

Non-Conventional Psychoactive Substances in Nigeria: Understanding Trends and Implications for Public Health

Presented by

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Learning Outcomes

- Identify and categorise common non-conventional psychoactive substances used in Nigeria, including synthetic and plant-based drugs.
- Explore the possible mechanisms of action of these substances on the brain and body.
- Analyse current research gaps regarding non-conventional substance use and its implications.
- Evaluate the health, social, and legal implications of these substances within Nigerian communities.
- Propose evidence-based policies and strategies to address the challenges associated with non-conventional substance use in Nigeria.





What are Non-Conventional Drugs?

- A **non-conventional drug** generally refers to a substance that is **not traditionally recognized** or **regulated** as a drug but is used to achieve psychoactive effects.

Non-Conventional Drugs: Key Features

- **Origin and Development:** Is the drug newly synthesized, emerging in new use patterns, or derived from unconventional sources?
- **Regulation and Availability:** Is the drug regulated, widely accessible without prescriptions, or sold in informal/illegal markets?
- **Patterns of Use:** Is the drug misused recreationally, repurposed for psychoactive effects (e.g., DIY mixtures), or associated with specific cultural or social trends?
- **Social and Legal Implications:** Does the drug exist in a legal gray area and/or face enforcement challenges?
- **Production and Distribution:** Is the drug produced informally or included in concoctions sold through illegal channels?

Possible categories of Non-Conventional Psychoactive Substances (NCPS)





New Psychoactive Substances (NPS)

- Definition: Synthetic compounds designed to mimic the effects of traditional drugs like cannabis, opioids, or stimulants, often evading existing drug laws.
- Examples: Synthetic cannabinoids

Emerging Drugs

- Definition: Recently identified or increasingly popular substances, often not yet regulated, which may have psychoactive effects.
- Examples: Ketamine (used as an anesthetic agent but abused for its euphoric effects)



Designer Drugs

- Definition: Chemical modifications of existing drugs intended to circumvent legal restrictions and provide similar effects.
- Examples: MDMA (a modified amphetamine with stimulant and hallucinogenic properties), a





Legal Highs

- Definition: Substances marketed as legal alternatives to illegal drugs, often available over the counter or online.
- Examples: nitrous oxide ("laughing gas"), and herbal mixtures with psychoactive effects.



Synthetic Drugs

- Definition: Lab-created drugs designed to produce effects similar to natural drugs.
- Examples: Synthetic opioids like fentanyl analogs, synthetic benzodiazepines (like etizolam)

Category	Overlap with Other Categories	Explanation
NPS (Novel Psychoactive Substances)	Overlaps with Designer Drugs and Synthetic Drugs	NPS are often synthetic and chemically designed to mimic effects of traditional drugs (e.g., cannabis, stimulants, opioids).
Designer Drugs	Overlaps with NPS, Designer drugs and sometimes Legal Highs	Designer drugs are chemically altered versions of existing drugs to bypass legal restrictions; they are a subset of NPS.
Emerging Drugs	Can include NPS, Designer Drugs, and Legal Highs	Emerging drugs are a broad category and can be any newly popular drug (synthetic or natural), whether mimicking other drugs or not.
Legal Highs	May include NPS, Designer Drugs, and sometimes Synthetic Drugs	Emphasis is on their legal status and market availability; many substances marketed as "legal highs" fall into other categories.
Synthetic Drugs	Overlaps with NPS, Designer Drugs, and sometimes Legal Highs	Covers any lab-made substances, whether created for recreational use, medical purposes, or to evade legal restrictions.

Combination Highs

- Refers to the practice of combining two or more substances to create a new psychoactive experience.
- This can involve combining substances that are already psychoactive or combining substances that become psychoactive only when mixed
- They're sometimes referred to as “DIY highs” or “polydrug combinations.”
- Can be difficult to categorize into the stated groups



NCPS: The Nigerian Scene

- In the past decade, there has been an increasing awareness of use and perhaps an increased use of NCPS
- Reports on the use of NCPS trended on news and social media in the last decade, peaking in 2018 when there was an outcry over addiction to codeine syrups, leading to a ban on the production and import of cough syrup containing codeine





Drugs of Abuse among In-Patients Receiving Treatment for Substance Use Disorders in a Tertiary Health Care Center in South-South Nigeria: An Exploratory Qualitative Study

Drogues d'Abus chez les Patients Hospitalisés Recevant un Traitement pour Toxicomanie Troubles dans un Centre de Soins de Santé Tertiaires dans le Sud-Sud du Nigeria: un Étude Qualitative Exploratoire

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ABSTRACT

INTRODUCTION: Recently, there has been an increase in the abuse of relatively newer substances sometimes in unusual combinations. Some of these drugs and their street names are unfamiliar to researchers and clinicians, hindering their identification. Our objective was to investigate current trends in drug abuse, focusing on eliciting drugs of use and their street names in Calabar, Nigeria.

