AGRANULOCYTIC RESPONSES TO PARASITAEMIA OF *PLASMODIUM FALCIPARUM* SPECIES IN CHILDREN (6-

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Abstract

*O*ne of the major social and health problems of the 21st century is drug use which has contributed a lot to the psychological/mental displacement of youths and the adult population in Nigeria. It is against this backdrop that the academic discourse looks at drug use as a public health issue in Nigeria. The prevalence of drug use was described using the recent National survey data of the National Bureau of Statistics, National Drug Law Enforcement Agency [NDLEA] and United Nations Office on Drugs and Crime [UNODC]. Also, the commonly used drugs, the nature of administration into the body and acute/health effects, root causes, and measures for curbing the menace were also discussed. Based on the reviewed literature side-by-side

the observed current situation, it was recommended among others that government and Non-Governmental Organizations should employ qualified Social Workers and Environmental Health officers to develop professional strategies for prevention, control

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and treatment of drug addicts and abusers in society. This will help to provide effective assessment, referral, community supports, and inter-professional collaboration; government at all levels as well as private enterprises, community leaders, philanthropists, and other relevant stakeholders should provide organise skill acquisition training/empower programs for the teeming youths and able men and women.

This will help to reduce idleness and at the same time channel their strength toward nation-building activities for the attainment of sustainable development goals in Nigeria.

INTRODUCTION

There is no doubt that the strength of any form of society derives its powers from the sons who happens to work as the first-line defence against any breach of the social fabric through maintenance of values and morals, religion and heritage. Based on this assumption, if the spread phenomenon of drug use and abuse among the society members, especially the young people are high, this threatens catastrophe will occur in the community (Anzaku, 2019). Substance abuse and addictive behaviour happen to be universal phenomena and they are currently regarded as the major public health problem (Oshodi et al, 2010).

Drug use or abuse is a matter of grave concern to Social Workers, educational stakeholders, medical practitioners, religious leaders, counsellors and parents. It is a national and international sensitive challenge that needs urgent attention due to the alarming rate of involvement of both young and adult Nigerians (Abdu-Raheem, 2013). The World Health Organisation (WHO, 2009) reported that the risk of exposure to substance abuse has become one of the factors that influence the development of the burden of disease. It was also noted that one-third of the disease burdens of adults can be associated with

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behaviours that began in adolescence. This makes drug use/abuse a concern for Social Workers as well as public health issues in Nigeria.

A recent national survey about drug abuse has been confirmed to be massive, meaning the rate at which young persons and adults are using psychoactive drugs popularly referred to as "getting high" is more than the global average rate at 15% Nigeria's and 5.6% global. Of note, four (4) out of every ten (10) teenagers you meet on the street now abuse drugs and if this goes unchecked, seven (7) out of every ten (10) young persons on your street would become drug addicts by the year 2030 particularly in the major cities (Funmilayo, 2019).

Fortunately, drug use/abuse is known to be an important national, social and health problem in almost all countries in the world including Nigeria and have been declared a national public health emergency in the 21st century (Merica, 2017; Abdulraheem, Olalekan & Abasiekong, 2018). Although the rates of drug use/abuse are generally higher among younger people than older adults. However, to complicate matters, detecting substance use can be especially challenging in the presence of multiple coexisting medical conditions. Usual social indicators of impaired function, such as difficulty at school, work, driving errors, or legal charges may be relevant for an adolescent person (Abdulraheem, Olalekan & Abasiekong, 2018; Funmilayo, 2019). Previously, the prevalence tragedy of drug use/abuse was among adults and adolescents, but most disturbing and worrying now is the rate at which underage teens are embracing drugs freely and unchecked. Worst still, young people are generating their mixtures, using conventional substances with unusual elements to create their formula for severe drug intake which are often called "science students" for these practices (Funmilayo, 2019).

This means that drug intake has graduated from the use of sedatives like cocaine, heroin and cannabis that we used to know to a potent mixture of several drugs to attain fatal overdose. For example, a

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cocktail of drugs like codeine, tramadol, cannabis with juice or soft drink is called "gutter water". More crude is the smoking of lizard part, manure (dung), sniffing of petrol, glue, urine and sewage as an inhalant (Olalekan, Funmilayo, Iteimowei, Okoyen, & Oyinlola, 2019). This presents the fact that drug use and abuse is on the increase and requires more proactive intervention by both Social Workers, Health professionals, parent members of society, government and Non-Governmental Organisations. This can be supported further by the National Drug Law Enforcement Agency [NDLEA] report on drug use/abuse arrest across the six geopolitical zones of Nigeria. The summary of the report drug use/abuse arrest is presented in Table 1

Geopolitical Zone	Male	Female	Total	%
North West	2,214	47	2,261	25.6
South West	1,604	78	1,682	19.1
North Central	1,344	72	1,416	16.0
South-South	1,126	188	1,314	14.9
South East	1,041	95	1,136	12.9
North East	1,003	14	1,017	11.5
Total	**8,332**	**494**	**8,826**	**100**

Source: National Drug Law Enforcement Agency [NDLEA] Annual Report (2014) on drug use /abuse arrest.

