



Pattern of Psychoactive Substance Use among Long Distance Commercial Drivers in Calabar, Nigeria

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Authors' contributions

This work was carried out in collaboration among the three authors. Author TO designed the study and wrote the protocol. Author OU performed the statistical analysis. Author CJO managed the literature search and wrote the first draft of the manuscript with assistance from authors OU and TO. All the authors read and approved the final manuscript.

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ABSTRACT

Background: The abuse of psychoactive substances has become a global menace that threatens the entire society because of its dire consequences. It has been observed that driving a vehicle under the influence of psychoactive substances is a growing cause of fatal road traffic accidents. In Nigeria, road transportation is a major means of movement of persons and goods, and long distance commercial drivers play a crucial role in this regards. These drivers sometimes use psychoactive substances to remain energetic and alert.

Aims: To examine the pattern of psychoactive substance use among long distance commercial drivers in Calabar with the view of obtaining information that may be useful for social monitoring and planning preventive strategies.

Methodology: A two-stage cross-sectional survey which lasted for three weeks, involving one hundred randomly selected (using table of random number) long distance commercial drivers drawn from the seven major motor parks in Calabar. These drivers had CAGE-AID and Socio-demographic questionnaires administered on them at the first stage of the study. Those that scored 1 and above on the CAGE-AID questionnaire were further interviewed using the computerized

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version of drug and alcohol module of the Schedule for Clinical Assessment in Neuropsychiatry (SCAN) in order to generate psychiatric diagnoses.

Results: The mean age of the respondents was 36.43 (SD 8.01). The most commonly used substance was alcohol (by 82% of the respondents) while the least commonly used was cocaine (used by 5% of the respondents). Some of the respondents use combination of substances. The most commonly used combination was alcohol/tobacco (used by 66%). Forty-three respondents (43%) reported using "combine" which is a mixture of cannabis leaves and seeds in local gin.

Hired drivers were significantly more likely (than owner drivers) to use cannabis ($P=.04$), alcohol ($P=.02$), tobacco ($P=.01$) and "combine" ($P=.04$).

The study recorded road traffic accident rate of 19% with some occurring under the influence of psychoactive substances.

Following the SCAN interview, Thirty two (76.2%) out of the 42 respondents that scored 1 or above on the CAGE-AID questionnaire had psychiatric diagnoses. The commonest of these diagnoses were alcohol and cannabis related disorders.

Conclusion: There is a wide spread use of psychoactive substances by long distance commercial drivers and this is associated with road traffic accidents as well as diagnosable psychiatric disorders. This calls for urgent interventions by relevant agencies of government.

Keywords: Long distance commercial drivers; psychoactive substance use; road traffic accidents; drug abuse.

1. INTRODUCTION

It is universally acknowledged that drugs are of tremendous benefits to man, but their inappropriate use may produce incalculable harm not only to the individual but to the society at large. Currently, drug abuse has become a global menace that threatens the entire society because of its dire consequences. Recently, the World Health Organization (WHO) estimated that about 5.4% of global burden of disease comes from the use of psychoactive substance [1]. Much of the attributable burden of psychoactive substance use includes a range of health and social problems, not least of which are injuries from vehicular accidents. It has been observed that driving under the influence of psychoactive substances is a growing cause of road traffic accidents both in the developed and developing nations [2,3,4,5,6].

Logan and colleague reported in their study that psychoactive substance was a factor in 52% of road fatalities recorded in the United State [2]. They identified alcohol as the most implicated factor accounting for over half the cases. The trend of road traffic accidents following psychoactive substance use by drivers has led some developed countries to introduce laws banning driving under the influence of certain illegal drugs. The enactment of such laws was based on the knowledge that psychoactive substances can affect driving skills and increase the risk of road traffic accidents [7].

In countries, the association between psychoactive substance use and road traffic

accidents has taken an alarming dimension. It is worrisome to note that even though there are fewer automobiles and miles of roads in developing countries, the number of motor vehicle fatalities per 10,000 vehicles in Nigeria, Ethiopia and Kenya far exceeds that of the United States and United Kingdom by at least six times [8].

