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Increasing Substance Use as a Cause of Road Transport Crashes in Nigeria: A Review of the Screening Methods

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Abstract *Road transport crashes contribute to significant morbidity and mortality in Nigeria. Psychoactive substance abuse among drivers contribute to the crash. However, screening for substance use among drivers are inconsistent. To determine the available screening methods for identifying psychoactive substance use among drivers in Nigeria, a systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. Four studies were identified and 50% of them met the inclusion criteria. Urine toxicology testing and breathalyzer testing were the main screening methods identified. The toxicology assays can detect many substances while breathalyzers provide rapid roadside detection of alcohol. A unified screening protocol for substance use among drivers in Nigeria is lacking. Developing and implementing a unified comprehensive screening will improve road safety in Nigeria.*

Keywords *Crashes, Nigeria, Road, Screening, Substance Use, Transportation.*

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Introduction

The incidence of road transport crashes in Nigeria continues to add to the increasing global data on morbidity and mortality following trauma. It continues to be a primary cause of death and a significant economic burden globally [1]. Consequently, it is anticipated that without ongoing interventions, road transport crashes will rank as the seventh leading cause of mortality by 2030 [1]. It could worsen the socioeconomic difficulties of various nations of the world, especially the developing nations.

In Nigeria, the road is the most feasible means of transportation for a significant portion of its population. However, there are inherent risks associated with road transportation system in Nigeria. There are poor road maintenance, violent crime, unsafe driving practices, and road crashes associated with the road transportation system. The Federal Road Safety Corps (FRSC) reported that in 2024, there were 5,421 fatalities resulting from 9,570 recorded road accidents [2]. Studies have consistently demonstrated the link between human factors, such as speeding, fatigue, substance abuse, and road accidents [3]. A study conducted in 2023 estimated that around 14.4% of Nigerians between the ages of 15 and 64 partake in the use of psychoactive substances [4]. Within the group of commercial drivers, the consumption of stimulants, cannabis, alcohol, and various combinations of these substances is prevalent, especially as a means to cope with the tiring long-distance of the journey. Driving under the influence of illicit substances adversely impacts mental capacity, instinct, discernment, and awareness [5]. Therefore, substance abuse is a significant factor in the increasing rate of road transport crashes in Nigeria.

In Nigeria, screening techniques for substance use among drivers involved in road transport crashes include roadside inspections and medical toxicology assessments conducted after crashes [6]. The Federal Road Safety Corps (FRSC) occasionally employs Breathalyzer Tests for immediate roadside alcohol detection to assess blood alcohol concentration in drivers. Nigeria's numerous fatal road crashes have been linked to alcohol, but toxicology drug tests are rarely done at crash sites; offenders are largely not held accountable. The legislation regarding Blood Alcohol Concentration (BAC) in Nigeria is weak or non-existence [7].

The National Drug Law Enforcement Agency (NDLEA) employs Rapid Immunoassay Urine assay during occasional motor-park outreaches and joint operations to screen for cannabis, tramadol, codeine, and amphetamines among drivers. These screening methods are not routinely carried out. They are often employed during the "ember months" when the incidence of road transport crashes is relatively higher [2].

The rising prevalence of psychoactive substances is a significant and potentially avoidable factor contributing to road transport crashes in Nigeria [8, 9]. Therefore, the effective identification of substance use among drivers is crucial for enhancing road safety, facilitating early intervention, and bolstering enforcement and public health initiatives. This review explores the various methods available for screening substance use in drivers, which include biological testing, roadside screening, and other innovative approaches. Self-report using questionnaire has been well documented. By assessing the strengths, weaknesses, feasibility, and relevance of these methods within the Nigerian context, the review seeks to pinpoint practical strategies that can enhance the detection of substance-impaired driving, ultimately aiding in the prevention of road transport crashes and the associated injuries and fatalities.

Methods

We performed a systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA)

guidelines 2020 [10]. The review process involved screening to identify, assess, and synthesize data concerning the screening practices for psychoactive substance use among drivers in Nigeria. An initial search was performed to locate studies. Following this, a screening process was undertaken to ensure that studies included in the review met the inclusion and exclusion criteria. Data were extracted and synthesized from the reviewed articles.

