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Prevalence of psychoactive substance use among registered commercial motorcycle operators in Kano, North Western Nigeria: A community study

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The present study was carried out in the most populated city in Northern Nigeria that is believed to have the highest number of commercial motorcyclists and highest prevalence of psychoactive substance use in the country. Research on psychoactive substance use among motorcycle operators in Northern Nigeria is limited, despite the high level of morbidity these substances cause to them. This study aimed to study the prevalence of psychoactive substance use among motorcycle operators in Kano, North western Nigeria. The study was cross-sectional descriptive. Participants for the study were commercial motorcyclists registered with the local branch of Amalgamated Commercial Motorcycle Owner's and Riders Association of Nigeria (ACOMORAN). Assessment was carried out with the use of socio-demographic questionnaire and World Health Organization Student Drug Use Questionnaire (SDUQ). Data obtained was analysed using Statistical Package for Social Sciences (SPSS), 17th edition. Three hundred and ninety four (394) subjects participated in the study. The results showed that the prevalence of overall psychoactive substance use was 19.3%. The prevalence of tobacco, stimulant (gadagi), and cannabis use were 19.3, 11.9 and 3.8% respectively, while the prevalence of inhalants and opiates use were 2.0 and 1.3%, respectively. There were no reported use of alcohol, benzodiazepines and cocaine. All the subjects were males, Moslems, within the age range of 22 and 60 years mean of 32.7 ± 6.6 years. They were mostly married (88.6%), and more than two third of them (70.1%) were from Kano. The study has highlighted the prevalence of substance use among commercial motorcyclists. It has important implication for policy makers to initiate primary preventive measures that could be focused towards the reduction of substance use among commercial motorcyclists in the community.

Key words: Motorcycle operators, psychoactive substance, Northwestern Nigeria, Student Drug Use Questionnaire (SDUQ).

INTRODUCTION

Substance use is common among young people (Mason et al., 2004; CDC, 2008; SAMHSA, 2009). Commercial motorcycle operation is widely adopted in Kano, perhaps for both logistic and social reasons. It is possible that

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commercial motorcyclists are at higher risk of substance use compared to the general population. Although previous studies did not document reasons for this, plausible explanations might be because of competition among the motorcyclists to be able to pick as much clients as possible in a day, leading them to use substances that would alter their sense of danger to perform careless maneuvers, over-speed, and beat traffics.

Hall (2005), in a study of alcohol and other psychoactive substance use in commercial transportation, reported a prevalence of cannabis as 52%, cocaine (63%), amphetamines (4.7%) and opiates (4.5%) among aviation transport workers in United States. In the same study psychoactive substance use among railroad workers was 3%, whereas a prevalence of 4.6% was found among commercial truckers. The study made use of breath alcohol analyzers and urine drug screening tests. In Seattle, USA, in a study of prevalence of psychoactive substance use in commercial tractor trailer drivers, Couper et al. (2002) reported that excluding caffeine and nicotine, positive findings were stimulants (9.5%), cannabis (4.3%) and alcohol (1.3%). The authors used urine specimen for drug analysis.

In Australia, Drummer et al. (2003) reported a prevalence of 26.7% of psychoactive substance use among fatally injured drivers. These included alcohol (18.6%), cannabis (13.5%), opiates (4.9%), stimulants (4.1%) and benzodiazepines (4.1%). In a study in Taipei, Taiwan, of comparison of the prevalence of substance use and psychiatric disorders between government and self-employed commercial drivers, Lin et al. (2003), reported a higher prevalence of 9.5% among self-employed commercial drivers compared to 8.3% among government drivers. The authors used many instruments for the assessment of substance use, such as Chinese Health Questionnaire (CHQ), Michigan Alcoholism Screening Test (MAST), Drug Abuse Screening Test (DAST) and urine drug screening test among others.

In a study in Ghana, of epidemiology of alcohol impaired driving, Asiamah et al (1998) reported that 21% of the respondents had a detectable BAC, with 7.3% above the legal limit of ≥ 80 mg/dl. The authors reported that 64% of impaired drivers were commercial drivers. However, the study was limited to alcohol use.

