



Risk Factors of Road Traffic Crashes among Intercity Drivers in Ibadan, Oyo State Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Authors AAF and TOA designed the study, while author AMA performed the statistical analysis and wrote the first draft of the manuscript. Authors AAF and AR managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

Aim: Road Traffic Crashes (RTCs) have emerged as a major cause of morbidity and mortality in Nigeria. In this report, we explored the prevalence and risk factors of self-reported RTC among intercity drivers in Ibadan, Oyo State, Nigeria.

Study Design: A descriptive cross-sectional study design was conducted.

Place and Duration of Study: The study was conducted on the four major highways (Abeokuta, Lagos, Oyo/Ogbomoshosho, and Ife) that connect Ibadan in November, 2012.

Methodology: A road-side survey was done in collaboration with Federal Road Safety Corps of Nigeria, Oyo State Command on 200 consenting long distance drivers. Data were obtained on the socio-demographic characteristics, psychoactive substance use, and experience of RTC; and analyzed using chi-square and logistic regression model with the alpha level of significance set at 0.05.

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Results: Majority (98.9%) of the drivers were males with mean age of 39.7±10.1 years. The substances reportedly used by the respondents included medications (46.5%), alcohol (33.5%) and herbs (43.0%). The life time prevalence of self-report crashes was 16%. The significant predictors of RTCs were being located driving along Abeokuta expressway (OR=4.1, 95% CI, 1.4-12.2) and having previous experience of licence suspension (OR=4.9, 95% CI= 2.0-12.0).

Conclusion: Interventions to reduce RTCs may be location specific and have to address causes of licence suspension among drivers.

Keywords: Self-reported road traffic crash; intercity drivers; morbidity; mortality.

1. INTRODUCTION

Road Traffic Crashes (RTCs) have emerged as a major global public health problem of this century. Globally, more than 1.25 million mortality from RTC are recorded annually, with millions more sustaining serious injuries [1]. Developing and underdeveloped countries have been reported to accounts for 80% of mortality from RTC [1,2], with an estimated economic losses of 5% incurred due to morbidity and mortality from RTC [2]. The road traffic injury mortality rate is higher in Africa (28.3 per 100,000 population) compared with 11.0 in Europe. Indeed, if major changes are not made to reverse the trend, it is feared that RTC fatality rate in Africa as a whole will increase by 80% between 2000 and 2020 [1,3]. In Nigeria, extrapolations from a multistate survey suggest that over 4 million people may be injured and as many as 200 000 potentially killed as the result of RTC annually [4].

There are numerous risk factors that may contribute to involvement in RTCs. These include vehicular, environmental and human factors. The vehicle factor relates to the road-worthiness of vehicles i.e the vehicle failure resulting from vehicle defects, lack of maintenance and using low quality spare parts, while environmental factors include defects in road design, layout and maintenance. Evidence suggests that human behaviour is the most common factor accounting for more than 85% of all RTCs [3]. Various human factors may include sex, age and driver risky behaviours such as high speed driving and psychoactive substance use while driving [5]. Male drivers, particularly those ages between 22 and 45 years are more exposed to driving than their females' counterparts and are involved in risky behaviours such as drink-driving [6] and non-usage of safety measures which might increase the risk of being involved in RTC among them [7]. According to Wade, [8] and Williams [9], young drivers have been found to have higher rates of crashes than older drivers.

Given by the increase in the prevalence of RTCs along major highways in Nigeria [8] thus, we analyzed the prevalence of RTC and identify factors influencing its' occurrence from data generated from a road side survey aimed at determining the breath alcohol level among drivers plying the major highways in Ibadan, Oyo State. This is key to provide baseline information upon which specific interventions aimed at preventing RTCs can be designed, implemented and evaluated.

2. MATERIALS AND METHODS

This was a descriptive cross-sectional study conducted in Ibadan, the capital of Oyo State and the third largest metropolitan area by population in Nigeria following Lagos and Kano [10]. A road-side survey was conducted in conjunction with the Federal Roads Safety Corps of Nigeria, Oyo State Command on the four major highways that connect Ibadan with Abeokuta, Lagos, Oyo/Ogbomosho, and Ife between 11.00 – 14.00 hrs on 13-14 November 2012. These are the major routes to Abeokuta, Lagos, Oyo/Ogbomosho and Ife towns respectively. The exact location of the survey was determined to be such that any vehicle passing that point was committed to an intercity journey.

A team comprising Federal Road Safety Corps officials and research assistants were manned at each location of the interview. The survey was carried out from 7am to 6pm over a two-day period, and a total of 200 consenting drivers were interviewed. The survey was aimed primarily to determine the alcohol breath level among the drivers, however, data on socio-demographics, psychoactive substance/road safety measures use, and experience of RTC were obtained using an interviewer-administered, semi-structured questionnaire. The questionnaire was adopted from findings of previous surveys in Nigeria [5,10]. Informed consent was obtained from each respondent before commencement of interview.

