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Annals of Forensic Science and Research

Open Access | Research Article

Herbal High Mixture as an Emerging Psychoactive Substance Prevalence among Commercial Drivers in Lagos, Nigeria

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Received: Aug 17, 2022

Accepted: Sep 13, 2022

Published Online: Sep 15, 2022

Journal: Annals of Forensic Science and Research

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Illicit drugs; Toxicology; Commercial driver; Questionnaire.

Abstract

The use of hyper active substances to lower the occupational stress associated to commercial driving has call for concern among young drivers and which oddly predisposes both the drivers and their passengers to dangers. Most of the drivers cannot afford to buy the synthetic illicit drugs but they improvise with traditional drug mixture with psychoactive properties. This study aimed at investigating the prevalence and toxicological implications of herbal mixture commonly used by the commercial drivers in selected areas in Lagos State. The study had a descriptive cross-sectional design, and 100 respondents were chosen using a multistage cluster sampling method. The approved respondents were surveyed using an Interviewer-Administered Structured Questionnaire (IAQ), which was utilized to gather data. Blood and urine samples were collected from drivers for clinical analysis. The questionnaire data were analyzed using descriptive statistics, urine and blood were clinically analyzed using GCMS and other clinical techniques. The findings from the questionnaire revealed that 69.5%, consumes amphetamines, 63.4% consumes kolanut, and tobacco 53.7% consumes opiates (tramadol) and 48.8% consumes cannabis on a regular basis. The haematological parameters and blood sugar level were significant ($p>0.05$) and the presence of metabolites of the illicit drug such as tramadol (desmethyltramadol), phencyclidine (piperidine), ethanol, acetaminophen (paracetamol) and other steroidial alkaloids such as solasonine, arcoline, arginine and piperazine were also found in the urine samples. The interaction with this people showed that the drivers are ignorant of the health hazards and risk associated with the usage, there is need for the regulatory bodies to create awareness through media channels to properly educate this group of people.

Cite this article: Idowu A, Funmilayo D, Oyindamola A, Halima N, Kolawole D. Herbal High Mixture as an Emerging Psychoactive Substance Prevalence among Commercial Drivers in Lagos, Nigeria. Ann Anat Res. 2022; 1(1): 1005.

Introduction

In developing nations like Nigeria, elites and the ignorant have begun to recognize the creative uses of traditional substances with psychotropic qualities in recent years. The quick rise is a result of these drugs' expanding markets. There is a lack of empirical data despite media reports highlighting the use of unconventional psychoactive substances in Nigeria. The patterns and causes of using unconventional substances such as dried pawpaw leaf which are easily available in this part of the world to get high was becoming rampant by some tertiary education students in Southern Nigeria [1,2]. Danjuma et al., [3] investigated the awareness of the use of abused substances in the Northern region, where youth inhale Gutter-Water (a cocktail of tramadol, cannabis, codeine, and vodka) and Monkey-tail (a cocktail of locally-produced gin, cannabis seeds, leaves, stems, and roots), and some use a combination of carbonated drinks like La Casera Apple Drink and Coca-Cola with menthol-flavored candy to triggerhyper activeness. Drivers are typically bound by the rules of the country they are traveling in [4]. Many of these drivers believe that using alcohol, codeine, tramadol, heroin, cigarettes, snuff, or marijuana to increase their strength will help relieve their stress and improve performance, ensuring sleep is either delayed or stopped as long as possible. This is because the nature of their job entails multiple trips with little to no time for rest [5,6]. Stimulants are frequently used by commercial drivers to stay alert and combat weariness throughout their lengthy shifts [7]. Driving while under the influence of drugs like alcohol and marijuana can change perceptions and cause delayed reactions, which increases the chance of a road traffic accident [8]. The high rate of substance abuse among commercial bus drivers and other immoral behaviors (aggressive behaviors) among them are thought to be directly related to the high rate of traffic accidents currently seen in our society, which poses a serious threat to the peaceful coexistence of those they interact with, particularly their passengers. The high rate of substance abuse among commercial bus drivers and other immoral behaviors (aggressive behaviors) among them are thought to be directly related to the high rate of traffic accidents currently seen in our society, which poses a serious threat to the peaceful coexistence of those they interact with, particularly their passengers. Drug levels in blood only indicate drug use at a specific moment in time, and they may be high enough to be detectable for just a brief period of time [9].Urine samples may have drug traces that are both longer-period and substantially greater than those found in blood. Further proof of drug usage can be found in urine, which may have larger quantities of drug metabolites than blood.

