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Determinants of Risk-Taking Behaviours among Road Users in Ilorin, Nigeria

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Abstract

Road traffic crashes are a major source of morbidity and mortality worldwide. This burden is particularly felt in low and middle-income countries with more than twice the rates of developed countries. This study sought to determine the knowledge and perception of Nigerian road users on safe road practices and evaluated human-related risk factors to road traffic crashes within this population.

This was a cross-sectional descriptive questionnaire survey of drivers and riders in an urban population in North-Central Nigeria. Pre-tested questionnaires were administered to drivers and riders at petrol stations within Ilorin metropolis.

905 drivers and riders responded to the survey. 77.8% of the respondents had a positive attitude towards road safety devices like seat belts and crash helmets. The respondents opined that impatience (54.3%) and over-speeding (40.7%) were the most common causes of road traffic crashes. Young age, negative attitude to protective devices, and motorcycle riders were shown to be predictors of risk-driving behaviours amongst respondents.

The study confirms the prevailing impression that risk taking behaviours are more common in the above groups of road users which puts them at increased risk of crashes. Improved driver education and increased enforcement of the laws may positively influence some of these behaviours.

Keywords: Road traffic injury; Road safety devices; Risk-driving behaviours; Road users

1. Introduction

Annually, up to 1.2 million people die from road traffic injuries (RTI) globally and many more suffer morbidity with consequent increase in disability adjusted life years (DALYs). The health and lifestyle consequences of RTIs have been established for several decades now. As far back as 1996, the World Health Organisation had projected that by 2020, RTIs would have ranked as the 3rd highest cause of DALYs (Lin, 1997), and by 2030 RTIs will be the 5th most common cause of death and the 7th most common cause of DALYs (Mathers et al, 2005). This RTI mortality burden is borne mostly by the low and middle-income countries (LMICs) like Nigeria with rates of 28.3 per 100,000 being reported which is more than twice that reported for European countries (11 per 100,000). (Peden et al, 2004)

In our environment, we have found that RTIs assume about 60% of our injury burden and mortality (Solagberu et al, 2000 and Solagberu et al, 2002). Reasons adduced for this high RTI burden in our environment include the collapse of road infrastructure in the absence of viable rail, water or air alternatives (Solagberu et al, 2011). Another reason proffered is the popular use of open lorries carrying goods and passengers together such that after a road traffic crash (RTC), heavy goods fall on the victims resulting in severe injuries. The presence of 'criminal hosts' where a person intentionally throws an object at the vehicle (usually a wheel) or shoots a driver or leaves sharp-pointed objects deliberately on the road to cause burst tires has also been identified as a contributing factor (Solagberu et al, 2011). Poor enforcement of laws especially regarding licensing of drivers has also previously been identified as a factor contributing to RTI morbidity and mortality (Solagberu et al, 2002).

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The adoption of appropriate road traffic safety practices has been shown to have an impact on the RTI burden. Excessive speeding has been shown to increase the risk of RTC and RTI in both the Western world and in African countries and this has informed institution of interventions to reduce speed as a way of reducing RTCs and RTIs (Norton et al, 2004 and Afukaar et al 2001). The perception of risk of RTIs and attitudes towards safety practices like seat belt use among African drivers are also affected deeply by cultural belief and attitudes. In South Africa for example, some drivers believe that witchcraft causes RTCs and this belief makes some of them assume a fatalistic attitude to road safety practices (Peltzer et al, 2003).

The aim of this study was to determine the knowledge and perception of Nigerian road users on safe road practices and to also determine human-related risk factors to road traffic crashes within this population.

2. Patients and Methods

This cross–sectional descriptive study was conducted among drivers and motorcycle riders in Ilorin, North-Central Nigeria. Ilorin is the capital city of Kwara state located on latitude 8.50° North and longitude 4.55° East with a total population of 781,934 (2006 estimate) and an annual growth rate of 2.3 % according to the Federal Population and Housing Census (2009).

Data was collected by trained personnel using pretested questionnaires at five randomly selected petrol stations in Ilorin metropolis. Subjects who had been previously interviewed were not re-interviewed. The questionnaire contained information about demographic characteristics of the respondents, driving experience, type of vehicle driven, driving license, and risk-taking behaviours. Risk-taking behaviour in this study was defined as a respondent who has any one of these three behaviours: driving a vehicle without at least 2 of the rear and wing mirrors; driving a car without a license (unlicensed driving) or driving without having undergone a driving test. Other information obtained include perception on causes and prevention of road traffic crashes, beliefs on protective role of seat belts and crash helmets, and previous involvement in a road traffic crash. Respondents were also asked what they considered as the three commonest causes of RTCs in our environment.

Respondents were categorized as having a 'Supportive' or a 'Negative' attitude based on their response to questions on the role of safety devices. Respondents who support the use of both seat belts and crash helmets was classified as supportive and those who were not in support of any of the devices were classified as having a negative attitude.

Participation in this study was completely voluntary. No respondent identifiable information was collected and responses were confidential.