Nigeria is a large country with massive landmass and very mobile people. Movement of goods and services in the country are mainly via the road transport system. Reports show that there has been an increase in the number of motor vehicle fatalities recorded on Nigerian roads [9]. Although poor road network, driver inexperience and mixture of road users (four and two wheeled vehicles, non motorized transport and pedestrians) are among the factors responsible for the increased rate of accidents on Nigerian roads, recent finding has shown that vehicle drivers under the influence of psychoactive substance are more likely to be involved in fatal road accidents [7].

Long distance commercial drivers play a crucial role in the movement of goods and services in Nigeria. It is reported that some long distance commercial drivers use performance enhancing drug in their bid to stay awake/vigilant, check fatigue and enhance their ability to drive for long hours [10]. There is need for more studies on psychoactive substance use among the long distance commercial drivers.

Although previous studies [11,12,13] conducted among drivers in Nigeria reported association

between drug/alcohol use and road traffic accident, it is not clear which classes of drugs/alcoholic beverages are commonly implicated in the road accidents. Besides, previous studies did not examine the characteristics/categories of the drivers involved i.e whether or not they were intercity, intra-city or long distance drivers. The present study investigated the pattern of psychoactive substance use among long distance commercial drivers with a view of obtaining information that might be useful for social monitoring and planning of preventive strategies.

2. METHODOLOGY

This study was a two-staged cross-sectional descriptive survey.

2.1 Study Location

The study was conducted in Calabar, the capital city of Cross-river state in Nigeria. The state is renowned for the production of cocoa, rubber, timber and local gin. Calabar has a functional seaport, airport and an export free zone. It is bounded on the north by Odukpani local government area, on the west by Calabar river with the great Qua river on the south and east. The city is tourism destination in the West African sub-region where business, relaxation and pleasure are guaranteed. Calabar has seven major motor parks namely Etim-edem, Cross-lines, Calculus, Young shall grow, Eta-agbor, Gbogobiri and Flour-mill parks. Although there are some minor and road-side parks, long distance transportation of persons and goods is mainly from the seven major motor parks listed above. Each of the parks has a register of long distance commercial drivers operating in it. At the time this study was conducted, the number of long distance commercial drivers in each of the seven motor parks are Etim-edem (55), Cross-lines (35), Calculus (30), Young shall grow (20), Eta-agbor (35), Gbogobiri (30) and Flour-mill park (45). This study was carried out in these seven major motor parks in Calabar.

2.2 Study Population

The population studied is long distance commercial drivers who are registered within Calabar metropolis. For the purpose of the study, a long distance commercial driver is one whose final distance is at least 500 kilometers (km) from the motor park where he took off and if driving at a maximum speed limit of 100 kilometer per/hour

will spend at least five hours before getting to his destination. The sample size consists of 100 long distance commercial drivers that were randomly selected from the seven major motor parks in Calabar.

2.2.1 Sampling

The sample size required for the study was calculated using the formular

$$n = \frac{Z^2 Pq}{D^2}$$

Where n = minimum sample size; Z =1.96 (2SD) at 95% confidence interval; P = probability that a driver will use a drug (0.5) at 95% confidence interval; q = 1-P; D = precision expected at 95% confidence interval (0.1).

Thus

$$n = [(1.96)^2(0.5)(1-0.5)] / (0.1)^2 = 96$$

This minimum sample size was rounded up to 100.

Considering that the number of long distance commercial drivers in each motor park varied, a quota (using proportional sampling methods) was used to determine the number of subjects to be recruited from each of the seven motor parks.

For each motor park –

(Number of long distance driver in the motor park x minimum sample size) / Sum of the long distance drivers in the seven motor parks.

The quota for each motor park was calculated such that Cross-line park contributed 14 drivers to the sample size while Etim-edem, Flour mill, Young shall grow, Calculus, Bogobiri and Eta-agbor parks contributed 22, 18, 8, 12, 12 and 14 drivers respectively.

2.3 Instruments

The following assessment instruments were used in this study:

2.3.1 Socio-demographic questionnaire

This sought information about the socio-demographics characteristics of the respondents including age, gender, driving experience, type of

vehicle, history of road traffic accident, history of alcohol / drug use among others.