Data were entered, cleaned, and analyzed using Statistical Package for Social Sciences (SPSS) version 20. Proportion of drivers who reported to have ever involved in RTC as a driver of a vehicle was determined and the correlates of the RTC was explored using chi-squared test. A logistic regression model was built with selected variables that were significantly associated with involvement in RTC at <20% alpha level. These variables include location, previous licence suspension and herbs use. The odds ratios and their 95% confidence intervals were reported. Ethical approval for the conduct of the study was obtained from the joint Ethics Review Board of the University of Ibadan and the University College Hospital Ibadan (UCH), Nigeria.

3. RESULTS

3.1 Characteristics of Respondents

A total of two hundred drivers responded. Eighty-four (42%) of the respondents were located at the Ojoo expressway followed by Ibadan-Ife (24.0%). Majority (98.9%) of the respondents were males and 38% were in the age group 30 and 49 years with mean age of 39.7±10.1 years. Less than one-third (19.5%) of the respondents had tertiary level of education and 77.5% had more than five years' experience in driving. More than a quarter (43.0%) of the respondents reported that their driving licence had been suspended previously and 68% were commercial drivers (Table 1).

3.2 Substance Use among Respondents

Table 2 shows the medications and psychoactive substance currently used by the respondents. Ninety-three (46.5%) of the respondents admitted to current intake of medications such as analgesic (75.8%) and antimalarial (10.5%). More than a quarter (33.5%) of the respondents reported that they used alcohol including beer (61.2%) and palmwine (38.8%). Among 43% of the respondents that used herbs, 95.3% reported taking locally made herb called "Agbo".

3.3 Prevalence of RTC and Factors Influencing It's Occurrence among Respondents

Thirty-three (16%) of the respondents reported to have ever had a RTC. The bivariate and multivariate analysis of factors influencing RTCs among the respondents shows that the odds of experiencing RTC significantly increased by four

folds among respondents that plied Ibadan-Abeokuta expressway compared to those that plied Ojoo expressway (AOR=4.1; 95% CI=1.4-12.2). Similarly, the odds of having RTC increased by five folds among respondents with previous experience of licence suspension compared to those that did not report such experience (OR=4.9; 95% CI= 2.0-12.0).

Table 1. Socio-demographic characteristics of respondents

Variables	Number of divers (n=200)	Percentage (100%)
Location of driver		
Ibadan-Abeokuta express	31	15.5
Ibadan-Ife express	48	24.0
Ibadan-Oyo express	37	18.5
Ojoo express	84	42.0
Age group		
<30	23	11.5
30-39	76	38.0
40-49	66	33.0
≥50-59	35	17.5
Mean ± SD	39.7±10.1	
Gender		
Male	198	98.9
Female	2	1.1
Education		
None	10	5.0
Primary	87	43.5
Secondary	64	32.0
Tertiary	39	19.5
Driving experience		
< 5 years	45	22.5
>5 years	155	77.5
Licence suspension		
Yes	86	43.0
No	114	57.0
Vehicle type		
Private	64	32.0
Commercial	136	68.0

4. DISCUSSION

This study determined the prevalence of RTC and identified factors influencing it's occurrence among commercial and private drivers located along the four major highways that connects to Ibadan. Findings from our study showed that majority of the drivers were younger than 40 years, with the male drivers highly represented compared to the females ones. Young male drivers constitute an important component of the labour force, and are known to be characterized by risky driving behaviours [5]. This findings is consistent with that of previous study in Jos [8]

and Ibadan, Oyo State Nigeria [10]. In the present study, 43.0% of the drivers reported previous licence suspension. This rate of licence suspension is higher than that found in previous study in the United States of America where 7.4% of licence suspension was found in 32 jurisdiction surveyed [11]. This pose a significant traffic safety risk in the country if adequate interventions are not conducted among the suspended drivers.

In this study, the life-time prevalence of RTCs among the drivers was 17.2%. This was higher than the crash rate of 11.1% reported from a previous survey conducted among drivers of public institutions in Ibadan, Nigeria [12], and lower than 26.2% of the commercial intercity vehicle drivers that reported involvement in RTC in Jos, Nigeria [8]. The composition of this study participants which include both private and commercial inter-city motor vehicle drivers and their distance of journey may had contributed to the differences in the crash rate in this study compared to previous study in Ibadan where commercial intra-city drivers which have shorter distance of journey were studied, and Jos where data was collected only among commercial intercity drivers. Earlier study in Ibadan have also documented high rate of RTC among commercial long distance drivers [10].

In spite of efforts by the government and law enforcement agencies to curb the carnage on the expressway, the traffic safety still remains a crucial issue on major highways in the country [13]. In this study, the result of the bivariate and multivariate analysis showed that location and previous experience of licence suspension were significant risk factors of road traffic crash. Although, other factors such as age, gender, education, driving experience and alcohol intake have been reported in previous studies to be significant predictors of RTC [6,10,12] however, this study did not find these factors to be significantly associated with RTC on the logistic regression model. We found that a significant proportion of respondents driving through Abeokuta expressway were more likely to have RTCs compared to those driving through other routes of exit. This finding is related to the fact that this expressway has been reported among those with high incidence of RTC in South West, Nigeria [13]. Previous reports have highlighted the major cause of crash along this route to be dangerous driving and over speeding among the drivers [13,14]. However, further research is needed in order to identify other risk factors of RTC along this route.