Information on the use of alcohol and other psychoactive substances among motorcyclists in Nigeria and more specifically in Northern Nigeria is limited. Reports of psychoactive substance use in Northern Nigeria were first published in the 1980's, long after the first reports from the southern parts of the country (Oshodi, 1986; Ahmed, 1986; Ifabumuyi, 1986). Current data indicate that drug use cuts across diverse groups, with high risk groups including males aged 10 to 29 years, law enforcement agents, commercial sex workers (CSW), commercial drivers and motor park touts (UNDCP, 2006; Suleiman et al., 2006; Gureje et al., 2007). In a study in Sagamu, south western Nigeria, of psychoactive substance use among commercial drivers and their assistants, Adenekan and Osibogun (1999) reported a prevalence of salicylates as 80.3%, alcohol (72.9%), tobacco (50.5%), cannabis (31%) and sedatives (23.5%).

Makanjoula et al. (2007), in a study of psychoactive substance use among long distance drivers in Ilorin, Nigeria, reported a prevalence of stimulants to be 56.1%, tobacco (53.6%), alcohol (37.7%) and anabolic steroids (34.8%). In a study in Zaria, North western Nigeria, among commercial motorcycle operators, Alti-Mu'azu and Aliyu (2008) reported a prevalence of cannabis use as 25.8%, inhalants (24.5%), caffeine (15.8%) and coffee (4.5%). However, the authors did not use standard instrument for data collection.

James (2014) studied substance abuse among commercial tricycle operators in Kano metropolis. Pertinent findings of the study included the fact that majority of substance abusers were of young age groups (24-29 years) and single (45.6%). The commonest substance abused was cannabis (29%) while Gadagi and Zakami were abused by 14.8 and 10.4% of the participants respectively. However, the study was limited because it used a non-structured questionnaire designed by the researcher, who failed to provide details of the questionnaire design nor its validity. In addition, a non-probability sampling method (snowball) was used, and there were numerous statistical errors in the study.

The present study was carried out in the most populated city in Northern Nigeria that is believed to have the highest number of commercial motorcyclists and highest prevalence of psychoactive substance use in the country (NDLEA, 2009). This study of psychoactive substance use among commercial motorcycle operators might allow for more exploration on the use of different types of psychoactive substances among the studied population. Identification and description of the extent of psychoactive substance use will be useful in planning any mental health promotion or mental disorders prevention among any population. This study was designed to determine the prevalence of psychoactive substance use among motorcyclists in Kano.

Hypothesis

We hypothesized that psychoactive substance use will be high among the commercial motorcycle operators in Kano, just like the high prevalence reported from other parts of the country.

Ethical consideration

Before beginning the study, ethical clearance was obtained from the Research Ethical Committee of Aminu Kano Teaching Hospital. The National Patron of

ACOMORAN gave permission for the study. Participation in the study was entirely voluntary. No commercial motorcycle operator was forced to take part in this study against his wish. Informed consent was sought and obtained from the participants after the nature of the study, aim, objectives and the procedure have been explained to them. The information obtained was not released to any person and was not used against the subject in any way. The subjects found to be suffering from any problems associated with psychoactive substance use were referred to the department of psychiatry Aminu Kano Teaching Hospital for appropriate treatment.

Inclusion criteria

1. Age ≥ 18 years.
2. Registered membership of ACOMORAN in Tarauni LGA.

Exclusion criterion

Motorcyclists with a history of mental illness.

METHODOLOGY

This was a cross sectional descriptive study carried out in Tarauni Local Government Area (LGA) of Kano State, the most populated state in Nigeria with population of more than nine million NPC, 2006). This LGA plays host to the Aminu Kano Teaching Hospital (AKTH). The LGA is made up of 12 political wards each represented by a Councilor in the Local Government Council. Tarauni is a predominantly Hausa community and most inhabitants are of the Moslem faith. The inhabitants are mainly subsistence farmers, planting maize, millet and guinea corn. There are no records of psychoactive plants grown in the LGA. The Local Government is undergoing a transition where tradition and modernity co-exist and some inhabitants have been employed as junior staff and domestic helps to the workers of AKTH and other businesses in the LGA. Some local inhabitants are self-employed selling in small shops and others are involved in ferrying workers to and from the LGA and other parts of Kano Metropolis. The commercial motorcyclists have specific stands along the taxi routes. In all the stands, there are local cafes ("me shayi") selling tea, coffee and the local stimulant ("gadagi") in the mornings and evenings. There is a modest functional urinal for the motorcyclists in each stand.

Sample size determination

The sample size was determined using the formula

$$N = \frac{z^2 p q}{d^2}$$

Where, N = minimal sample required; Z = Standard normal deviate at 95%; Confidence interval = 1.96; P = 34.3% (prevalence of substance use obtained from a previous study in Kano city conducted by the Community Medicine Department of the AKTH); q = Complementary probability to P = 1 - P = 1- 0.34 = 0.66; d = precision of the study = 5% = 0.05.

$$n = \frac{(1.96)^2 (0.34 \times 0.66)}{(0.05)^2}$$

= 338.