2.3.2 CAGE-AID questionnaire

The CAGE questionnaire which is the fore-runner of CAGE-AID questionnaire was developed in the mid 1970's to serve as a brief screening instrument for significant alcohol problems in a variety of settings. CAGE is an acronym for the four questions that make up the instrument. CAGE acronym means;

- C = Cut down on your drinking behavior
- A = Anger over your drinking behavior
- G = Guilt over your drinking behavior
- E = Eye opener in the morning

Each yes answer is scored as 1 and these are summed to generate a total score. A score of 1 warrant follow up, while scores of 2 or more strongly suggest significant alcohol problem. CAGE instrument can be administered in a minute or less either verbally or on paper. The CAGE questionnaire has been used in various studies in Nigeria [14,15,16].

The CAGE-AID questionnaire modified the CAGE questions for use in screening for drugs other than alcohol. Questions asked in CAGE-AID include:

- (i) Have you ever felt that you have to cut down on your drinking or drug use?
- (ii) Have people annoyed you by criticizing your drinking or drug use?
- (iii) Have you ever felt guilty about your drinking or drug use?
- (iv) Have you ever had a drink or used drug first thing in the morning (eye opener) to steady your nerves, get rid of hang over or get the day started?

One or more yes responses constitute a positive screen test.

2.3.3 Schedule for clinical assessment in neuropsychiatry (Scan)

The SCAN is a set of semi-structured instruments aimed at assessing, measuring and classifying the psychopathology and behavior associated with the major psychiatric syndromes. It was developed by the World Health Organization (WHO) and the National Institute for Health (NIH) joint project on diagnoses. Its components include: the Present State Examination -10th edition (PSE-10), the Glossary of Differential Definitions, Item Group Checklist

(IGC) and the Clinical History Schedule (CHS). The SCAN systems also contain another essential element called the CATEGO which is a set of computer program for processing SCAN data and providing output. With the SCAN, diagnosis can be made on any of the following states of the patient: Present state, Lifetime before and a Representative previous episode. The SCAN instrument has been used in research works in Nigeria [17]. The use of SCAN requires training which the researchers received in a WHO accredited centre. The researchers used the drug and alcohol module of the SCAN to generate the present state diagnoses (ICD-10 categories).

2.4 Procedure

A list of registered long distance drivers for each motor park was obtained and using a table of random numbers, the quota for each motor park was randomly selected. With the help of the Chairman of the union of road transport workers, the selected subjects were contacted and invited to take part in the study. The Socio-Demographic and CAGE-AID questionnaires were administered on the subjects. The questions were read out to the subjects and their responses recorded by the investigators. Subjects that scored 1 and above on the CAGE-AID questionnaire were further interviewed using the drug and alcohol module of the SCAN with the aim of generating present state psychiatric diagnoses.

2.5 Statistical Analysis

Data from SCAN interview were collected based on the subject's present state and computer algorithms were run to generate the possible psychiatric diagnoses. Data from the socio-demographic questionnaire were subjected to descriptive statistical analysis using the Statistical Package for Social Sciences version 16. Chi (x^2) test was applied to test the difference between variables of categorical data and the significance level used was 0.05.

3. RESULTS AND DISCUSSION

3.1 Results

3.1.1 Socio-demographic characteristics

A total of 100 long distance commercial drivers were recruited into the study. Their socio-demographic characteristics are given in Table 1.

Table 1. Socio-demographic characteristics of the subjects studied

| Variable | n (%) |
|---|----------|
| Age group (years) | |
| 20 – 29 | 17 (17%) |
| 30 – 39 | 55 (55%) |
| 40 – 49 | 20 (20%) |
| 50 and above | 8 (8%) |
| Mean age: 36.43±8.01 | |
| Religion | |
| Christianity | 93 (93%) |
| Islam | 4 (4%) |
| Traditional religion | 3 (3%) |
| Education | |
| No formal education | 3 (3%) |
| Primary education | 20 (20%) |
| Secondary education | 71 (71%) |
| Tertiary education | 6 (6%) |
| Marital status | |
| Married | 79 (79%) |
| Single | 21 (21%) |
| Status of driver | |
| Owner drivers | 17 (17%) |
| Hired drivers | 83 (83%) |
| Driving experience (years) | |
| 0 – 9 | 72 (72%) |
| 10 – 19 | 19 (19%) |
| 20 and above | 9 (9%) |
| Drivers with history of road traffic accident | |
| 20 – 29 years old | 6 (6%) |
| 30 – 39 years old | 7 (7%) |
| 40 – 49 years old | 4 (4%) |
| 50 years and above | 2 (2%) |
| Road traffic accident under the influence of drugs/alcohol | |
| Drivers aged 20 – 29 years old | 1 (1%) |
| Drivers aged 30 – 39 years old | 3 (3%) |
| Drivers aged 40 = 49 years old | 1 (1%) |
| Drivers aged 50 years and above | 0 (0%) |