The data collected was analysed using SPSS, version 25.0 (SPSS, Inc, IBM, New York, US). Descriptive statistics were used to summarize continuous variables including means, standard deviations and proportions. Categorical variables were compared with the Pearson's chi square test and continuous variables between the 2 groups were analysed with the student t test. Variables which showed significant association on bivariate analyses were fit into a logistic regression model to determine the independent predicators for risk-driving behaviour. Differences were considered significant at $p \leq 0.05$.

3. Results

3.1 A total of 905 drivers and riders participated in this study. Majority of the respondents 791 (87.4%) were men. The mean age of the respondents was 39.98 (SD ± 11.09). Majority of the respondents 807 (89.2%) drove motor vehicles and 98(10.8) were motorcycle riders. More than two-thirds of the participants were driving their private vehicles 616(68.1%). The mean number of years of driving experience amongst the respondents was 13.78years (SD ± 10.07) as shown in Table 1.

Table 1: **Age, Number of years driving and Number of times of involvement in a crash**

	Age	No of Years Driving	No of times involved in RTCs
Valid	889	893	256
Missing / Nil	16	12	649
Mean	39.9843	13.7833	1.5781
Median	40.0000	10.0000	1.0000
Std. Deviation	11.09509	10.07249	1.19219
Range	62.00	40.98	9.00
Minimum	18.00	.02	1.00
Maximum	80.00	41.00	10.00

Majority of the respondent vehicles 792(87.5%) had intact rear-view/wing mirrors. Most of the respondents 782(86.4%) possessed a driving license and more than half 515(56.9%) had undergone driving tests before obtaining driving licenses. Overall, 386(42.7%) had at least one of the risk-driving behaviours. Most of the respondent believed that seat belts 808(89.3%) and crash helmets 763(84.3%) are protective against serious injury after road traffic crashes. Majority of the respondents 704 (77.8%) had supportive/positive attitude towards safety devices and 200(22.1%) had unsupportive/negative attitude towards protective role of safety devices (Table 2).

Table 2: Type of vehicles driven by respondents

Type of Vehicle	**N**	**Percentage (%)**
Motor Car	807	89.2
Motor Cycle	97	10.7
Motor Car and Motorcycle	1	0.1
Total	**905**	**100**
Ownership of vehicle	**N**	**Percentage (%)**
Private	615	68
Commercial	289	31.9
Company	1	0.1
Total	**905**	**100**

Table 3 shows the distribution of risk-driving behaviours and attitudes towards protective devices amongst the respondents. Majority of the respondents agreed that use of seatbelts and crash helmets were protective. Only 57.6% of the respondents had undergone a driving test before being issued driver licenses. Three hundred (33.1%) of the respondents had previously been involved in an RTC ranging from 1-10 times per respondent. Majority of those who had been involved in an RTC had only one previous RTC.

Table 3: Risk-driving behaviours and attitudes to protective devices

	Presence of Rearview / Side Mirror	**Possession of Driver's License**	**Pre-licensing Driving Test**	**Are Seatbelts protective?**	**Are Crash Helmets protective?**	**Involvement in car crash**
Yes	792 **(87.5%)**	782 **(86.4%)**	521 **(57.6%)**	808 **(89.3%)**	763 **(84.3%)**	300 **(33.1%)**
No	75 **(8.3%)**	115 **(12.7%)**	330 **(36.5%)**	96 **(10.6%)**	141 **(15.6%)**	591 **(65.3%)**
Missing Values	38 **(4.2)**	8 **(0.9%)**	54 **(6%)**	1 **(0.1%)**	1 **(0.1%)**	14 **(1.5%)**
Total	905 **(100%)**	905 **(100%)**	905 **(100%)**	905 **(100%)**	905 **(100%)**	905 **(100%)**

The most common perceived causes of RTCs amongst the respondents were: impatience/ carelessness 491 (54.3%), over speeding 368 (40.7%) and bad vehicles 308 (33.3%). Only 1 respondent attributed RTCs to supernatural causes as shown in table 4.

Table 4: Perception of Aetiology of Road Traffic Crashes

Aetiology	Respondents (N=905)	Percentage of respondents (%)
Impatience/carelessness	477	52.7
Over-speeding	368	40.7
Bad vehicles	297	32.8
Bad roads	286	31.6
Drunk driving	258	28.5
Human error	178	19.7
Not educated on road signs	105	11.6
Wrong Overtaking	84	9.3
Phone calls while driving	41	4.5
Amateur driver	40	4.4
Poor illumination/light	28	3.1
Ineffective road safety agencies	24	2.7
Motorcyclist impatience	14	1.5
Pedestrian jaywalking	10	1.1
Poor animal crossing	6	0.7
Underage driver	6	0.7
Bad mirrors	4	0.4
Act of the devil	1	0.1

The 3 commonest means recommended by respondents for RTC prevention were: increased patience/care 358(39.6%), traffic rule education 262(29.0%) and provision of good roads 253(27.9). Only 5 respondents recommended restrictions against under-age driving as a solution as shown in table 5.