Studies were considered for inclusion if they: (a) were carried out in Nigeria; (b) involved drivers or other road users; (c) reported the implementation of one or more screening techniques for identifying substance abuse; and/or (d) investigated the relationship between illicit substance use and road traffic accidents.

Eligible studies encompassed cross-sectional and various observational studies that offered pertinent information regarding the methods employed to screen for illicit substance use among drivers or individuals involved in road transport crashes. Studies that provided adequate details on the type, procedure, or application of screening methods were given priority for analysis.

We conducted a systematic search of the literature using the search terms “road transport crashes and substance abuse screening among drivers in Nigeria,” and “road transport accidents and screen for illicit substance use among drivers in Nigeria,” in PubMed, Google scholar, Bielefeld Academic Search Engine, and CORE. No language or publication date restrictions were applied.

Results

We identified 4 studies through database searching. After review, we selected 2 studies after applying the inclusion criteria. A urine toxicology assay using a test kit for the presence of ten psychoactive drugs: cocaine, oxycodone, morphine, amphetamine, methamphetamine, methadone, barbiturates, cannabis, benzodiazepines, and phencyclidine is popular among researchers. The breathalyzer is mostly used by the Federal Road Safety Corps.

Table 1. Articles on Screening Methods for Psychotropic Substances Among Drivers in Nigeria

Authors	Screening Method	Participants Enrolled	Methodology	Prior Crash Involvement (%)	Findings
Egwuatu et al 2020 [11]	Urine Toxicology	264	Cross Sectional Study	46	Different psychoactive substances in the urine. Cannabis is the commonest (29.2%)
Iwegbu et al 2025 [15]	Urine Toxicology	1200	Cross Sectional Study	-	Different psychoactive substances in the urine. Alcohol is the commonest (16.0%)

Discussion

This review evaluated the screening techniques employed to identify substance use among drivers and individuals involved in road transport crashes in Nigeria. Out of the four studies found through database searches, only two satisfied the established inclusion criteria. The limited number of qualifying studies underscores the scarcity of research specifically focused on the screening of illicit and psychoactive substance use among drivers in Nigeria. This observation may indicate that, despite rising concerns regarding substance use and its possible role in road transport crashes, systematic screening and research in this domain are still inadequate.

This review's findings reveal that urine toxicology testing is frequently utilized for identifying psychoactive and illegal substances in drivers and other road users within research contexts [11]. The toxicology tests identified are capable of screening for a variety of substances, such as cocaine, oxycodone, morphine, amphetamine, methamphetamine, methadone, barbiturates, cannabis, benzodiazepines, and phencyclidine. The capacity to detect multiple substances at once is a significant benefit of urine toxicology screening, especially in environments where polysubstance use may be prevalent. This type of screening can yield valuable evidence of recent exposure to psychoactive substances and may aid researchers in assessing the extent of substance use among drivers.

Nevertheless, the application of urine toxicology testing carries significant limitations. A positive urine test does not necessarily imply that a driver was impaired at the precise moment of driving or during the occurrence of a road traffic accident [12]. The detection window for numerous substances can extend beyond the period of acute intoxication, influenced by the type of substance, frequency of use, dosage, and individual metabolic characteristics [13]. Consequently, while urine toxicology tests are valuable for detecting substance exposure, one must exercise caution when interpreting positive results as definitive proof that substance use led to a specific road traffic accident. Whenever feasible, toxicological results should be analyzed in conjunction with clinical evaluations, driving behavior information, crash circumstances, and other pertinent factors [14].

The fact that cannabis was the most frequently abused psychoactive substance among the assessed drivers as shown in Table 1 on the first reviewed article, is a worrying discovery. This is because cannabis may have adverse effects on a driver's ability and may increase the likelihood of causing or being involved in a road traffic crash. Cannabis impairs attention and concentration, reaction time and speed, judgment and coordination, and the ability to take timely action in response to roadway hazards [15]. In addition, a study conducted in Nigeria established that cannabis use among commercial drivers was significantly associated with an increased risk of road traffic crashes, especially when combined with alcohol consumption [6]. A study of long-distance commercial drivers in Nigeria also established that cannabis-related driving impairment and concurrent alcohol use were significantly associated with increased odds of crash involvement [16].