Table 2. Types of psychoactive substance used by drivers

| Type of substance | Past year – 2012 (n%) | Present state – 2013 (n%) |
|-------------------|-----------------------|---------------------------|
| Alcohol | 74 (74%) | 82 (82%) |
| Cannabis | 59 (59%) | 68 (68%) |
| Tobacco | 63 (63%) | 66 (66%) |
| Kolanut | 61 (61%) | 61 (61%) |
| Heroin | 8 (8%) | 11 (11%) |
| Cocaine | 3 (3%) | 5 (5%) |

3.1.2 Pattern of substances commonly used by participants

As shown in Table 2, alcohol was used by 82% of the participants. This was followed by cannabis (used by 68% of the participants), tobacco (66%) and kolanut (61%). The lowest use rates were recorded for heroin (11%) and cocaine (5%).

With regards to combination of substances, the most commonly used combinations were alcohol/tobacco (66%) and alcohol/cannabis (62%) while the least used combinations were cocaine/cannabis (3%) and cocaine/alcohol (5%). These are shown in Table 3.

Table 3. Drivers and combination of psychoactive substances used

| Combination of substances | Past year – 2012 (n%) | Present state – 2013 (n%) |
|---|-----------------------|---------------------------|
| Alcohol / Tobacco | 62 (62%) | 66 (66%) |
| Alcohol / Kolanut | 58 (58%) | 54 (54%) |
| Alcohol / Cannabis | 56 (56%) | 62 (62%) |
| Tobacco / Kolanut | 61 (61%) | 61 (61%) |
| Cannabis / Tobacco | 54 (54%) | 54 (54%) |
| Cannabis / Kolanut | 58 (58%) | 60 (60%) |
| Cannabis / Heroin | 52 (52%) | 58 (58%) |
| Alcohol / Heroin | 49 (49%) | 53 (53%) |
| Alcohol / Cocaine | 6 (6%) | 5 (5%) |
| Cannabis / Cocaine | 10 (10%) | 3 (3%) |
| Tobacco / Heroin | 20 (20%) | 23 (23%) |
| Heroin / Kolanut | 30 (30%) | 32 (32%) |
| “Combine” (mixture of cannabis local gin) | 43 (43%) | 43 (43%) |

3.1.3 Substance used and status of drivers

As shown in Table 4, sixty (72.3%) of the hired drivers use cannabis as compared to eight (47.1%) owner drivers. The table showed that there was significant difference in cannabis use between owner and hired drivers ($P = .04$). The table also showed that hired drivers were more likely than owner drivers to use alcohol ($P = .02$), and tobacco ($P = .01$).

3.1.4 Subjects and CAGE-AID scores

Fifty eight (58%) of the subjects are low scorers (having scored zero) on the CAGE-AID questionnaire while 42 subjects (42%) who scored one and above on the questionnaire are high scorers. Table 5 shows the socio-demographic characteristics of the high and low scorers.