Table 2. Substance use among respondents

Variables	Number of divers (n=200)	Percentage (100%)
Currently using medications		
Yes	93	46.5
No	107	53.5
Types of medications used (n=95)		
Analgesic	72	75.8
Antimalaria drugs	10	10.5
Blood tonic/ multivitamin	4	4.2
+Others	9	9.5
Alcohol use		
Yes	67	33.5
No	133	66.5
Types of alcohol used (n=67)		
Beer	41	61.2
Palm wine	27	38.8
Herbs use		
Yes	86	43.0
No	114	57.0
Types of herbs used (n=86)		
Agbo	82	95.3
++Others	4	4.7
<i>+anti-hypentension, cough syrup, eye drop</i>		
<i>++Kola nut, Oroki, Agunmu</i>		

In this study, a significant proportion of drivers with previous licence suspension were involved more in RTCs compared to those whose licences have never been suspended. This result supports motor vehicle administrators, law enforcement and the courts' assumption that all suspended drivers pose a significant traffic safety risk when they continue to drive. Similar finding has been made in previous study in California, United States of America (USA), where it was found that all suspended driver groups have higher crash and conviction rates compared to validly licenced drivers [15]. However, contrary to our finding, other authors in Washington DC, USA reported that drivers with licence suspension had significantly lower rates of RTCs compared to those without licence suspension [16]. The difference between this study finding and that conducted in Washington DC, USA [16] may be attributed to the reasons for licence suspension. Although, in the present study, reasons for licence suspension was not investigated, however studies have found drivers to be suspended for both non-driving (e.g. failure to pay child support) and driving reasons. The non-driving reasons posed the lowest traffic safety risks among the suspended driver groups [15], and is less prevalent in the study area.

Table 3. Factors influencing road traffic crash among respondents

	Ever experienced RTC		Total	P-value	Unadjusted odds ratio	Adjusted odds ratio (lower and upper 95% CI)
	Yes n(%)	No n(%)				
+Locations						
Abeokuta express	10 (32.3)	21 (67.7)	31	0.006	3.9	4.1 (1.4-12.2)
Ife express	8 (16.7)	40 (83.3)	48	0.328	1.7	1.6 (0.5-4.8)
Oyo express	6 (16.2)	31 (83.8)	37	0.399	1.6	0.9 (0.3-2.9)
*Ojoo express	9 (10.7)	75 (89.3)	84	1		
Age						
<40	19 (19.2)	80 (80.8)	99	0.313	1.5	
*≥40	14 (13.9)	87 (86.1)	101			
Gender						
Male	33 (16.7)	165 (83.3)	198	0.529	0.1	
*Female	0 (0.0)	2 (100.0)	2	1		
Education						
None	2 (20.0)	8 (80.0)	10	0.727	1.4	
Primary	15 (17.2)	72 (82.8)	87	0.797	1.1	
Secondary	10 (15.6)	54 (84.4)	64	0.974	1.0	
*Tertiary	6 (15.4)	33 (84.6)	39	1		
Driving experience						
< 5 years	9 (20.0)	36 (80.0)	45	0.474	1.4	
*>5 years	24 (15.5)	131(84.5)	155	1		
+Previous licence suspension						
Yes	24 (27.9)	62 (72.1)	86	<0.001*	4.5	4.9 (2.0-12.0)
*No	9 (7.9)	105 (92.1)	114	1		
Vehicle Type						
Private	12 (18.8)	52 (81.2)	64	0.557	1.3	
*Commercial	21 (15.4)	115 (84.6)	136	1		
Medication use						
Yes	12 (12.9)	81 (87.1)	93	0.203	0.6	
*No	21 (19.6)	86 (80.4)	107	1		
Alcohol intake						
Yes	13 (19.4)	54 (80.0)	67	0.434	1.4	
*No	20 (15.0)	113 (85.0)	133	1		
+Herbs use						
Yes	19 (22.1)	67 (77.9)	86	0.065	2.0	1.7 (0.7-3.9)
*No	14 (12.3)	100 (87.7)	114	1		

* Significant at P <0.005

+Variables included in the multivariate analysis include; location, previous licence suspension and herbs use

5. CONCLUSION

The survey relied on the reports of the respondents, which could not be independently validated. This could result to social desirability bias, which is a situation whereby participants respond to questions in a manner that will be viewed favourably by others. In addition, there was tendency to under-report crashes due to poor recall. To reduce such bias, questions were word in a neutral fashion, while the forced-choice questions that involved equating two options for their desirability were used. The occurrence of RTC was high among the respondents, particularly among those driving through the route that connect Ibadan to Abeokuta and those

with previous experience of licence suspension. Interventions to reduce RTCs may be location specific and have to address causes of licence suspension among drivers.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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