The table showed that the northwest geopolitical zone has the highest arrested cases of drug use/abuse with a total of 2,261(25.6%). However, South-South geopolitical zone has the highest female arrested accounting for 38% of the total female drug use /abuse arrested in the country. Similarly, the males were found to use drugs more than females given the fact that they engage more in physical activities and risk behaviour. However, these are just figures of formal

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arrest cases made. But the fact remains that the level of drug use/abuse across the country is exponential to the formal arrest made. Thus, drug use/abuse is an issue of public health concern. At this point, it is important to explain the major concepts.

Conceptual Clarification of Related Terms

Public Health: Public health is the science and art of preventing disease, prolonging life and promoting physical health and efficiency through organised community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organisation of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of social machinery which will ensure to every individual in the community a standard of living adequate for the maintenance of health (Winslow, cited in Gascón-Pérez, 2013)

Drug: The World Health Organization (WHO) defines a drug as any substance which, introduced into the living organism can modify one or more of its functions. It can be taken orally, via a skin patch, by injection, or via an inhaler, to name the most common methods. (WHO, 2014). Some of these substances are natural in origin, as is the case with tobacco or cannabis. Others are the result of chemical processes carried out using natural products, like what occurs with alcoholic beverages, which are obtained from the fermentation or distillation of grain or fruit juice. Drugs are also produced artificially. This is the case for drugs for psychiatric use or synthetic drugs (Espada & Irles, 2019).

Drug Use: The American Psychiatric Association has developed the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV), which outlines specific criteria for the diagnosis of drug-use disorders, including drug abuse and drug dependence. The criteria for

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drug abuse entail continued drug use despite use resulting in significant problems. The criteria for drug dependence include, in addition to continued drug use despite problems, symptoms such as tolerance and withdrawal (American Psychiatric Association, 2013). The World Health Organization [WHO] describes drug use to entail:

a- Unsanctioned use: use of a drug that is not approved by society, or a group within that society.

b- Hazardous use: use of a drug that will probably lead to harmful consequences for the user. This concept is similar to the idea of risky behaviour.

c- Dysfunctional use: use of a drug leading to impaired psychological or social functioning (e.g. loss of a job or marital problems).

d- Harmful use: use of a drug that is known to have caused tissue damage or mental illness in a particular person (WHO, 2010). Also, the Advisory Council on the Misuse of Drugs in the United Kingdom defined "problem drug use" as drug use with serious negative consequences of a physical, psychological, social and interpersonal, financial or legal nature for users and those around them. It is a condition that may cause an individual to experience social, psychological, physical or legal problems related to intoxication and/or regular excessive consumption, and/or dependence (Advisory Council on the Misuse of Drugs [ACMD], 2010).

Drug Abuse: According to the World Health Organization (WHO, 2014) drug abuse refers to the harmful or hazardous use of psychoactive drugs, including alcohol and illicit drugs. The use of psychoactive drugs can lead to dependence syndrome and or a cluster of behavioural, cognitive, and physiological phenomena that develop after repeated usage, and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority is given to drug use than to other

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activities and obligations, increased tolerance, and sometimes a physical withdrawal state (WHO, 2014). Also, Ahmad (2012) drug abuse is the use of any drug for purposes other than that for which it is normally prescribed or recommended by a medical practitioner or agency. This implies the drug abuse is illegal to use drugs or without medical prescription which invariably may result in physical, social, cognitive and psychological harms on the users.

Drug Misuse: Drug misuse is defined as the use of a substance for a purpose not consistent with legal or medical guidelines (WHO, 2006). It harms health or functioning and may take the form of drug dependence, or be part of a wider spectrum of problematic or harmful behaviour (Department of Health [DH], 2019).