METHODS: Using a qualitative design, we conducted focus group discussions among 15 male in-patients of the drug treatment ward of the Federal Neuropsychiatric Hospital, Calabar. Data was collected as audio recordings and handwritten notes and was analyzed using the Nvivo software.

RÉSUMÉ

INTRODUCTION: Récemment, il y a eu une augmentation de l'abus de substances relativement nouvelles parfois dans des Combinaisons. Certaines de ces drogues et leurs noms de rue sont peu familiers aux chercheurs et aux cliniciens, ce qui entrave leur identification. Notre objectif était d'étudier les tendances actuelles dans l'abus de drogues, en mettant l'accent sur l'obtention de drogues de consommation et leur noms de rues à Calabar, Nigeria.

MÉTHODES: À l'aide d'une conception qualitative, nous avons mené des discussions de groupe entre 15 patients masculins hospitalisés du médicament service de traitement de l'Hôpital fédéral neuropsychiatrique, Calabar. Les données ont été recueillies sous forme d'enregistrements audio et d'écriture manuscrite, et a été analysé à l'aide du logiciel Nvivo.

Trends in
NCPS use:
Examining
the evidence



EMERGING
DRUGS

Abused Prescription-Only Medication

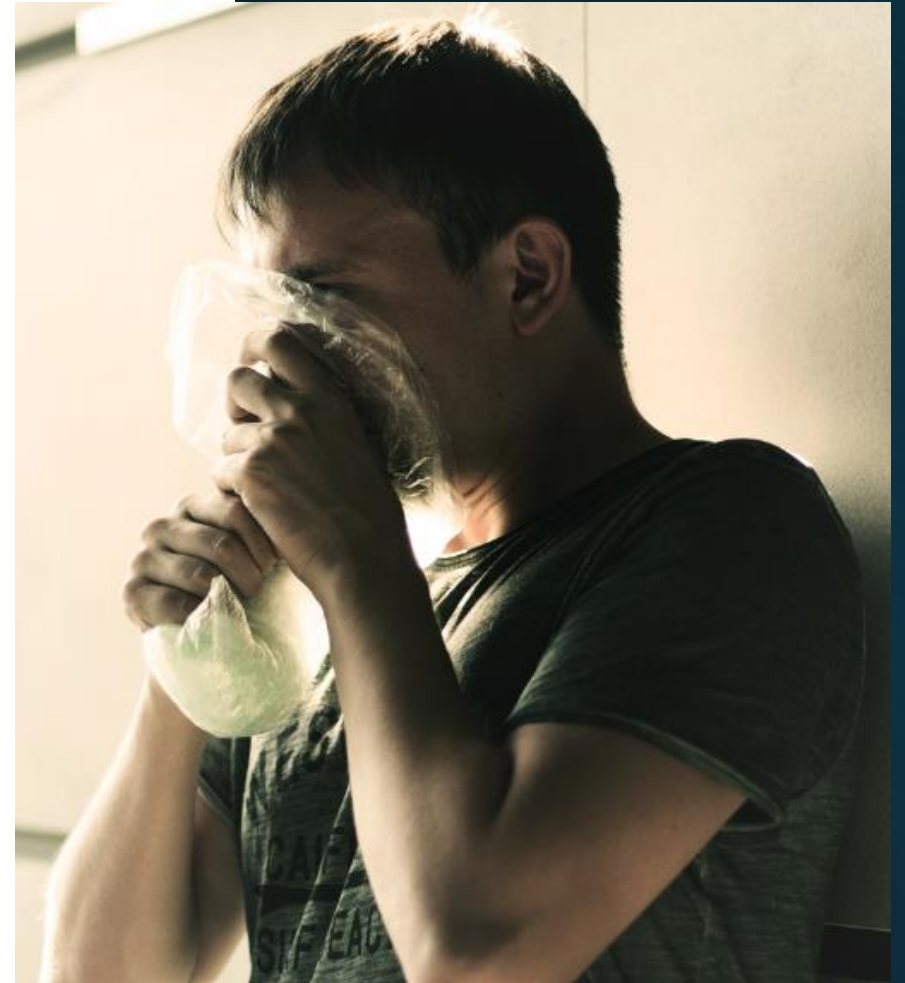
- Prescription drugs commonly abused in Nigeria, such as Flunitrazepam (*aka Rohypnol, Refnol, Sweetnol, Blue Boy*), codeine (in cough syrups), and tramadol
- MOA: opioids act by binding on opioid receptors, and increasing dopamine in the brain's reward centres
- An estimated **4.7 percent** of the population, i.e., **4.6 million** people, had used opioids (such as tramadol, codeine, or morphine) for non-medical purposes in the past year (Nigerian Drug Use Survey 2018)
- The non-medical use of cough syrups containing codeine and dextromethorphan is estimated at **2.4 per cent** of the adult population (nearly 2.4 million people).
- Codeine-containing cough syrups have been on the list of POM since 2012 but were banned in 2018 (NAFDAC 2018)