Table 4. Status of drivers and types of psychoactive substances used

| Substance type | Hired drivers (n%) | Owner drivers n (%) | Total | X ² | df | p-value |
|--|--------------------|---------------------|-------|----------------|----|---------|
| Cannabis | 60 (72.3%) | 8 (47.1%) | 68 | 4.13 | 1 | 0.04* |
| Alcohol | 72 (86.8%) | 10 (58.8%) | 82 | 5.68 | 1 | 0.02* |
| Kolanut | 53 (63.9%) | 8 (47.1%) | 61 | 1.04 | 1 | 0.31 |
| Tobacco | 60 (72.3%) | 6 (35.3%) | 66 | 7.04 | 1 | 0.01* |
| Heroin | 11 (13.3%) | - | 11 | 1.36 | 1 | 0.24 |
| Cocain | 5 (6.0%) | - | 5 | 0.18 | 1 | 0.67 |
| Mixture of cannabis in local gin (combine) | 40 (48.2%) | 3 (17.7%) | 43 | 4.20 | 1 | 0.04* |

X² = Chi square, df = degree of freedom, *indicates statistically significant difference

Table 5. Drivers' sociodemographic variables and CAGE-AID score

| Variables | High scorers | Low scorers | Total |
|---------------------------|--------------|-------------|-------|
| Age group (years) | | | |
| 20 – 29 | 7 | 10 | 17 |
| 30 – 39 | 24 | 31 | 55 |
| 40 – 49 | 10 | 10 | 20 |
| 50 and above | 1 | 7 | 8 |
| Religion | | | |
| Christian | 39 | 54 | 93 |
| Muslim | 1 | 3 | 4 |
| Traditional religion | 2 | 1 | 3 |
| Marital status | | | |
| Married | 36 | 43 | 79 |
| Single | 6 | 15 | 21 |
| Status of driver | | | |
| Owner driver | 10 | 7 | 17 |
| Hired driver | 32 | 51 | 83 |
| Educational status | | | |
| No formal education | 0 | 1 | 1 |
| Primary education | 7 | 13 | 20 |
| Secondary education | 31 | 40 | 71 |
| Tertiary education | 4 | 4 | 8 |

3.1.5 Relationship between CAGE-AID scores of subjects and Road Traffic Accident (RTA)

Of the forty two high scorers on CAGE-AID questionnaire, twenty seven (64.3%) scored 1, eleven (26.2%) scored 2 while four (9.5%) scored 3. None of the subjects scored 4 on the questionnaire.

In the past one year, six subjects who scored 1, four that scored 2 and three out of those that scored 3 on the CAGE-AID questionnaire were involved in RTA. Within the same period, six low scorers were also involved in RTA. These are shown in Table 6.

Table 6. Relationship between the subjects CAGE-AID scores and road traffic accident

| CAGE-AID score | Number of subjects | Total number of RTA | RTA under drug influence |
|----------------|--------------------|---------------------|--------------------------|
| 0 | 58 | 6 | 0 |
| 1 | 27 | 6 | 1 |
| 2 | 11 | 4 | 1 |
| 3 | 4 | 3 | 3 |
| 4 | 0 | 0 | 0 |
| Total | 100 | 19 | 5 |

3.1.6 SCAN diagnoses

All the high scorers on the CAGE-AID questionnaire (42%) were subjected to further assessments using the drug and alcohol module of the SCAN. The purpose was to generate possible psychiatric diagnoses (ICD 10 categories). Table 7 shows the type and frequencies of the generated diagnoses following SCAN interview.

Table 7. Types and frequencies of SCAN diagnoses

| SCAN diagnoses | Frequency (%) |
|------------------------------------|---------------|
| Alcohol dependence syndrome | 11 (34.4%) |
| Harmful use of alcohol | 5 (15.6%) |
| Cannabis dependence syndrome | 9 (28.1%) |
| Harmful use of cannabinoids | 4 (12.5%) |
| Tobacco dependence | 2 (6.3%) |
| Harmful use of stimulant (Kolanut) | 1 (3.1%) |
| Column total | 32 (100%) |

As shown in the table, Alcohol dependence syndrome was the commonest diagnosis. This was followed by Cannabis dependence syndrome while Harmful use of stimulant (kolanut) was the least common diagnosis.

3.2 Discussion

Majority of the subjects in this study were young adults between the ages of 20 – 49 years. This is in agreement with other epidemiological surveys which show that drug abuse is dominated by young adult population [18,19,20]. Most of the subjects are educated up to at least secondary education showing that the worsening youth unemployment in Nigeria has caused educated young men to take to commercial driving as an income generating venture.