Drug Dependency: This refers to a strong desire or sense of compulsion to take a substance, difficulty in controlling its use, the presence of a physiological withdrawal state, tolerance of the use of the drug, neglect of alternative pleasures and interests and persistent use of the drug, despite harm to oneself and others (WHO, 2006). Dependence is diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) when three or more of the following criteria are present in 12 months: tolerance; withdrawal; increasing use over time; persistent or unsuccessful attempts to reduce use; preoccupation or excessive time spent on use or recovery from use; negative impact on social, occupational or recreational activity; and continued use despite evidence of its causing psychological or physical problems (American Psychiatric Association [APA], 2013).

Drug Addiction; According to the National Institute on Drug Abuse (NIDA), addiction is a "chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences" (NIDA, 2010). In other words, addiction is an uncontrollable or overwhelming need to use a drug, and this

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compulsion is long-lasting and can return unexpectedly after a period of improvement.

Prevalence of Drug Use/Abuse as a Public Health Concern in Nigeria

The survey conducted by the United Nations Office on Drugs and Crime [UNODC] (2018) in collaboration with the Federal Ministry of Health [FMoH] and European Union [EU] found that an estimated 14.4 per cent (range 14 per cent - 14.8 per cent) of the population in Nigeria or 14.3 million people between 15 and 64 years of age had used drugs, excluding alcohol and tobacco, in 2017. This estimate includes people who had used a drug at least once in the past 12 months as well as high-risk drug users. The estimates have been adjusted to account for individuals who had used more than one drug, in other words, "any drug use" counts individuals only once even if they had used multiple substances in the past year. As a result, the sum of individual drug estimates will add to a number greater than the estimated total (United Nations Office on Drugs and Crime [UNODC], 2018; Kazeem, 2019).

Individuals who inject drugs formed the largest number of high drug abuse in the country. Hence, 1 in 5 high-risk drug users/abusers inject drugs. The common drug injected by the user includes pharmaceutical opioids (such as Tramadol), cocaine and heroin. An estimated 4.7% of the population of 4.6 million people had used opioids such as tramadol, codeine or morphine for non-medical rationale. Similarly, the non-medical use of cough syrup containing codeine and dextromethorphan is estimated at 2.4% (2.4 million people of the adult population). However, the misuse of cough syrup is almost equal among men (2.3%) and women (2.5%) respectively. On the other hand, the non-medical use of tranquillizers is 0.5%, Ecstasy 0.3%, inhalants 0.3%, amphetamines 0.2% and cocaine 0.1% though not insignificant remains lower than the drugs mentioned earlier. On the whole, an

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estimated population of 376, 000 were found to be high-risk drug users with opioids as the highest used drug (National Bureau of Statistics [NBS], 2018; Kazeem, 2019).

On the use of heroin, the NBS (2018) and UNODC (2018) reports indicated that an estimated 87,000 had used heroin in 2017 and the mean age of the commencement of heroin use was 22 years with most of them reported smoking it. The report of injecting drugs such as heroin was common among women than men. However, men inject more drugs than women in the country. Hence, one in every four-drug user in the country is a woman, while, the annual prevalence of drug users among men is 21.8% (10.8 million) and that of women 7.0% (3.4million) as annual prevalence rate (National Bureau of Statistics [NBS], 2018). Added to this, the highest level of drug use was among age 25-39 years with an average age of 19 years as the initiation for drug use among the general population, while one in every five persons who have used drug suffers from drug-related disorder (NBS, 2018; UNODC, 2018). Risky injecting practices and sexual behaviours among drug users which could amount to contracting HIV/AIDs and other sexually transmitted diseases is a matter of concern to public health practitioners as well as Medical Social Workers. This is based on the fact that women who injected drugs are more likely than men to engage in high-risk sexual behaviours (UNODC, 2018).

In 2014, the highest prevalence of drug use/abuse as reported by NDLEA was the northwest geo-political zone with 25.6 % of the total arrest cases across the country (NDLEA Annual Report, 2014). However, NBS (2018) annual report revealed that the highest prevalence of drug use was found in the southern geopolitical zones ranging between 13.8 % and 22.4 % compared to the northern geopolitical zones' prevalence ranging between 10 % and 13.6 % (NBS, 2018).

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Difficulties to access treatment for drug use disorder were reported to be high in Imo, Yobe, Rivers, Bayelsa and Lagos states. Also, almost one-quarter of high-risk users of the drug were reported to be arrested for drug-related offences at the course of their drug use, while 73% had been arrested for possession of drugs with 12% arrested for theft, sex work 5%, burglary 4% and shoplifting 2% (NBS, 2018). This implies that some drug users are likely to participate in a criminal or deviant act that pose threat to the general wellbeing of society. This further buttressed by the report which indicated that two-thirds of drug users have a serious problems such as truancy, absenteeism from the workplace, difficulties handling responsibilities at the workplace, poor academic performance as well as neglect of family responsibility.