The sample size is 338. However the sample size was increased to 400 which is about 20% for greater precision.

Sampling technique

Multi-stage sampling technique was used in this study. The first stage involved systematic probabilistic selection of 4 political wards from the 12 existing wards (Marhaba, Kasuwa, Dangi, and Bawo wards). In Stage 2, three motorcycle operators stands on each selected wards were systematically selected, bringing the total number of randomly selected stands to twelve. Stage 3 involved whole population study of the commercial motorcyclists in each selected stand after being identified by their identity card of the association, until when the required sample size was achieved. At the time of the study there were 126 registered commercial motorcycle stands within Tarauni LGA, with 5040 registered members, and 14 to 66 members per stand.

Instrument for data collection

The WHO student drug use questionnaire (SDUQ)

The WHO student drug use questionnaire (SDUQ), also known as youth survey questionnaire was adapted for this study. The questionnaire was developed by the WHO in cooperation with the United Nations Fund for Drug Abuse Control, for use in different socio-cultural settings (Smart et al., 1980). The original questionnaire is made up of 22 items. The student drug use questionnaire has been used extensively in Nigeria, including among adult long distance vehicle drivers (Makanjoula et al., 2007; Akinhanmi, 1996). The questionnaire was translated to Hausa language by the researchers using back-iterative technique. An inter-rater reliability of 82% was obtained using the agreement method (Hall 1974) and was considered acceptable. The questionnaire was administered by the researchers themselves, who are trained psychiatrists.

Procedure

Data collection took place between November and December 2009. Specific visitation week was allocated to each of the wards in the study area. Each day of the week, a visit was paid to each of the selected motorcycle stands in the LGA, with assistance of the ACOMORAN. The motorcycle operators who were in their stand, who met the inclusion criteria, were administered the socio-demographic data and SDUQ. The questionnaires were interviewer administered. About ten interviews were conducted daily (with range of six to 14 interviews).

Data analysis

Data analysis was done with the statistical package for the social sciences (SPSS), 17th edition. Simple descriptive data were presented with frequencies, proportions and percentages.

Table 1. Sociodemographic characteristics of subjects (n = 394).

Variable	n	%
Age group (years)		
22 - 35	264	67.0
≥ 35	130	33.0
Educational level		
None	31	7.9
Primary (completed)	133	33.8
Secondary (completed)	158	40.1
Higher education (completed)	72	18.3
Marital status		
Single	45	11.3
Married	349	88.7
Years of motorcycling		
1 - 5	99	25.1
6 - 10	171	43.4
11 - 15	105	26.7
16 - 20	19	4.8

Table 2. Prevalence of specific substance use among respondents (n = 394).

Variable	Tobacco n (%)	Stimulants n (%)	Cannabis n (%)	Inhalant n (%)	Opiates n (%)
Lifetime use	76 (19.3)	47 (11.9)	15 (3.8)	8 (2.0)	5 (1.3)
12 months use	63 (16.0)	46 (11.7)	13 (3.3)	8 (2.0)	5 (1.3)
Current use	63 (16.0)	41 (10.5)	13 (3.3)	7 (1.8)	5 (1.3)

RESULTS

Socio-demographic characteristics of the participants

Table 1 shows the distribution of the participants according to socio-demographic variables. There were 394 participants, aged 22 to 60 years, with mean age of 32.7 years ± 6.6. Nine in ten of the participants had completed at least Primary level of education, with 158 (40.1%) of them having completed secondary education, while 72 (18%) had completed higher education (diploma and NCE). Majority of the participants, 349 (88.7%) were married, with 306 (77.7%) being married to one wife and the majority of them had between 1 to 5 children.

All the respondents were males and practicing (>90%) Moslems. The table also shows that the duration of operating as commercial motorcyclist among the respondents was between one to 20 years, with a mean of 8.6 ± 4.5 years. The modal duration of working as commercial motorcycle operators was 6 to 10 years, accounting for 171 (43.4%) of the participants.

Prevalence of substance use among the participants

Seventy six of the participants admitted using psychoactive substances in their lifetime, giving a lifetime prevalence of 19.3%. The lifetime use, 12 months use and current use of psychoactive substances are presented in Table 2. Tobacco had the highest prevalence for lifetime use with 76 respondents (19.3%), 12 month use with 63 respondents (16.0%) and current use of 63 respondents (16%). This is followed by stimulant use, with lifetime use of 47 respondents (11.9%), 12 month use with 46 respondents (11.7%) and current use with 41 respondents (10.5%).