Materials and methods

Study design: Descriptive survey

The descriptive survey design was used for the study. This design is considered appropriate because of its suitability in providing information on the natural status of a given phenomenon as [10] attested. The participants would be commercial drivers (Bus, tricycle, motorcycle and trailer) in four major parks in Lagos State which are Apapa, Ojuelegba, Mushin and Obalende.

Table 1: Sample Location and GPS Coordinates.

Sample Location	Longitude	Latitude
Mushin	6.5352° N	3.3490° E
Apapa	6.4446° N	3.3641° E
Ojuelegba	6.4926° N	3.3490° E
Obalende	6.4483° N	3.4107° E

Research population

The research population consists of authorized bus, motorbike, tricycle, and trailer drivers in Lagos, Nigeria. However, in order to avoid over-representation of one group over the other due to fluctuation in the population of each of the research groups, a quota of twenty-five (25) individuals was given to each group (for a total of one hundred and hundred). Purposive sampling was used to select responders at the garage/park level. Because it enables the researchers to pick any study group participant at discretion, the purposive sampling methodology was the method of choice. As a result, only research participants who met at the garage or park during the study's duration were employed as responders in this study.

Sampling technique

The sampling technique adopted for the study was multistage, which included the clustering of all commercial driver parks in Apapa, Ojuelegba, Mushin and Obalende, amounted to 6 major ones. All the parks were numbered 1 to 6 in a small piece of paper, from which 6 were picked randomly through balloting. Since the commercial drivers were registered proportionate number of 20 was picked from each 6 parks. But only 82 respondents returned the questionnaires.

Sampling criteria

Inclusion criteria: Participants in the study were to be registered commercial drivers who agreed to be included and who were observed at the motor parks during the study period. The respondents must be old enough to drive-at least 18 years old. Although there is no set legal drinking age in Nigeria, there are social prohibitions against underage drinking.

Exclusion criteria: The study excluded all commercial drivers that are not registered.

Data collection

This is a modified, semi-structured self-report survey based on WHO recommendations for student substance use surveys, WHO help, and WHO audit. These tests were previously used to pupils in Nigeria and were determined to be valid and reliable [11-13]. The modified questionnaire contained questions about the respondents' sociodemographic characteristics, frequency of substance use, types of substances used (alcohol, caffeine, amphetamine, cocaine, opioids, and solvents, among others), and the health effects of drug abuse (such as headaches, hallucinations, memory loss, and chest pain). Before the study began, these instruments were pretested and self-administered [14].

Ethical Consideration

The Institute Review Boards (IRB) of the Nigeria Institute for Medical Research granted permission for this investigation

under project number IRB/17/041. The participants' written informed consent was also obtained following a thorough explanation of the rationale for the study and their right to give or withhold consent. All information was handled strictly confidentially.

Liver function test

The measurement of 2-oxoglutarate and pyruvate hydrazones in an alkaline medium is used to determine the levels of Aspartate Aminotransferase (AST) And Alanine Aminotransferase (ALT). By reacting with 2, 4-dinitrophenylhydrazine in an alkaline media, pyruvate produces hydrazone, which may be measured spectrophotometrically. More at 510 nm is absorbed by pyruvate hydrazone than by 2-oxoglutarate hydrazone [15]. The responding cuvettes were subjected to the Alkaline Phosphatase (ALP) test, which was run for one minute at 37°C. Cuvette 1 was put in the spectrophotometer after one minute with the absorbance set to 0.000 [16].