However, with the current health care system in the country, there is an obvious gap in meeting the needs for treatment and care for people with drug use or substance disorders. Data from UNODC (2018) and NBS (2018) revealed that two-thirds of high-risk drug users saw the need for drug treatment. However, almost 40% of them could not access such services. Hence, the cost of treatment, inadequate drug treatment services and stigmatization of drug users by the general public were reported to be major barriers to accessing drug treatment in the country. At this point, it is important to discuss the rationale behind drug use/abuse in the country.

Causes of Drug Use/Abuse among the Young and Adult Population in Nigeria

Drug use/abuse is a worldwide issue in both developed and developing countries with quite a lot of causes of varying origins which could be linked to either precipitating or maintaining factors. The former factor refers to the initial and, normally, a reasonable excuse for using drugs, while the latter represent reasons for maintaining the use of drugs that marks or leads to physical or psychological dependence on drugs

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(Afuwai, 2016). Put together, the major causes of drug use/abuse includes:

i. **Mental and Emotional Factors**: Many people that abuse/use drugs appear to have a personality disorder before taking drugs as shown by poor school record, truancy, delinquency and dropout. Such drug abusers often seem to be without resources to cope with the challenges of day to day life; they are inconsistent in their feelings and critical of society and authority. Some drug abusers give a history of mental illness or personality disorder in the family. Studies found a higher risk for those individuals with a mental disorder to progress from experimentation into problematic usage of drug use/abuse than those in a community ((Imam, 2004).

ii. **Individual socioeconomic status**: Class is a determinant of health and drug-use behaviours in Nigeria. However, this is not a purely individual risk factor. The impacts of individual socio-economic status are related more to relative socio-economic position than to absolute poverty and are affected by social and structural variables such as social attitudes towards disadvantaged people by politicians and other influencer persons in the country and the degree to which supports and services are available (Spooner & Hetherington, 2004).

iii. **Family socioeconomic status**: being raised in a family characterised by low socio-economic status has been found to contribute to negative outcomes during childhood and later in adulthood. The family disadvantage in both rural and urban areas in Nigeria particularly when combined with other factors such as community disadvantage and/or drug-dependent parents can result in intergenerational disadvantage and associated negative outcomes that can lead to excessive drug use/abuse (Spooner & Hetherington, 2004; Rowe, La Greca & Alexandersson, 2010; Hernandez & Araiza, 2014).

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iv. **Media Influence:** Alcohol and tobacco companies spend billions of dollars creating advertising, and it appears to have a great impact on the Nigerian populace that abuse/use drugs (Media, 2010). Studies show that on television, four consecutive episodes from 42 top-rated sitcoms and dramas discovered that alcohol was involved in 77% of all episodes, tobacco 22%, and illicit drugs 20% (Meub, 2011).

v. **Community disadvantage:** growing up or living in a socio-economically disadvantaged community can contribute to negative outcomes for child development as well as contributing to drug use in adolescence and adult life in the country (Spooner & Hetherington, 2004).

vi. **Income inequality:** there is an ongoing debate about the impact of income inequality at the national, state or local level on health and social outcomes in the country. The evidence is somewhat mixed and limited concerning drug-use behaviours and outcomes (Spooner & Hetherington, 2004).

vii. **Cultural Factors:** Cultural influences can be divided into drug-specific cultural influences that only (or primarily) influence drug-use behaviours (for example, disapproval of illicit drug use) and broader (Western) cultural influences (for example, individualism which is taking over collectivism in the modern Nigerian society) that have indirect influences on drug use/abuse among young and adult population in the country (Spooner & Hetherington, 2004).

viii. **Biological Factors:** If parents have addiction struggles, chances are that the offspring of that family will be detectable to addiction. Black and Matassarin-Jacobs cited in Haddad (2015) refers to biological theorist's speculation that substance dependant people may lack naturally occurring endorphins (chemicals in the brain) and, therefore take substances in a physiologic attempt to replace the missing chemicals. Probably this suggests the interplay

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between personality features and genetic susceptibility in the individual response to the chemical substance family role models who drink excessively.

ix. **Availability of Drugs**: If psychoactive drugs/substances are readily available in a community, abusers will have easy access to them and will invariably use and abuse them. Alcohol and tobacco are good examples of psychoactive substances that are readily available and widely used and abused in Nigeria because of their social acceptance (Imam, 2004; Afuwai, 2016).

x. **Psychodynamic Factors**: Some psychological theories have attempted to explain how people become substance dependent. People who are alcohol dependent have often been viewed as individuals who easily succumb to the escape provided by alcohol. The psychoanalytic theory describes people with alcohol dependency as having strong oral tendencies related to unresolved needs for early attachments (Frosch cited in Haddad, 2015). Other factors include:

✓ Favourable environment for use/abuse of drugs
✓ Government policies;
✓ Peer influence,
✓ Idleness and rate high of unemployment among youths and adult population;
✓ Leisure and pleasure drives;
✓ Experimentation;
✓ Poor monitoring of wards by parents and law enforcement agencies among others.