Trihexyphenidyl (aka Artane)

- Trihexyphenidyl (commonly known as Artane), an anticholinergic drug that is prescribed for patients on antipsychotics to control extrapyramidal side effects
- Trihexyphenidyl is known to have a euphoric effect and thus abuse potential
- MOA: acetylcholine and dopamine have opposing actions. Reducing acetylcholine activity can enhance dopaminergic effects.
- comprises as high as **25% of total prescriptions** and is prescribed in almost **90% of patients with schizophrenia** (which comprise close to 50% of admissions in Nigerian dedicated psychiatric hospitals) (Okafor et al., 2022)
- Can relieve negative symptoms like social withdrawal and worsen positive symptoms like hallucinations
- Combination of relief and exacerbation creates a complex dependence pattern, particularly in vulnerable psychiatric populations (Okeleji et al 2024)

Inhalants

- Vulcanizing Solution (street name: solution) was abused by inhalation and said to be “very toxic”
- Inhalation of septic tank gas emissions was also a means of getting intoxicated



Inhalants: Vulcanizing solution

- Vulcanizing solution, or vulcanizing cement or rubber cement, is an adhesive used to repair and bond rubber, especially in tyre repair applications.
- Few Nigerian studies report the use of vulcanizing solutions.
- Prevalence of 9.3% among youth in North Central Nigeria (Aliyu et al. 2016)
- The composition of vulcanizing gum may vary by brand, but one component that could lead to misuse is the solvent (e.g., hexane, toluene, or heptane).



Inhalants: Vulcanizing solution



- MOA: Solvents increase the release of dopamine from the mesolimbic system leading to euphoria
- In addition, the gum contains other constituents, such as natural or synthetic rubber, sulphur compounds, resins, plasticizers, and accelerators (e.g., zinc oxide, tetramethylthiuram disulfide), which can be harmful if inhaled along with the solvent.
- It is sometimes mixed with petrol and sniffed (Dumbili et al 2023)

Inhalants: Septic Tank fumes

- Other studies also report the abuse of gas emitting from Septic Tanks (colloquially called Soakaway in Nigeria)
- *I also learned that they sniff soak away gas, especially early in the morning. They bore a hole into it and sniff the gas with a tiny pipe known to them as a stem (Veta et al. 2024)*
- Prevalence of around 3% among 420 adolescents in South-South (unpublished study), 6.2% in North Central Nigeria (Aliyu, 2016)
- Sewer gas contains hydrogen sulphide, ammonia, carbon dioxide and methane
- Previous research suggests that hydrogen sulphide is likely to be the most psychoactive component however the others could also contribute (Zinnia Health 2024)
- However, they are mostly irritant and cause hypoxia which might explain the lightheadedness associated
- There is also fermented urine which produces the same gases (Jimoh et al 2022)



Other emerging inhalants

- Nitrous oxide (laughing gas) is increasingly used recreationally by Nigerian youth, especially at parties.
 - Neurological damage (e.g., myeloneuropathy, neuropathy), psychiatric disorders, and even death.
 - nationwide clampdown on illicit sales and nonmedical use of the substance in July 2023 by NDLEA
- Petrol fumes (Aliyu et al, 2015)
- Tear gas (Aliyu et al, 2015)
- Methylene chloride (aka suck and die), a solvent in paint stripping, cleaning, and degreasing processes (Ohieku et al, 2016).