Troponin

To prevent hemolysis, serum or plasma were promptly separated from blood using a centrifuge, and only clear, non-hemolyzed specimens were used. Prior to testing, room temperature (15-30°C) was permitted to be reached by the test device, specimen, and/or controls. The device timer was activated once the dropper was held vertically and two drops of serum (about 50 L) were added to the specimen well(s) of the test device. Ten minutes after the start of the timing, the color line(s) appeared, and the observation was noted [17].

Potassium level

Blood samples were drawn, allowed to clot, and then the serum was delicately separated using centrifugation. An aliquot is diluted one to one hundred times with distilled water. Before being stopped with glass or a cork covered in Parafilm, the flask was thoroughly agitated. Testing for potassium was done with this dilution using a flame photometer. The assays called for 0.2 ml of blood and a stock solution of 10 mq/L of potassium chloride produced from reagent-grade crystals dried to a constant weight between 95 and 100 degrees Celsius. The protocol was as described by Bowman and Berliner.,[18].

Antioxidant enzymes assay

The Superoxide Dismutase (SOD) activity was assessed by measuring the rise in absorbance at 480 nm, which was used to assess SOD's capacity to prevent epinephrine's auto-oxidation. The Catalase Activity (CAT) was calculated using (Sinha et al., 1972). At 250°C, it was measured calorimetrically at 620 nm and expressed as moles of H_2O_2 consumed/min/mg protein. The Reduced Glutathione (GSH) content of blood as non-protein sulphydryls was estimated according to the method described by (Sedlak and Lindsay.

Malondialdehyde (MDA)

Malondialdehyde (MDA), a measure of lipid peroxidation, was quantified by the method of Buege and Aust. The flocculent materials were eliminated by centrifuging at 3000 rpm for 10 minutes after adding 1.0 ml of the supernatant to 2 ml of the 1:1:1 ratio TCA-TBA-HCl reagent (tricarboxylic acid-thiobarbituric acid-hydrochloric acid reagent; thiobarbituric acid 0.37%, 0.24N HCl, and 15% TCA). After removing the supernatant, the absorbance was measured at 532 nm against a blank.

Determination protein concentration

This was determined using the Bouret method [19] with BSA as the reference. Various concentrations were used to create sequential dilutions of stock BAS solutions. Each diluted protein standard solution (stock BSA) was mixed with the biuret reagent, and the combination was then left to stand at room temperature for 30 minutes before being read.

Blood cell counts

Blood was drawn into a test tube that contained an anticoagulant in it (EDTA bottle). The 18 automated parameter haematology analyzer was used to analyze them (Mindray Hematology analyser, BC-2300). Hematocrit values were calculated by letting blood from decapitated mice to flow into capillary tubes pre-heparinized, which were then centrifuged at 1000 g for five minutes. RBC and hemoglobin counts were used to calculate the mean corpuscular volume (MCV), which represents the volume of an average erythrocyte [20].

Urine analysis

A sterile sample bottle was used to collect 10ml of urine from each respondent. Each participant's urine sample had an appropriately labeled container with the same serial number as the one on the survey. An instant refrigeration unit was then used to store the urine sample before it was submitted to the lab for drug testing. The urine was kept at -20oC in the freezer. The GCMS was left on warm for four hours. To ensure there were no leftovers in the GCMS after it had warmed up, a blank solution (water) was run. 250oC was the fixed temperature. The urine was then pipetted using a micropipette into a centrifuge tube. The centrifuge was then filled with the centrifuge tube. It was centrifuged at 4000 rpm for 30 minutes. In the solid-buffer extraction method, the ratio of organic solvent to urine is 4:1. The organic layer was evaporated to dryness under a mild stream of nitrogen following centrifugation (4000 rpm, 30 min). After being gently mixed and reconstituted in 100 L of ethanol, the residue or supernatant was added to the vial of the GCMS-QP2010SE model. Following that, the GCMS desktop screen was used to view and record the numerous drug metabolites (such as alcohol, tramadol, phencyclidine, and others) along with their peak values [21].