Commonly Abused Drugs and their Effects on Users in Nigeria

The commonly abused drugs among young and adult populations across the country are presented in Table 2:

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Substances: Category & Name	*Examples of commercial & street Name*	*DEA schedule /How Administered*	*Effects /Health Risks*
Tobacco *Nicotine*	Found in cigarettes, cigars, bidis, and smokeless tobacco (snuff, spit tobacco, chew (National Institute on Drug Abuse [NIDA], 2020)	Not scheduled/smoked snorted, chewed	Increased blood pressure and heart rate/chronic lung disease; cardiovascular disease; stroke; cancers of the mouth, pharynx, larynx, oesophagus, stomach, pancreas, cervix, kidney, bladder, and acute myeloid leukaemia; adverse pregnancy outcomes; addiction (NIDA, 2020)
Alcohol *Alcohol (ethyl alcohol)*	Found in liquor, beer, and wine (NIDA, 2020).	Not scheduled/swallowed	In low doses, euphoria, mild stimulation, relaxation, lowered inhibitions; in higher doses, drowsiness, slurred speech, nausea, emotional volatility, loss of coordination, visual distortions, impaired memory, sexual dysfunction, loss of consciousness/ increased risk of injuries, violence, fetal damage (in pregnant women); depression; neurologic deficits; hypertension; liver and heart disease; addiction; fatal overdose (Ahmed, 2012; Yusuf,2013; NIDA, 2020).
Cannabinoids			
Marijuana	Blunt, dope, ganja, grass, herb, joint, bud, Mary Jane, pot, reefer, green, trees, smoke, sinsemilla, skunk,	I/smoked swallowed (NIDA, 2020).	Euphoria; relaxation; slowed reaction time; distorted sensory perception; impaired balance and coordination; increased heart rate and appetite;

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	weed (Martin, 2010; Osayande, 2011; Agwogie, 2010; NIDA, 2020)		impaired learning, memory; anxiety; panic attacks; psychosis/cough; frequent respiratory infections; possible mental health decline; addiction (Ahmed, 2012; Yusuf,2013; NIDA, 2020).
Hashish	Boom, gangster, hash, hash oil, hemp (NIDA, 2020).	/smoked, swallowed	Euphoria; relaxation; slowed reaction time; distorted sensory perception; impaired balance and coordination; increased heart rate and appetite; impaired learning memory; anxiety; panic attacks; psychosis/cough; frequent respiratory infections; possible mental health decline; addiction (Ahmed, 2012; Yusuf,2013; NIDA, 2020).
Opioids			
Heroin	Diacetylmorphine: smack, horse, brown sugar, dope, H, junk, skag, skunk, white horse, China white; cheese (with OTC cold medicine and antihistamine) (NIDA, 2020).	I/injected, smoked, snorted	Euphoria; drowsiness; impaired coordination; dizziness; confusion; nausea; sedation; feeling of heaviness in the body; slowed or arrested breathing/constipation; endocarditis; hepatitis; HIV; addiction; fatal overdose (Ahmed, 2012; Yusuf,2013; NIDA, 2020).
Opium	Laudanum, paregoric: big O, black stuff, block, gum, hop (NIDA, 2020).	II, III, V/swallowed, smoked	
Stimulants			
Cocaine	Cocaine hydrochloride: blow, bump, C,	II/snorted, smoked, injected	Increased heart rate, blood pressure, body temperature, metabolism;