Lizard dung

- Whitish part of lizard dung which could be licked or smoked
- Prevalence of 10% among persons in a transport terminal (aka motor park) in Abuja (Chukwuedozie 2022)
- lizard dung mixed with Lacasera (Ikoh et al 2019)
- There is very limited research on the psychoactive component
- The whitish portion of lizard excrement is primarily composed of uric acid, a waste product from protein metabolism. Uric acid itself is not psychoactive.
- However, when uric acid decomposes, it can produce ammonia, which may have psychoactive effects if inhaled in significant quantities.
- This practice is highly dangerous and poses serious health risks, including exposure to harmful bacteria and potential respiratory issues.



Abused plants

- Datura Metel
- Papaya leaves

Datura Metel

- “called Witch’s Garden egg. It is just like the garden egg. If you pluck it and eat it, no matter the quantity, it will make you very high. They ferment the garden egg with water or alcohol for one or two days and take it. It is a weed that grows on its own; you cannot get it in the market...”



One dies, five hospitalised after taking “gegemu”

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Datura Metel

- Datura metel plant (Indigenous names: Igbo – Myaramuo; Hausa – Zakami; Yoruba – Apikan.), which grows as a weed in Northern Nigeria, although it is sometimes cultivated.
- It is commonly abused in Northern Nigeria and is the most drug in some parts of Northern Nigeria (Okafor et al 2022)
- D. metel contains tropane alkaloids and are used as sedative and anti-spasmodic agents (Imo et al 2019).
- Euphoria and Increased Energy: Initial stimulating effects that encourage continued use.
- Hallucinogenic Effects: Visual distortions at higher doses.



New Psychoactive Substances (NPS)

Synthetic Cannabinoids: The Case of 'Colorado'

- was described as “not grown but synthesised in a lab”
- synthetic cannabinoid compounds sprayed on leafy green materials for smoking.
- Synthetic cannabinoids are classified as novel psychoactive substances (NPS) and are marketed under various brands/names such as *Joker, K2, Spice, Black Mamba, Kush, and Kronic*.
- It is highly addictive and could have severe and occasionally life-threatening consequences.

Synthetic Cannabinoids: Largely unresearched in Nigeria

- Mostly lumped together as Cannabis
- However, a few studies mention its abuse in Nigeria (Okikola 2022)
- Beyond mentioning, they don't explain or explore (Daramola et al 2023, Onyima et al 2023)



- In The Gambia, Senegal, Sierra Leone and Liberia, Kush is the prevailing cause of SUDs.
- Kush is a derivative of cannabis mixed with synthetic drugs like fentanyl and tramadol and chemicals like formaldehyde (Wendu report 2024)

Inside the 'zombie' drug epidemic sweeping West Africa

Experts say kush, a synthetic, cannabinoid-like drug is as dangerous as heroin and cocaine - and it's killing around a dozen users a week

Saidu Bah
in Freetown

Related Topics
Global Health Security, Drugs,
Addiction, Sierra Leone, West
Africa, Africa

02 January 2024 3:35pm GMT



Comparison: THC vs SC



Aspect	THC	Synthetic Cannabinoids
Receptor Interaction	Partial agonist at CB1/CB2	Full agonist at CB1/CB2
Potency	Milder effects	Higher potency, often 2-100 times stronger
Selectivity	Targets CB1 (central effects) and CB2	May act on CB1/CB2 or other receptors (non-selective)
Safety Profile	Relatively safer with mild side effects	Severe adverse effects, including psychosis and seizures

Combination highs

- Coca-cola and Emzolyn (cough syrup)
- Lacasera and Tom-Tom
- Cannabis and Formalin
- Cannabis and Gammalin-20
- Coca cola and Maggi cubes (Monosodium glutamate)

Coca-cola and Emzolyn Syrup

- Mixing coca-cola and emzolyn to achieve a high was reported in our study
- Emzolyn is a cough syrup available in Nigeria, formulated to alleviate symptoms associated with coughs and colds.
- Its composition varies slightly between formulations, but the primary active ingredient with psychoactive properties is Diphenhydramine Hydrochloride
- Diphenhydramine is an antihistamine with sedative and anticholinergic properties, and when taken in high doses, it can produce psychoactive effects such as euphoria, hallucinations, or altered states of consciousness.