Results

Demography and background of commercial drivers in selected areas in Lagos State

The demography result shows that the commercial drivers were mostly within the age range of 40 to 50 years with the highest percentage of 31 % and they are mostly male drivers (94 %). This survey show more married commercial drivers (85 %) than single and divorcee. The result indicate that majority of the respondents only attended Secondary schools (58.5%) while the lowest percentage of 7 % sent further to attend tertiary institution **(Table 1).** The highest percentage of commercial drivers in this study drive tricycle (34 %), closely followed by bus drivers and trailer drivers. The lowest percentages (11 %) drive the motorcycle. 33 % of the commercial drivers learn driving from family and friends, followed by those who attended driving school (22 %). It was observed that the highest percentage (20 %) of the drivers had been driving between 9-11years. Majority of the drivers drive for 12 hours and more daily (21 %). The lowest percentage of drivers drives 8 hours daily (6 %) as shown in **Table 2**.

Table 1: Socio-demographic profile of the respondents.

Variables	Categories	Frequency	Percentage
Age	20-30	22	27
	30-40	24	30
	40-50	25	31
	50-60	8	10
	60+	3	3.8
Sex	Male	77	94
	Female	5	6
Marital status	Single	7	9
	Married	70	85
	Divorce	5	6
Educational back ground	Primary	28	34
	Secondary	48	59
	Tertiary	6	7

Table 2: Drugs commonly abused and social factors influencing drug consumption among the commercial drivers.

Variables	Categories	Frequency	Percentage
Which of the following do you drive	Trailer	22	27
	Bus	23	28
	Motorcycle	9	11
	Tricycle	28	34
How do you learn driving	Driving school	22	26
	Self-taught	19	23
	Family and friends	28	33
	Others	13	16
How long have you been driving	1-3 years	7	9
	3-5 years	8	9
	5-7 years	4	5
	7-9 years	9	10
	9-11 years	16	20
	11-1 3years	4	5
	13-15 years	7	9
	15-17 years	5	6
	17-19 years	7	9
	19-21 years	15	18
How many hours do you drive per day	6 hours	13	16
	7 hours	11	13
	8 hours	5	6
	9 hours	4	5
	10 hours	9	11
	11 hours	6	7
	12 hours	17	21
	12+ hours	17	21

The results in Table 3 reveal the commonly consumed drugs by the drivers. The highest percentages of the drivers (70 %) take amphetamines, closely followed by consumption of Tobacco, Kolanut (63 %) and alcohol (61 %). The drug least consumed is cocaine as 23 % of the commercial drivers take the drug. The factors influencing drug consumption among the drivers range from reasons of fun, energy booster, depression, self -medication to insomnia. The highest percentage of 59 % consume the drugs for the fun of it followed by drivers who consume the drug to serve as energy booster (22 %), 13 % consume the drug when they feel depressed and 5 % take the drugs to avoid insomnia. Only 2 % take the drugs for self – medication.

This study show the rate of consumption of the drugs among the drivers, 20 % of the drivers often take the listed drugs, 27 % of the respondents consume the drugs quite often, 29 % of the drivers consume the drugs occasionally while 24 % of the drivers consume the listed drugs every day. Results also reveal the quantity of drugs taken by the commercial drivers. 32 % of the drivers consume the drugs in small quantity, 27 % of the drivers takes the drugs in medium quantity while 38 % of the drivers consume the drugs in a large quantities.

Table 3: Frequency of drugs commonly abused among the drivers.

Drug	Yes	No
Cannabis	40 (49 %)	42 (51 %)
Cocaine	19 (23 %)	63 (77 %)
Opiates	44 (54 %)	38 (46 %)
Ecstacy	25 (31 %)	57 (70 %)
Tobacco	52 (63 %)	30 (37 %)
Kola nut	52 (63 %)	30 (37 %)
Amphetamines	57 (70 %)	25 (31 %)
Volatile inhalants	29 (36 %)	53 (65 %)
Alcohol	50 (61%)	32 (39%)
Crack cocaine	29 (35 %)	53 (65 %)
Tranquilizers	26 (32 %)	56 (68 %)

The result in Table 4 shows the health effects after consumption of the named drugs. The highest percentage of the commercial drivers(34.1%)experience sleep disturbance after consuming the drugs, this is followed by redness of eye and headache. A very low percentage (1%) of the commercial drivers experience anxiety and hallucination after consumption. The drivers also indicated that they take some medication after experiencing the listed health effects in Table 4. 56 % of the drivers take medication while 44 % do not take any medication. Results also reveal source of the medication taken by the drivers to be from the hospital (7 %), pharmacy shop (10 %), herbal sellers (44 %) and self – medication (39 %).