Ingestion of the substance may increase drivers' sense of well-being and alertness; therefore, the drivers may not realize the extent of their impairment by cannabis and continue to drive instead of pulling over to seek assistance. Cannabis may also be taken in combination with other substances which may complicate toxicological screening and make it hard to identify the cause of a crash, particularly if multiple drugs are involved. As such, the detection of cannabis as the commonest substance of abuse among drivers is a critical issue and a call for enhanced screening practices to include other psychoactive substances alongside alcohol. Drivers should be educated about the risks associated with operating a motor vehicle under the influence of any substance. Selected programs should also be prioritized and implemented to promote awareness and reduce substance abuse among drivers in Nigeria.

Alcohol abuse is another serious public health problem in Nigeria due to the high prevalence in the population. In fact, there are reports that drivers are among the groups of people who abuse drugs and take them regularly. However, there are contradiction with the findings of the study by Egwuatu et al, which identified cannabis as the most commonly abused substance [11]. Other studies among commercial drivers have reported alcohol as the predominant substance of use. In

Umuahia, southeastern Nigeria, Akande et al. found that alcohol was the most commonly used substance among commercial bus drivers, reported by 51% of participants, compared with 8.5% for cannabis [6]. Similarly, a study of long-distance commercial drivers in Calabar reported alcohol use among 82% of respondents, making it the most frequently used psychoactive substance [17]. These differences might be explained by variations in geographical setting, occupational characteristics, cultural norms, substance availability, and study methodology. Alcohol is legal, relatively accessible, and socially accepted in many communities, which may contribute to more frequent use and greater willingness to disclose consumption. In contrast, cannabis use might be underreported due to its illegal status, stigma, or fear of legal consequences. Furthermore, differences in screening methods influence the findings, as questionnaire-based studies might capture lifetime or recent use, while toxicological testing identifies substances present within a specific detection window. However, the identification of alcohol as the commonest substance in other studies supports the need of road-safety screening protocols in Nigeria to assess both alcohol and illicit substances rather than focusing on cannabis alone.

The review indicated that the breathalyzer is primarily utilized by the Federal Road Safety Corps for conducting roadside screenings on an occasional basis [2]. This device offers a relatively swift and effective means of evaluating alcohol consumption among drivers, making it particularly advantageous for regular roadside enforcement [18, 19]. In contrast to laboratory-based toxicological assessments, breath alcohol testing delivers immediate results, thereby facilitating timely enforcement of regulations concerning driving under the influence of alcohol. Nonetheless, the evident dependence on breathalyzer testing may suggest a deficiency in the routine roadside screening for other psychoactive substances. Although alcohol significantly contributes to impaired driving, it is important to note that drivers may also consume cannabis, opioids, stimulants, benzodiazepines, and various other psychoactive substances that a standard breathalyzer cannot detect [20].

The results indicate a potential gap between research-oriented and enforcement-oriented screening methods in Nigeria. It seems that researchers predominantly utilize urine toxicology tests that can identify a broad spectrum of illegal and psychoactive drugs, while standard enforcement practices tend to concentrate on alcohol detection via breathalyzer tests. This discrepancy could hinder the recognition of drug-impaired driving and may lead to an underappreciation of the role that illegal and other psychoactive substances play in road traffic accidents.

Psychoactive substances are becoming readily accessible in Nigeria [21, 22]. Therefore, consumption is becoming a daily event among drivers in Nigeria. It is therefore imperative to screen drivers for the use of these substances. Roadside screening aids in rapid identification of culpable drivers who need additional toxicological evaluation, while laboratory confirmatory assays make certain the substance identification. In addition, well-structured screening protocols would enhance the comparability of results across various parts of Nigeria.