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	candy, Charlie, coke, crack, flake, rock, snow, toot (Haddad, 2015; NIDA, 2020;		feelings of exhilaration; increased energy, mental alertness; tremors; reduced appetite; irritability; anxiety; panic; paranoia; violent behaviour;
Amphetamine	Biphetamine, Dexedrine: bennies, black beauties, crosses, hearts, LA turnaround, speed, truck drivers, uppers (NIDA, 2020).	II/swallowed, snorted, smoked, injected (NIDA, 2020).	psychosis/weight loss; insomnia; cardiac or cardiovascular complications; stroke; seizures; addiction. Also, for cocaine—nasal damage from snorting. Also, for
Methamphetamine	Desoxyn: meth, ice, crank, chalk, crystal, fire, glass, go fast, speed (NIDA, 2020).	II/swallowed, snorted, smoked, injected (NIDA, 2020).	methamphetamine—severe dental problems (Ahmed, 2012; Yusuf,2013; NIDA, 2020).
Club Drugs			
MDMA (methylenedioxymethamphetamine)	Ecstasy, Adam, clarity, Eve, lover's speed, peace, uppers (NIDA, 2020).	I/swallowed, snorted, injected (NIDA, 2020).	**MDMA**—mild hallucinogenic effects; increased tactile sensitivity, empathic feelings; lowered inhibition; anxiety; chills; sweating; teeth clenching; muscle cramping/sleep disturbances; depression; impaired memory; hyperthermia; addiction. **Flunitrazepam**—sedation; muscle relaxation; confusion; memory loss; dizziness; impaired coordination/addiction. **GHB**—drowsiness; nausea; headache; disorientation; loss of coordination; memory loss/unconsciousness; seizures; coma (Ahmed,

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			2012; Yusuf,2013; NIDA, 2020).
Flunitrazepam ***	Rohypnol: forget-me pill, Mexican Valium, R2, roach, Roche, roofies, roofinol, rope, rophies (Afuwai, 2016; NIDA, 2020).	IV/swallowed, snorted (NIDA, 2020).	
GHB***	Gamma-hydroxybutyrate: G, Georgia homeboy, grievous bodily harm, liquid ecstasy, soap, scoop, goop, liquid X (Afuwai, 2016; NIDA, 2020).	I/swallowed	
Dissociative Drugs			
Ketamine	Ketalar SV: cat Valium, K, Special K, vitamin K (NIDA, 2020).	III/injected, snorted, smoked (NIDA, 2020).	Feelings of being separate from one's body and environment; impaired motor function/anxiety; tremors; numbness; memory loss; nausea. Also, for ketamine— analgesia; impaired memory; delirium; respiratory depression and arrest; death. Also, for PCP and analogs—analgesia; psychosis; aggression; violence; slurred speech; loss of coordination; hallucinations. Also, for DXM—euphoria; slurred speech; confusion; dizziness; distorted visual perceptions (Hawkins, Catalano & Miller, 2012; NIDA, 2020).
PCP and analogs	Phencyclidine: angel dust, boat, hog, love boat, peace pill (Afuwai, 2016; NIDA, 2020).	I, II/swallowed, smoked, injected (NIDA, 2020).	
Salvia divinorum	Salvia, Shepherdess's Herb, Maria Pastora, magic mint, Sally-D.	Not scheduled/chewed, swallowed, smoked.	
Dextromethorphan (DXM)	Found in some cough and cold medications: Robotripping, Robo, Triple C (Afuwai, 2016; NIDA, 2020).	Not scheduled/ swallowed (NIDA, 2020).	

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Hallucinogens			
LSD	Anadrol, Oxandrin, Durabolin, Depo-Testosterone, Equipoise: roids, juice, gym candy, pumpers.	III/injected, swallowed, applied to the skin (NIDA, 2020).	Altered states of perception and feeling; hallucinations; nausea. Also, for LSD and mescaline—increased body temperature, heart rate, blood pressure; loss of appetite; sweating; sleeplessness; numbness; dizziness; weakness; tremors; impulsive behaviour; rapid shifts in emotion. Also, for LSD—Flashbacks, Hallucinogen Persisting Perception Disorder. Also, for psilocybin—nervousness; paranoia; panic (Crowe & Bilchik, 2011; NIDA, 2020).
Mescaline	Buttons, cactus, mesc, peyote (Afuwai, 2016; NIDA, 2020).	I/swallowed smoked (NIDA, 2020).	
Psilocybin	Magic mushrooms, purple passion, shrooms, little smoke (Afuwai, 2016; NIDA, 2020).	I/swallowed (NIDA, 2020).	
Other Compounds			
Anabolic steroids	Anadrol, Oxandrin, Durabolin, Depo-Testosterone, Equipoise: roids, juice, gym candy, pumpers.	III/injected, swallowed, applied to the skin (NIDA, 2020).	**Steroids**—no intoxication effects/hypertension; blood clotting and cholesterol changes; liver cysts; hostility and aggression; acne; in adolescents—premature stoppage of growth; in males—prostate cancer, reduced sperm production, shrunken testicles, breast enlargement; in females—menstrual irregularities, development of beard and other masculine characteristics. **Inhalants** (varies by chemical)—stimulation; loss of inhibition; headache;
Inhalants	Solvents (paint thinners, gasoline, glues); gases (butane, propane, aerosol propellants, nitrous oxide); nitrites (isoamyl, isobutyl, cyclohexyl): laughing gas, poppers, snappers, whippets (Afuwai, 2016; NIDA, 2020).	Not scheduled/inhaled through nose or mouth (NIDA, 2020).	