The result of this study reveal the type of medication commonly used among the commercial drivers to be Paracetamol, Panadol, Alabukun (brand of pain killer), Agbo (locally made herbal medicine), and Procold (brand of pain killer and cold medication). Highest percentage of 29 % use Agbo, followed by drivers who use Panadol and alabukun (23 %) respectively, and respondents who use paracetamol constitute 21 % of the drivers. The lowest percentage (1 %) of the drivers use procold while 2 % did not give any response in the survey.

The result shows the eating habits of the commercial drivers. 56 % of the drivers indicated that they eat often, those who do not eat often constitute 28 % and 16 % of the drivers eat quite often.

Table 4: Health effect of consumption of the named drugs among the respondent.

Variables	Frequency	Percentage
Sleep disturbance	28	34
Fatigue	3	4
Depression	2	2
Anxiety	1	1
Disorganized behavior	5	6
Excess sweating	3	4
Headache	11	13
Tremor	3	4
Redness of eye	15	18
Hallucination	1	1
Mood swing	7	9
Cough	3	4

Clinical analysis

The results of the liver function test is shown in **Table 5**. There are significant difference in the mean values of samples collected for the biochemistry analysis with p<0.05 level of significance. The bus drivers had the lowest value for AST, ALT, ALP, troponin and potassium. This is followed closely by mean values of blood samples of tricycle drivers for AST, and ALT. Trailer drivers had the highest mean values for AST and ALT while the tricycle drivers had the highest mean values for ALP, troponin and potassium. Mean values for AST ranged from 8.54 to 10.93, ALT mean values ranged from 8.69 to 11.10, ALP mean values ranged from 42.08 to 56.82, troponin values ranged from 0.38 to 0.59 and potassium values ranged from 4.13 to 4.86. AST mean values for tricycle and bus drivers are not significantly different, but there was significant difference between those two and mean values from trailer drivers. There was significant difference in the ALT mean values for tricycle, bus and trailer drivers. There was no significant difference in the mean values for the three categories of drivers for troponin and potassium. There was no significant difference between mean values for bus and trailer drivers for ALP.

Table 5: Liver Function Test Analysis.

Drivers	AST	ALT	ALP	Troponin	Potassium
Tricycle	8.88 ± 4.63^{b}	9.27 ± 6.67^{ab}	56.82 ± 23.37^{a}	0.59 ± 0.44^{a}	4.86 ± 1.30^{a}
Bus	8.54 ± 2.55^{b}	8.69 ± 5.28^{b}	42.08 ± 13.84^{b}	0.39 ± 0.20^{a}	4.13 ± 0.64^{a}
Trailer	10.93 ± 2.99^{a}	11.10 ± 5.66^{a}	43.61 ± 12.23^{b}	0.43 ± 0.28^{a}	4.18 ± 0.66^{a}

Results expressed as Mean ± SD. Means that have the same superscript in column are not significantly difference from each other (p-value<0.05).

The result of the antioxidant enzymes analysis and creatinine is shown in Table 6. There are significant differences in the mean values of samples collected for the analysis with p<0.05 level of significance. The creatinine (urine) had the value ranging from 57.95 ± 25.42 to 70.36 ± 23.75 with the tricycle rider having the lowest value and trailer drivers having the highest value. In terms of the creatine (blood), it had a range value from 1.01to 1.37 with the tricycle riders having the lowest value and the bus drivers having the highest value. The GSH had a range value from 10.79 to 34.87, with the trailer drivers having the lowest value and the control respondents having the highest value. The SOD had a value ranging from 0.97 to 2.08 with the trailer drivers having the lowest value and the control having the highest value. The CAT also had a range value from 3.95 to 8.20 with the trailer drivers having the lowest value and the control respondents having the highest value. MDA had mean values ranging from 0.046 to 2.93 with the tricycle riders having the lowest value and the bus drivers having the highest value. Protein also had a range value from 61.83to 70.89with the tricycle riders having the lowest value and the trailer drivers having the highest as well. Creatinine was not detected in the urine and blood of samples collected from the control respondents.