The identification of only two studies that met the criteria in the index review highlights a significant research gap on screening methods employed in Nigeria or substance abuse among drivers. This shows that most studies in Nigeria about substance abuse by drivers rely on self-report by the drivers, which is highly subjective [23, 24]. The attendant implication is that it is difficult to give the actual prevalence of drivers under the influence of substance abuse in Nigeria. Hence, there is an urgent need for a comprehensive screening method among the drivers. Future research must include a wide number of substances, including those not

detectable by urine, like synthetic cocaine (K2), standardized screening methods, suitable biological testing, and elaborate data about various crashes in different parts of Nigeria. The outcomes of such research should assist the policy makers in addressing the increasing rate of road crashes in Nigeria.

The limited literature on substance-impaired driving in Nigeria, as well as the absence of routine screening for drugs other than alcohol, compromises road safety in the country. While alcohol is indeed a significant contributor to road traffic crashes, the fact that other psychoactive substances including stimulants, cannabis, opioids, and prescription medicines are increasingly being used by drivers requires more attention. The reliance on alcohol screenings only may compromise efforts to reduce road traffic injuries by underestimating the role of other substances in traffic crashes in Nigeria [25]. In addition, the lack of uniform screening practices makes it difficult to assess the extent of the problem based on positive results from toxicological screening [26].

Facilitating collaboration across healthcare, law enforcement, and road safety agencies in Nigeria to develop a consensus on the principles of standardized toxicological screening for drivers is critical to addressing the challenge of substance-impaired driving. The protocol should be guided by considerations such as the type of specimen, screening and confirmatory tests, and standard operating procedures for collecting and analyzing samples, reporting results, and interpreting findings. Conducting more studies on substance-impaired driving in different regions and among various categories of road users in Nigeria will also contribute to a better understanding of the issue. For example, more data on the relationship between the type of psychoactive substance, occupation, age, location, and severity of traffic crashes would help the Federal Road Safety Corps (FRSC) and other relevant agencies to develop effective countermeasures.

Such measures will ultimately improve road safety in Nigeria by providing the FRSC, law enforcement agencies, and other stakeholders with critical information needed to promote safer driving, prevent traffic crashes, and determine the appropriate toxicological screening for drivers in Nigeria. In addition, cooperation among the FRSC, law enforcement agencies, healthcare facilities, and researchers in Nigeria can generate the necessary evidence to guide the development of countermeasures that reduce road traffic injuries and deaths attributable to substance-impaired driving.

Conclusion

The review identified the lack of epidemiological research on screening methods for the use of psychoactive substances among drivers in Nigeria. Toxicological screening of urine is useful, but other methods should be expanded for suspected drivers under the influence of psychoactive substances. Although a breathalyzer test is a rapid screening tool for alcohol, it does not detect other psychoactive substances. Further studies on the prevalence of substance use among drivers and improved screening procedures during traffic checks are needed to enhance the current understanding and reduce substance use among drivers in Nigeria. Standardized and comprehensive toxicological screening protocols should be developed and implemented across relevant road safety and healthcare settings. Law-enforcement and healthcare personnel should be trained in the recognition of substance-related impairment and the use of reliable screening tools. Access to confirmatory laboratory testing would improve the reliability of screening results and legal and clinical decision-making.

Collaboration among road safety agencies, healthcare institutions, toxicology laboratories, and researchers is also needed for effective surveillance. Public education campaigns targeting commercial and private drivers should target the risks associated with driving under

the influence of psychoactive substances. These steps would strengthen evidence-based road safety interventions and reduce substance-related road traffic crashes, injuries, and deaths in Nigeria.

Establishing a national database for substance-related traffic incidents would improve surveillance and interventions. Evaluation of screening practices and road safety policies will be needed to ensure that interventions respond to emerging patterns of psychoactive substance use among Nigerian drivers.

Conflict of Interest

The authors affirm that they do not have any financial affiliations presently or within the preceding three years with any organizations that could potentially influence the submitted work. They further assert that no other associations or engagements might give rise to perceived influences on the submitted work. The authors confirm the absence of any conflicts of interest. All authors provide their consent for the publication of this manuscript.

Ethical Approval

This is a systematic review; ethical approval is not needed.

Authors' Contributions

All authors contributed to the project's conception and design, as well as the development of the project. All authors participated in the literature review, data analysis, and manuscript preparation. All authors approve the final version of the manuscript for submission.

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Data Availability

The data set related to this study were from the two papers that met the inclusion criteria.

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