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		nausea or vomiting; slurred speech; loss of motor coordination; wheezing/cramps; muscle weakness; depression; memory impairment; damage to cardiovascular and nervous systems; unconsciousness; sudden death (WHO, 2011; Sahu & Sahu, 2016; NIDA, 2020).

DEA: Drug Enforcement Administration

Drug Use/Abuse as a Public Health Issue in Nigeria

Drug abuse is an emerging public health issue in Nigeria. The recent world drug report-2019 of the United Nations Office on Drugs and Crime (UNODC) estimated that 271 million (5.5%) of the global population (aged between 15 and 64 years), had used drugs in the previous year (UNODC, 2019). Also, it has been projected that 35 million individuals will be experiencing drug use disorders. Further, the Global Burden of Disease Study 2017 estimated that, in 2017, there were 585,000 deaths due to drug use, globally. The burden of drug abuse (usage, abuse, and trafficking) has also been related to the four areas of international concern, viz. organized crime, illicit financial flows, corruption, and terrorism/insurgency (UNODC, 2019; Jatau et. al, 2021).

Other harms associated with illicit drug use include increased mortality from overdose and other directly or indirectly associated harms such as the increased risk of infection with blood-borne viruses HIV, hepatitis B and hepatitis C; high levels of depression and anxiety disorders; social problems such as disrupted parenting, employment and accommodation; and increased participation in an income-generating crime. The majority (59%) were cases of accidental poisoning, although a sizeable proportion (16%) was a result of

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intentional self-poisoning. Opioids alone or in combination with other drugs accounted for some 70% of the deaths, and cocaine 13%. Many of the deaths appear to be due to multiple drug toxicity, especially the presence of central nervous system depressants, for example, alcohol and benzodiazepines, rather than simply an overdose of an opioid (The British Psychological Society & The Royal College of Psychiatrists 2008; Anzaku, 2019).

This is supported by research that shows those whose deaths were attributed to overdose have drugs such as opioid levels no higher than those who survive, or heroin users who die from other causes. Recent cohort studies have shown that mortality rates from methadone-related death are decreasing. Psychiatric comorbidity is common in drug abuse populations, with anxiety and depression generally common, and antisocial and other personality disorders in opioid-using populations (The British Psychological Society & The Royal College of Psychiatrists 2008).

According to UNODC (2018), nearly 1 in 8 persons (12 per cent of the adult population) in Nigeria has suffered some kind of consequence due to another person's drug use. Among those who had experienced any consequences, most had felt threatened or afraid of someone's use of drugs (8 per cent of the adult population). Other important consequences that people had experienced were that someone using drugs had harmed them physically (5 per cent of the adult population) or that they had stopped seeing a relative or friend due to their drug use (5 per cent of the adult population).

It is imperative to state that the burden of drug use/ abuse is on the rise and becoming a public health concern in Nigeria which is the most populous in Africa. The country has developed a reputation as a centre for drug trafficking and usage mostly among the youth population (Jatau et. al, 2021). The abuse of drugs constitutes one of the main causes of impairment of social competence and performance in the

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case of otherwise healthy young people for instance; behavioural problems associated with drug abuse are currently among the most important reasons for interrupted social and intellectual development (Chukwuka & Freddy, 2015).

However, the curative, rehabilitative and legal modalities earlier employed to combat drug use/abuse has not yielded appreciable result, many individuals and groups are now resorting to preventive measures which are better, cheaper and healthier. The best strategy for implementing and attaining this goal is through public health intervention programmes. Through public health intervention programmes such as Health Education, people can be helped to understand their behaviour and how it affects their health. People are encouraged to make their own choices for a healthy life (Chukwuka & Freddy, 2015). Thus, it is imperative to look at some of the public health measures to curb the rising impact of drug use/ abuse on public health in Nigeria.