Table 6: Antioxidant enzyme analysis (Oxidative stress).

Drivers	Creat (urine)	Creat (blood)	GSH	SOD	CAT	MDA	Protein
Control	ND	ND	34.87 ± 5.49^{a}	2.08 ± 0.466^{a}	8.20 ± 3.02^{a}	0.98 ± 0.675^{b}	65.84 ± 10.88^{ab}
Tricycle	57.95 ± 25.42^{b}	1.01 ± 0.284^{a}	11.13 ± 2.49^{c}	1.15 ± 0.356^{b}	5.26 ± 2.769^{b}	0.046 ± 0.010^{c}	61.83 ± 17.62^{b}
Bus	65.2 ± 28.04^{a}	1.37 ± 0.142^{a}	15.77 ± 4.82^{b}	1.24 ± 0.174^{b}	5.70 ± 3.60^{b}	2.93 ± 0.564^{a}	62.11 ± 7.859^{b}
Trailer	70.36 ± 23.75^{a}	1.25 ± 0.384^{a}	10.79 ± 0.85^{c}	0.97 ± 0.326^{c}	3.95 ± 3.10^{c}	2.02 ± 0.729^{a}	70.89 ± 18.77^{a}

Results expressed as Mean ± S.D. Means that have the same superscript in column are not significantly difference from each other (p-value<0.05).

Blood pressure and sugar level analysis

The result obtained in **Table 7** shows the blood pressure and sugar level test, there are significant differences in the mean yield of samples collected for the blood pressure and sugar level analysis with p<0.05 level of significance. The systolic blood pressure had the value ranging from 133.72to 147.22with the bus drivers having the lowest value and trailer drivers having the highest value. For mean values of diastolic blood pressure, it had a range values from 87.54 to 98.88 with the bus drivers having the lowest value and the trailer drivers having the highest values. The sugar level had a range value from 75.77 to 97.82, with the trailer drivers having the lowest value and the bus drivers having the highest value.

Table 7: Blood pressure and sugar level.

Drivers	Blood pressure		
	Systolic	Diastolic	Sugar level
Trailer	147.22 ± 32.99a	98.88 ± 15.50a	75.77 ± 14.88b
Tricycle	139.4 ± 24.13b	94.4 ± 16.57a	93.7 ± 19.90a
Bus	133.72 ± 17.75b	87.54 ± 9.10b	97.82 ± 21.57a
Blood pressure clinical standard: 120mmHg /80mmHg			
Sugar level clinical standard: 70 to 100mg/dL when fasting and up to 140mg/dL 2 hours after eating (American diabetes association, 2006).			