There was no reported use of alcohol, heroin, cocaine and benzodiazepines among the respondents.

DISCUSSION

The present study was conducted among males, as commercial motorcycle operation is an all-male business in Kano state, and many studies have reported that there

is higher male preponderance in all psychoactive substance use (SAMHSA, 1998; Gureje et al., 2007; Alti-Muazu and Aliyu, 2008; Rashid, 2010).

The lifetime prevalence of drug use among the subjects in this study was 19.3%, far lower than most studies reviewed in Nigeria. Studies in southwestern Nigeria (Oluwadiya et al., 2004; Owoaje et al., 2005; Iribhogbe and Odai., 2009) and in Southeastern Nigeria (Adogu et al., 2009) among commercial motorcycle operators showed a higher prevalence of more than 30% of psychoactive substance use among the subjects. These observed differences might be due to socio-cultural differences between Northern and Southern Nigeria. The prevalence was also a little lower than 21% reported by Asiamah et al. (1998) in Ghana. However, their study was restricted to alcohol use among commercial drivers. In addition, in this study we excluded individuals with mental illnesses because studies have shown that mental illnesses predispose individuals to substance use, and hence might be a confounder in this study. It is possible that the studies reviewed did not exclude individuals with mental illnesses, which might account for the higher prevalence in them. The observed prevalence in this study agrees with 17% reported by Gomez-Talegon and his colleagues (2012) in Spain.

Five classes of psychoactive substances stood out as being used by the motorcyclists. They were tobacco (19.3%), stimulants (11.9%), cannabis (3.8%), inhalants (2.0%) and opiates (1.3%) in that decreasing order of prevalence. This contradicts a study by James (2014) in Kano metropolis which reported a higher prevalence of cannabis use (29%) and a lower prevalence of tobacco use (10%). However, in that study, the prevalence of specific substance use was rounded up to 100% even though the participants reported concomitant multiple substance use. The reported prevalence in this study is lower than 8.5% reported by Labat et al. (2008) in France. However, their study used specialized tests to detect substance use, which might detect more individuals with substance use compared to the WHO SDUQ.

Prominently absent was alcohol use. It is not clear whether the absence of alcohol use was an artifact of the responses or represents the true state of affairs. If alcohol breath analyzers were used or other biological examinations of alcohol, it would be easier to reach conclusion. The Holy Quran expressly forbids its (alcohol) use, but the religious leaders are divided over the use of other psychoactive substances (Gureje et al., 2007). The reported non-use of alcohol may also be due to proscription by religion and legislation against the use and sale of alcohol by the state government, which may also account for non-use of benzodiazepines.

The difference between lifetime use, 12 months use and current use is rather small, and coupled with the time at which they started using the psychoactive substances (more than 19 years), this may perhaps imply that once people start using psychoactive substances as adults it is difficult to stop (Gureje et al., 2007).

Tobacco was found to be the most commonly used psychoactive substance both for life time use and current use. This finding is consistent with previous reports in Ilorin among long distance vehicle drivers where tobacco topped the list for both current and lifetime use with a prevalence of 30.4 and 53.6%, respectively (Makanjoula et al., 2007). On the other hand, the prevalence of tobacco use is higher than 9.8% reported by Achigbu et al. (2014) in Enugu, Southern Nigeria. However, their study was restricted to motorcyclists involved in accidents, and standard questionnaire was not used for data collection.

Stimulants were the second most used substance (second to tobacco) in this study, and ‘gadagi’ was the preferred stimulant. Among commercial motorcycle operators in Kano state, ‘gadagi’ is a common name (Atiku et al., 2009; James, 2014). It is a special tea, mixture of different herbs and shrubs, sold mostly by a tribe from neighboring Niger Republic that operates mainly as local security officers in Kano. Respondents claimed that it gives them a feeling of immortality, invulnerability and energy, and ensures that they work without fatigue. It has different brand names such as “Kano no junction, no roundabout”. It is relatively recently introduced into the town, the biological property is not yet known. Some local newspaper has called ‘gadagi’ a hallucinogen, and its use is a rapidly growing habit among the youths in Kano. The rate of “gadagi” consumption is probably on the increase in Kano metropolis, especially among commercial motorcycle operators. It is a socially acceptable psychoactive substance, and there is no law governing its sale and consumption. It is considered to be a local energy booster and may be generally very addictive.