Public Health Measures for Curbing Drug Use/Abuse in Nigeria

Public health in Nigeria functions to promoting healthy behaviour; Monitor the health status of the population; develop new insights and innovative solutions; lead the development of sound health policy and planning among others (National Open University of Nigeria [NOUN], 2018). Public Health practitioners have a lot of roles to play in curbing drug use/abuse in the country. Hence, some of the measures as proposed by scholars were stated as follows:

i.   Identifying the socio-cultural and psychological determinants that may determine the use of illicit drugs (Bashirian, Hidarnia, Allahverdipour & Hajizadeh, 2012; Chakravarthy, Sarah & Lotfipour, 2013);

ii.   Creating awareness about drug abuse and its adverse consequences through the aid of appropriate mass media tools.

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Added to this, building mechanisms for tracking and monitoring prescription drug abuse, and improving data collection on drug overdose fatalities (WHO, 2011; Philips, 2013);

iii. Delivering customized information suitable to the target audience in a culturally sensitive manner and the same vein, promoting free education and implementing innovative strategies to minimize the rates of school drop-outs (Botvin & Griffin, 2007; Gauffin, Vinnerljung, Fridell, Hesse, & Hjern, 2013);

iv. Developing family prevention programs in the form of multi-dimensional family therapy and individual cognitive behavioural therapy (Rowe, 2012);

v. Enabling the community to address the issues of substance abuse through training programs (Pringle, Kowalchuk, Meyers, & Seale, 2012);

vi. Advocating timely and complete management of drug abuse victims, and encouraging exercises as a potential treatment for drug abuse, as well as, developing a standardized strategy to monitor response to treatment (Lennox, Sternquist, & Paredes, 2013);

vii. Sensitizing clinicians to identify patients at risk for non-prescription drug abuse, as well as, strengthening preclinical assessment to predict substance abuse liability (Marusich, Lefever, Novak, Blough, & Wiley, 2013);

viii. Capacity building for the tools and methods desired for toxicological screening (Rosso, 2013);

ix. Fostering linkages between local, national and international agencies in the field of development, organization, monitoring and evaluation of treatment and other services (WHO, 2014);

x. Formulating strategies in collaboration with international agencies to monitor the sale of over-the-counter drugs and through the internet, and as well enforcing stricter penalties for

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individuals who are involved in the trade of illicit drugs (WHO, 2011; Davis, 2012. Shrivastava, Shrivastava, & Ramasamy, 2014).

The use of these measures in curbing drug use/abuse is a step towards healthy living and a crime-free society, as most of the crimes committed in the country today are linked to the influence of drugs and other psychoactive substances.

Conclusion

Drug abuse touches all parts of an individual's life, including job eligibility, education, and social functioning. The criteria for substance abuse in DSM 5 are a maladaptive disorder that creates impairment or distress in at least one area of an individual's life (Arria & McLellan, 2012). The problem of drug abuse has created a negative impact on individuals' families, friends, co-workers, children, and society and this makes it an issue for Social Work intervention. Thus, the involvement of social workers in drug abuse treatment can minimize individuals' problems because they have the knowledge and skills to help clients to recover. Social workers' roles remain a component of drug abuse treatment, which includes their perception, strengths, and limitations (Wells et al., 2013). However, the insufficient engagement of social workers with clients in drug abuse treatment facilities has affected their ability to accomplish their goals. This inadequate involvement is attributed to role uncertainty, lack of information, and absence of confidence in practice competence.

Recommendations

The following recommendations are worthy of note for the effective curbing of drug use/ Abuse in Nigeria:
1. Government and Non- Governmental Organizations [NGOs] should employ qualified Social Workers and Environmental Health officers to develop professional strategies for the

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prevention, control and treatment of drug addicts and abusers in society. This will help to provide effective assessment, referral, community supports, and inter-professional collaboration.

2. Government at all levels, as well as private enterprises, community leaders, philanthropists, and other relevant stakeholders, should provide organise skill acquisition training/empower programs for the teeming youths and able men and women. This will help to reduce idleness and at the same time channel their strength toward nation-building activities for attainment of sustainable development goals in Nigeria

3. Parents, caregivers and community members should bolster the inculcation of the core national values through the use of mentoring, socialization process, formal and informal leadership training, the teaching of cultural heritage and serving as good role models to children and youths in the country. No country in the world has been able to curb social problems without inculcating the right type of values in the citizens.

4. The National Drug Policy should prioritize by ensuring that medical / health practitioners, law enforcement agencies (NDLEA, the police, immigration, customs among others) adhere to the policy for selection, distribution, selling, administering and rational use of drugs in Nigeria. This will help to control the use of psychoactive drugs in the country.

5. Religious leaders and traditional rules should be charged with the responsibility of sensitizing their followers on the dangers of drug abuse.

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