Haematological parameters

The result obtain in **Table 8** show the mean values of the hematological analysis. There are significant differences in the mean values of samples collected from the drivers with $p<0.05$ level of significance. The White Blood Cell (WBC) had the value ranging from 6.16 to 7.17 which exceeded the clinical range, with the trailer drivers having the lowest value and tricycle drivers having the highest value. Neutrophils (NEUT) had a range values from 33.99 to 40.86 with the bus drivers having the lowest value and the tricycle drivers having the highest values. The bus and trailer drivers had values lower than the clinical range. The lymphocytes (LYMP) had range values from 53.47 to 63.09 (higher than clinical range), with the tricycle drivers having the lowest value and the bus drivers having the highest value. The monocytes (MONO) component had mean values ranging from 4.43 to 5.09 (within the clinical range) with the bus drivers having the lowest value and the tricycle drivers having the highest value. The eosinophils (EOS) component had range values within the clinical range, from 2.47 to 4.0 with the trailer drivers having the lowest value and the tricycle drivers having the highest. Basophils (BASO) had the values within the clinical range, from 1.0 to 3.0 with the trailer drivers and bus drivers having the lowest value and tricycle drivers having the highest value. Hemoglobin (HB) had mean values from 13.49 to 13.59, lower than the clinical range, with the bus drivers having the lowest value and the tricycle drivers having the highest value. Red Blood Cell (RBC) had mean values within the clinical range from 4.48 to 4.74, with the bus drivers having the lowest value and the tricycle drivers having the highest value. The Packed Cell Volume (PCV) also had mean values higher than the clinical range from 40.53 to 42.23 with the bus drivers having the lowest value and the tricycle driver having the highest value. Platelet had mean values lower than clinical range, from 91.61 to 269.33 with the trailer drivers having the lowest value and the tricycle drivers having the highest. The Mean Corpuscular Volume (MCV) had mean values within the clinical range, from 89.32 to 90.98 with the tricycle drivers having the lowest value and the bus drivers having the highest value. The Mean Corpuscular Hemoglobin (MCH) also had mean values within the clinical range, from 29.08 to 30.07 with the tricycle drivers having the lowest value and the bus drivers having the highest value. The Mean Corpuscular Hemoglobin concentration (MCHC) had mean values within the clinical range, from 32.23 to 33.12 with the tricycle drivers having the lowest value and the bus drivers having the highest.

Table 8: Blood Parameters of Different Groups of Commercial Drivers.

Parameters	Tricycle drivers	Bus drivers	Trailer drivers	Clinical range
WBC 10^6	7.17 ± 2.24	6.49 ± 2.12	6.16 ± 1.44	3.7-10.5
NEUT 10^6	40.86 ± 8.63	33.99 ± 8.58	35.52 ± 6.70	40-80
LYMPH 10^6	53.47 ± 9.96	63.09 ± 9.64	57.99 ± 7.25	20-40
MON10^6	5.09 ± 1.39	4.43 ± 0.96	5 ± 1.34	02-Oct
EOS10^6	4 ± 1.81	2.70 ± 0.78	2.47 ± 0.77	0-7
BASO10^6	3 ± 0	1 ± 0	1 ± 0	0-3
HB (g)	13.59 ± 1.55	13.49 ± 1.66	13.57 ± 1.36	135-180
RBC 10^6	4.74 ± 0.68	4.48 ± 0.55	4.68 ± 0.62	4.1-5.6
PCV (g)	42.23 ± 4.90	40.53 ± 4.43	41.50 ± 3.56	37-54
PLATELET (g)	27.33 ± 89.80	98.20 ± 25.16	91.61 ± 28.01	155-385
MCV (g)	89.32 ± 4.99	90.98 ± 4.51	89.81 ± 4.2	80-98
MCH (g)	29.08 ± 2.19	30.07 ± 1.58	29.39 ± 1.75	27-34
MCHC (g)	32.23 ± 1.72	33.12 ± 0.88	32.48 ± 0.78	30-36

Analysis of the urine sample

The result in Table 9 shows the parent drug and their possible metabolites found in each of the commercial drivers' urine samples. The parent drug Tramadol has its metabolite Demethyl tramadol present in the urine of all the categories of drivers. Phenycyclidine (angel dust) metabolite which is 4-piperidin-1-yl-oxazolidin-2 one; 2-Piperdinone, 1-methyl is predominant in all the commercial drivers. Nicotine, which has some of it active component (Solasonine) is present in all the commercial drivers. Alcohol metabolite (ethanol–aldehyde) is present in all commercial drivers. The prevalence of paracetamol and the metabolite (acetaminophen) and other alkaloids such as arginine, imidazol was detected in the entire commercial driver urine sample.

Table 9: Metabolites and alkaloids with their parent drugs prevalent in each of the commercial drivers' urine sample.