The bulk of the respondents knew nothing about some commonly used psychoactive substances in the country. Only about a quarter of the respondents knew about drugs like amphetamines, barbiturates, benzodiazepines and opiates. Even among those who knew about the drugs, the perceived ease of acquiring the drug varied. For example benzodiazepines (valium) as many said it was difficult to obtain as those that said it was easy.

None of the participants reported use of heroin and cocaine, and this is in keeping with a study in Ilorin among long distance drivers, the study in Kano metropolis among commercial tricycle operators, and the study in Zaria among commercial motorcyclists where there was no use of cocaine and heroin (Makanjuola et al., 2007; James, 2014; Alti-Muazu and Aliyu, 2008).

The prevalence of current cannabis use was 3.3%. This is consistent with the study in Ilorin and Zaria which reported current cannabis use as 4.3% (Makanjoula et al., 2007; Alti-Muazu and Aliyu, 2008). It is also in line with a study by Cooper et al. (2002) in USA which reported a prevalence of 4.3% among commercial trailer

drivers. However, the prevalence is much lower than 17.4% reported by Acar et al. (2013) in Istanbul, Turkey. The observed difference might be due to the fact that their study involved individuals involved in accidents due to driving under the influence of substances.

The common opiates used among the subjects was codeine (as found in the cough syrup “benyline with codeine”), and tramadol (tramal) tablets. This may be partly due to the fact that it is easily available and affordable in most of the pharmaceutical shops and outlets in Kano metropolis. There does not appear to be strong legislation against the sale of such substances without prescription. James (2014) reported similar finding of use of Benyline syrup as a psychoactive substance among commercial tricycle operators in Kano.

Current prevalence of inhalants use was 2.0% which is much lower than the study among long distance drivers in Ilorin, which reported 8.7%. The use of inhalants is reportedly popular among commercial motorcycle operators (Makanjoula et al., 2007).

The non-categorization under the law of these psychoactive substances (inhalants, cough syrup and tramadol) as illegal and the absence of legislation regulating their sale and consumption may perhaps aid their widespread availability and use.

The results of this study differ from a study in southwestern Nigeria among refugees from Liberia, where more of the respondents in the age group (31 to 40 years) used psychoactive substances more than the younger age group of 18 to 30 years (Amosu, 2008), the results however are in keeping with other studies done among commercial motorcyclists in Zaria and Nnewi (Alti-Muazu and Aliyu, 2008; Adogu et al., 2009; Rashid, 2010; James, 2014). The socio-cultural difference between Nigeria and Liberia may explain the variation in prevalence of age pattern of substance use in the two countries.

All the respondents were Moslems, which is the predominant religion in Kano state. Majority of the respondents participated regularly in their religious activities, which may partly account for the low prevalence of psychoactive substance use in them. This is consistent with the findings of similar studies in Ilorin and Abeokuta where significant association was found between substance use and religiosity, with those who were very religious being less likely to use psychoactive substances (Makanjoula et al., 2007; Amosu, 2008). It is also consistent with the finding of inverse relationship between substance use and religiosity (Gureje et al., 2007; Makanjoula et al., 2007; Akinhanmi, 1996).

More than 88% of the respondents were married, and more than 60% had between one and 5 children, in keeping with the study in Ilorin among long distance drivers with more than 95% of the subjects married with children (Makanjoula et al., 2007).

Most of the respondents in this study had some form of education, up to secondary school, which is consistent with the study in Ilorin and Zaria where more than 68% had some form of education ranging from primary to tertiary education (Makanjoula et al., 2007; Alti-Muazu and Aliyu, 2008).

This study had some limitations. The study was among registered commercial motorcyclists, and the results cannot be generalized to all commercial motorcycle operators. As indicated earlier, there are many motorcycle operators not registered with ACOMORAN. However, the present study may help to provide baseline information for further studies dealing with the subject in the region. Future studies should recruit a wider range of motorcycle operators.

Conclusion

This study has highlighted the prevalence of psychoactive substance use among commercial motorcycle operators. The study has important implications for policy makers to initiate primary preventive measures that would be focused towards the reduction of psychoactive substance use among commercial motorcycle operators in the community. Clinicians working in the area, especially those not familiar with the culture of the people should be alert to the possibility of psychoactive substance use disorders, and where required interventional measures should be instituted early. There is need for more epidemiological studies, especially community based, covering wider areas, involving various medical specialties, psychologists, sociologists, so as to have a more comprehensive picture of psychoactive substance use problems among different population groups, especially commercial motorcycle operators.

Conflict of Interests

The authors have not declared any conflict of interests.

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