Coca-cola and Emzolyn Syrup: Why the mix?

- **Improved taste:** Mixing it with a sweet or caffeinated drink like Coca-Cola may mask the bitter taste, making it easier to consume larger amounts, thereby increasing the likelihood of experiencing psychoactive effects.
- **Enhanced Absorption:** Coca-Cola's carbonation might accelerate the absorption of diphenhydramine into the bloodstream, leading to a quicker onset of effects.
- **Sugar spike:** Coca-Cola's sugar can also provide an energy spike, which might initially amplify feelings of euphoria or altered states.
- **Potential Stimulant-Sedative Interaction:** Coca-Cola contains caffeine, a stimulant, which could counteract the sedative effects of diphenhydramine initially, giving a mixed sensation of alertness and mild euphoria. This stimulant-sedative interaction might appeal to users seeking both relaxation and a "high."
- **Social and Psychological Factors:** Mixing contributes to the perception of achieving a unique or more intense "high," driven by placebo effects or social experimentation.

Lacaseria and Tom-Tom

- Lacaseria and Tom-Tom are popular consumables in Nigeria, each with distinct compositions and purposes.
- **La Casera:**
- **Type:** Carbonated apple-flavoured soft drink.
- **Ingredients:** Carbonated water, sugar, citric acid, apple juice concentrate (5%), flavourings, preservatives, and colourants.
- **Tom Tom:**
- **Type:** Menthol-flavored candy.
- **Ingredients:** Sugar, glucose syrup, water, menthol, flavouring, and colour (E153)
- The use of this combination to achieve a high is also reported by other studies (Nwala et al. 2021)

Lacaseria and Tom-Tom: Possible mechanisms

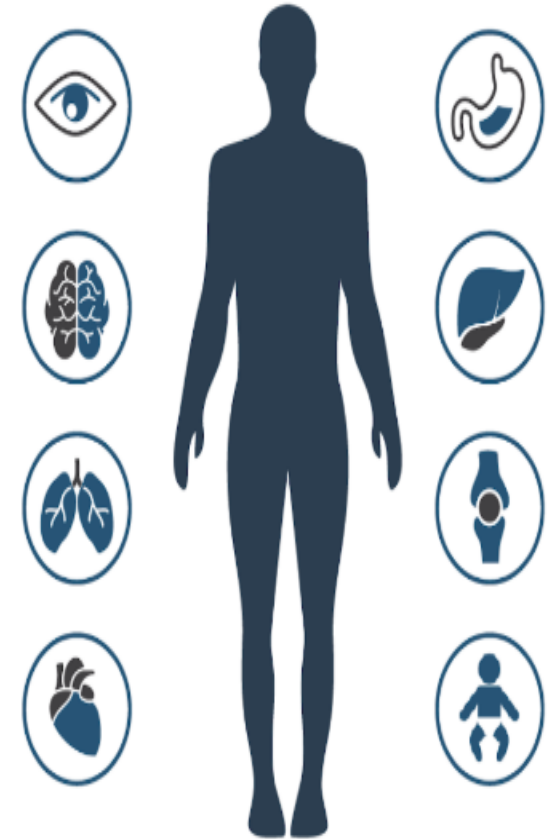
- **Placebo Effect:** Belief in psychoactivity can create perceived effects
- **Unique Metabolism:** Individual differences may produce unexpected psychoactive metabolites.
- **Substance Interactions:** Combined use with other drugs or medications may induce psychoactivity.
- **Sensory Overload:** Strong sensations (e.g., menthol cooling) mimic psychoactive effects.
- **Misidentified Effects:** Non-psychoactive reactions (e.g., sugar rush) may feel mind-altering.
- **Contextual Influence:** Social or environmental factors enhance perceived effects.
- **Contaminants/Additives:** Substances may be mixed with psychoactive chemicals.