Parent drugs	Tricycle drivers	Bus drivers	Trailer drivers
Alcohol	2-(metylguanidino) ethanol	2-(metylguanidino) ethanol	2-(metylguanidino) ethanol
Paracetamol	Acetaminophen	Acetaminophen	Acetaminophen
Nicotine	Solasonine	Solasonine	Solasonine
Tramadol	Desmethyltramadol,	Desmethyltramadol,	Desmethyltramadol,
Phenylcyclidine	N-methyl homopiperazine,	N-methyl homopiperazine, 4-Methyl-1-nitrosopiperidine	N-methyl homopiperazine, 4-Methyl-1-nitrosopiperidine
	4-Methyl-1-nitrosopiperidine		
Other metabolites/ alkaloids	Creatinine, Trimethoprin, Heptanal, Butanal, Cyclohexanone, Pterin-6-carboxylic acid, Imidazo(4,5-d)imidazole-1-acetic acid, Trans-z-alpha-bisabolene epoxide and Benzenacetic acid.	Creatinine, Trimethoprin, Arecoline, Arginine, Cyclohexanol, 5-methyl-IR-3-cis-cyclohexanediol, Imidazo(4,5- d)imidazole-1-acetic , Pterin-6-carboxylic acid and 2,6-lutidine-3,5-dichloro-4-dodecylthio	Creatinine, Trimethoprin, Arginine, Cyclohexanol, 5-methyl-IR-3-cis-cyclohexanediol, Pterin-6-carboxylic acid, Imidazo(4,5-d)imidazole-1-acetic acid, Trans-z-alpha-bisabolene epoxide, Benzenacetic acid and 4-tetradecyl ester

Discussion

The abuse substances mostly exposed to in most Africa countries have similar function with well-known drugs with no known chemical properties and UNODC [22] reported emergence of diverse non-conventional New Psychoactive Substances (NPS) in Nigeria. The presence study assessed the prevalence of dugs amongst commercial drivers in selected areas in Lagos State. The study showed that the high level ignorance associate to usage of abuse substance was very high in this part of the word and predominant among the youth. The preponderance of illiteracy associated with the commercials drivers became apparent out from primary education and this can be a major hindrance to access information on abuse substance health implications and this corroborate with Andrew *et al.,*[23] who reported poor academic achievement has been found to influence alcohol or other drug abuse. The elongated number of hours used by the driver also activated herbal high mixture usage amongst them to enhance performance to prevent sleeping while driving in order to meet up with payment delivery by the higher purchase at the close of the day and this was in line with Makanjuola *et al.,*[6] high drug usage among trailer drivers to enhance work performance. The study showed that most of the drivers used cocktail of locally present products with similar characteristics of psychoactive substances present at their various motor parks and this drugs are sold indiscriminately under disguised local names such as (*"Jedi jedi", "Alomo", "Ata", "Shepe" "Eja"*). This lifestyle exposed the drivers to high rate of early death amidst them and this can be as a result of the drugs consumed which have health implication that can cause damage to major body organs and this support the findings of Bekibele *et al.,* [24] high rate of chronic somatic disease, liver disease, kidney disease and mental disorders among the drivers. The study also observed prevalence of self- medication using herbal mixture locally known as "Agbo" and majority of the driver do not consult medical practitioners for health challenges but they really in most cases on herbal mixture and this agrees with earlier studies reliance of drivers on drug consumption without proper medications. In addition, based on the questionnaire analysis, this research revealed that there is a significant relationship between the educational background and the quantity of drugs they consume. This shows that their lack of improper education and intellectual information could be a determinant for the consumption of large quantity of drugs amongst the drivers. The blood biochemistry revealed increase in the result which could be an early warning to hepatotoxicity due to drug and alcohol induced liver diseases and this corroborate with Banerjee *et al.,* [25] and Tang *et al.,* [26] who reported alcohol induced liver disease may progress from steatosis to more severe liver disease form such as hepatitis, fibrosis and cirrhosis. More so, the present study furthered assessed blood glucose level of the drivers and revealed that the bus drivers had a higher level of glucose compared to other drivers and this can be a marker for high intake of alcohol which can result in risk of diabetes which can lead to the psychomotor and cognitive functioning of the commercial drivers. This support the findings of Lonnen *et al.,* [27] who reported fluctuation in the blood sugar of commercial drivers. The local regulators should constantly should analyzed the major locally mixed herbal drugs used by driver and place bans if necessary to further reduce the danger of the implications associated to this class of drugs and the government should make arrangement on creating awareness on using local languages for easy understanding.

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