governmental and non-governmental organizations, religious leaders, celebrities, through targeted outreach and awareness programs. These can reduce the prevalence of drug use problems and drug-related complications significantly.
8. Also there is strong need to strengthen our value system – good family upbringing, stable family system, hard work, 'good name above riches', *among* others.
9. There is need to train more healthcare providers and assistants (at Primary Health Care level) to recognize early signs of methamphetamine and other psychoactive substance use disorders, and work non-judgmentally with their patients to manage the drug use problem. The training can include effective counseling/psychotherapy and ensuring timely referrals when the need arises.

Conclusion

Substance use disorder especially methamphetamine continues to be a pressing problem for many young adults who are the future of our generation, with a lot of dangerous health and social implications. The sudden rise in the Nigerian South Eastern Communities calls for concern and all hands must be on deck to fight the menace.

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