As observed in this study, the most widely used socially acceptable substance was alcohol while the most widely used illicit substance was cannabis. Previous authors have reported similar findings [11,21]. The use rates of alcohol, cannabis and cocaine reported in the present study are comparatively higher than the ones reported earlier by Adenekan and colleague [11]. This is understandable given the emerging status of Calabar as a hub for business and pleasure for tourists. Lambo had drawn attention to the role of tourists in facilitating the spread of drug use in Africa [22].

To the best of the authors' knowledge, no previous study has reported the use of "combine" (a peculiar mixture of cannabis leaves and seed in local gin). The present study demonstrated that the use of "combine" was popular amongst the respondents. The high use rate of 43% recorded for "combine" in this study might be explained by the increasing number of local breweries and distilleries which brew a particular local gin known in the local parlance as "ogogoro". This local gin is quite popular among the residents of the coastal region of Nigeria to which Calabar belong. Also, cannabis grows in the state [23] and with the worsening youth unemployment, cultivation and trafficking in cannabis is becoming a popular money fetching business among the jobless youths in the state. Accordingly, the production of "ogogoro" coupled with the successful cultivation of cannabis will invariably encourage the production of "combine" and its use among the populace in Calabar.

The rampant use of psychoactive substances by the youth population explains the deteriorating security situation in the Niger-Delta regions of Nigeria where armed youths engage in shooting sprees, vandalizing of oil pipelines, hostage taking and other vices [24].

This study observed that hired drivers significantly used cannabis, alcohol, tobacco and

"combine" more than owner drivers. Although the reason for this is not quite clear, it might be related to the fact that hired drivers in their quest to meet the target set by their masters, resort to use of drugs to enhance their efficiency.

Another important finding of this study was the positive history of Road Traffic Accidents (RTA) in the past 1 year as reported by about one-fifth of the respondents. A quarter of these RTA happened under the influence of psychoactive substance use.

It is important to note that about a third of the subjects that participated in this study have diagnosable mental and behavioral disorders which may benefit from further evaluation and care. This observation calls for attention from mental health practitioners in the country. Alcohol and cannabis related disorders were the commonest reported diagnoses. This is not surprising given the massive production and consumption of local gin along the coastal areas of Niger-Delta region and the cultivation of large cannabis plantations in the Cross-River state [23].

4. CONCLUSION

This study has demonstrated that a sizable proportion of long distance commercial drivers operating in major motor parks in Calabar use psychoactive substances and some of them have diagnosable drug/alcohol related disorders. From the authors' observation during data collection, drivers and motor-park touts consume various psychoactive substances especially in the morning before the commencement of the day's activities and after an arrival from a journey. Different alcoholic beverages, kolanuts and tobaccos are openly sold at the motor-parks while illicit substances like cannabis, heroin and cocaine are readily available and sold to known customers on demand. All these may explain the cause of repeated fights, violent conducts and sundry crimes which are common occurrences in Nigeria motor-parks.

Based on the foregoing, it is our recommendation that there be legislation against hawking and sales of all types of alcoholic drinks in Nigerian motor-parks with appropriate punishments prescribed for offenders. More so, the National Drug Law Enforcement Agency (NDLEA) should up their game with the view to combating both the demand and supply of licit/illicit substances in and around the Nigerian motor-parks. Besides,

there is need for long distance commercial drivers to be randomly screened for drug use before embarking on their trips with a view to ensuring that they are not driving under the influence of psychoactive substances. There is also need for educational programs that will improve the knowledge and awareness of the drivers on the harmful effects of substance use on their health and driving skills.

5. LIMITATION

During the study, it was observed that some respondents were usually in hurry and busy trying to get their bookings at the various motor parks. This might have affected their responses to the questions asked.

Beside the above, some respondents were hostile because of fear that the researchers were sent by security agencies as such getting them for interviews was a herculean task.

Another factor that limited the findings of this study was the researchers' inability to carry out toxicological assessments on the respondents.

CONSENT

A written informed consent was obtained for publication of this study from the research subjects.

ETHICAL APPROVAL

The authors declare that this study was reviewed and approved by the Research Ethics Committee (REC) of Federal Neuropsychiatric Hospital, Calabar. The study was also performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki." Subjects diagnosed with psychiatric disorders using the SCAN system were counseled and advised to seek help from psychiatric hospital Calabar.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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