Other nonconventional substances

- Used sanitary pads
- Moringa plant (a plant native to parts of Africa and Asia; widely used for its high nutritional content and medicinal properties)
- ‘Codeine diet’ a blend of codeine cough syrups mixed with Coco-Cola or malt drink
- ‘Gutter water’ – a blend of codeine cough syrups, tramadol, cannabis, Rohypnol (flunitrazepam), and spirit or juice.
- Codeine and alcohol, codeine and Rohypnol, codeine and Lacasera
- Laundry blue
- Skuchi – a cocktail comprising tramadol, cannabis and codeine
- Ketamine

Impacts on Health

- **Vulcanizing Gum (Inhalants):** Effects: Hypoxia, dizziness, brain damage due to neurotoxicity, respiratory irritation, and potential organ toxicity from solvents like toluene or hexane.
- **Septic Tank Fumes:** Effects: Respiratory distress, hypoxia, potential poisoning from hydrogen sulfide and ammonia, dizziness, and altered consciousness.
- **Datura Metel:** Its effects include hallucinations, tachycardia, mydriasis, dry mouth, and potential acute poisoning that can lead to delirium and seizures.
- **Synthetic Cannabinoids** (e.g., "Colorado"): Effects: Cardiovascular strain (e.g., hypertension, arrhythmias), neurotoxicity, paranoia, and seizures.
- **Formalin-Laced Cannabis:** Effects: Respiratory irritation, systemic toxicity, and potential long-term effects on brain and respiratory systems.
- **Lizard Dung:** Effects: Risk of bacterial infections, respiratory issues from ammonia exposure, and gastrointestinal distress.



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Social Implications

- Impact on Families: family strain, domestic violence
- Youth Involvement: early initiation, peer pressure, educational impact
- Community Challenges: Rising crime rates, workforce depletion
- Social Stigmatization: marginalisation, stigma, difficulties with reintegration
- Cultural and Societal Shifts: Normalization of abuse can erode societal values



Implications for healthcare services



- The increasing use of non-conventional psychoactive substances (e.g., vulcanising gum, lizard dung, formalin-laced cannabis) poses challenges for detection, diagnosis, and treatment.
- Healthcare professionals may be unfamiliar with the effects and management of these substances, leading to delayed or inappropriate care.
- Unlike cannabis, SCs are not detected by common drug screens (Deng et al 2018)
- Absence of standardised training programs for healthcare workers on emerging drugs and unconventional substances.



Legal implications

- Regulatory gaps: NCPS often exist in legal grey areas, making enforcement difficult.
- Challenges in detection: Many NCPS, like synthetic cannabinoids, evade standard drug screening.

GAPS IN RESEARCH



- **Key Challenge:**
- Drugs of abuse are constantly changing (both in type and constituents), making it difficult to develop effective interventions.
- **Expert Insight:**
- **Daphne Moffett**, CDC Director in Sierra Leone, states:
“Before appropriate interventions can be developed, we need to know what materials are in Kush.”

Gaps in Research



- Psychoactive Components & Mechanisms: Poorly understood biochemical pathways (e.g., soakaway fumes, lizard dung).
- Composition: Exact composition of some drugs are unknown
- Prevalence: Inadequate population studies on NCPS use.
- Health Outcomes: Lack of long-term studies on physical, mental, and social impacts.
- Treatment: No evidence-based approaches for detoxification and counseling.
- Drug Interactions: Limited knowledge on effects of mixtures (e.g., Coca-Cola + Emzolyn).
- Detection: Availability of tests to detect for research

Recommendations



- **Review existing laws:** Include emerging substances in drug control policies.
- **Cross-border collaboration:** Monitor and control synthetic drug imports.
- **Education programs:** Target youth through schools and community centres.
- **Media involvement:** Utilize TV, radio, and social media to dispel myths.
- **Training for health workers:** Equip them to handle NCPS cases effectively.
- **Research funding:** Investigate NCPS effects and treatment approaches.
- **Community policing:** Empower local leaders to combat substance misuse.
- **Government-NGO partnership:** Address gaps in prevention and treatment.

Conclusion

- Non-conventional psychoactive substances are increasingly abused in Nigeria, posing significant health, social, and legal challenges.
- While some have been studied, critical gaps remain in understanding their prevalence, composition, mechanisms of action, and long-term impacts.
- Addressing these gaps requires focused research, targeted policy interventions, and robust public health strategies.
- Workers in substance use disorder (SUD) fields must enhance their knowledge and awareness to develop evidence-based approaches for prevention and treatment.
- Collaborative efforts among researchers, policymakers, and healthcare providers are crucial to mitigate the growing impact of these substances on Nigerian communities.

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The End...

THANK

YOU