Table 5: Proffered Preventive Initiatives for Road Traffic Crashes

Aetiology	Respondents (N=905)	Percentage (%)
Patience/Caution	358	39.6
Traffic rule education	262	29
Good road	253	28
Law enforcement	213	23.5
Prompt vehicle repairs	193	21.3
Avoidance of alcohol	141	15.6
Limiting speed	127	14
Prayer	39	4.3
Stop phone calls while driving	22	2.4
Stop driving when tired	19	2.1
Stop night travelling	17	1.9
Use of seat belts/helmet	9	1
No Solution	6	0.7
Good lights	6	0.7
No underage driver	5	0.5
Avoid bribery and corruption	1	0.1

3.2 Determinants of risk-driving behaviour

Univariate analysis shows that there was no significant difference in gender as regards risk-driving behaviour but respondents who are younger than 30years (young drivers) were three times more likely [OR-2.5, 95%CI (1.95, 3.99)] to have risk-driving behaviour than older drivers (age 30years and above). In addition, respondents with risk-driving behaviours had significantly less years of driving experiences than those without risk-driving behaviours [9.6 1±7.58 years Vs 16.89 ± 10.56 years, p <0.0001, 95%CI (-8.53, -6.04)].

More of the respondents with negative attitude towards protective role of safety devices had risk-driving behaviours than those with positive/supportive attitude [52% Vs 40.1%, p=0.003; OR-0.62, 95%CI (0.45, 0.85)]. The proportion of motorcycle riders who had risk-driving behaviours was twice as high compared to those who drove motorcars (76.5% Vs 38.7%) [OR-0.193, 95%CI (0.12, 0.32)]. When subjected to logistic regression, young driving age (p<0.0001), negative attitude to protective devices (p=0.002), and motorcycle riders (p<0.0001) were predictors of risk-driving behaviours.

4. Discussion

Road traffic crashes have been attributed to risk-taking behaviour of road users. This risky behaviour varies for different societies (Tursz, 2000 and Hilton, 2006). Such differences result from variations in the definition of risk between cultures and differences in what is regarded as acceptable or not acceptable in different societies. This study showed that a high proportion of the respondents have risk-driving behaviours (43%). Although this rate is unacceptably high, it is lower than 67% risky behaviour found among drivers in Meleke city of Ethiopia (Hassen et al, 2011). Some reports have suggested that males have more risk-taking driving behaviours than females due to biological and cultural reasons (Rhodes et al, 2011 and Al Reesi et al, 2015). We were however unable to properly compare the difference of risk-taking driving behaviour between male and female drivers in this study because of the limited number of female drivers/riders surveyed.

The findings from this study indicate that young drivers<30 years are twice as likely to be engaged in risky driving behaviours than older drivers which corresponds to reports that show that young drivers are more frequently involved in risk behaviours and traffic crashes than older drivers (Boufous et al 2010 and Beenstock et al, 2000). Some of the factors that have been postulated to expose young people to risk-taking behaviours include genetic, biological, social and environmental factors (Boufous et al, 2010). Upbringing that places high value on responsibility will encourage youth to avoid involvement in risk-taking and enhance development of a sense of personal competence, even when exposed to an adverse social environment (Jessor, 1993).

Respondents with risk-driving behaviours had significantly less years of driving experience than those without risk-driving behaviours. A study in Ethiopia found that driving experience less than 5 years was associated with a higher risk of road traffic crashes (Mekonnen, 2018). On the contrary, a study among teenage and adolescent drivers in California showed that drivers who had more driving experience were found to exercise riskier behaviours, probably due to over confidence (Mike, 2009). Although, increased driving experience was associated with less risky behaviour in this study, driving experience alone, was not found to be an independent predictor of safe driving behaviour. It will be expected that more experience should bring more maturity and caution when driving. This may however not be so in an environment where crashes are attributed to fate. This is supported by a study done in Turkey where drivers who were involved in previous crashes had no change in risk taking behaviour (Yilmaz et al, 2006).

We have previously documented the vulnerability of motorcycle road users to road traffic crashes (Solagberu et al, 2006). In this study, motorcycle riders were twice as likely to have risk-taking behaviour than car drivers. Factors predisposing motorcycle riders to risk-taking behaviour are usually multi-factorial including ability to ply roads that are too narrow or too rough for automobiles and tendency to manoeuvre through during traffic jams (Oluwadiya, 2004). A focused group study in Iran identified the urge for fun, enjoyment, and thrill-seeking among motorcyclists as some of the risk factors for engaging in risky riding (Zamani-Alavijeh et al, 2010).

A significant proportion of our respondents (86.4%) possessed driver's licenses, but only 57.6% undertook a driving test before obtaining the license. This is very similar to 83.5% licensed rate found in South African drivers of minibus taxis, buses and trucks and 87% rate found amongst Kenyan drivers (Dept of Transport, South Africa 2003 and Ndwigah, 2003). This high rate of licensing does not correlate with a similarly high rate of pre-licensing driving tests (57.6% in this study) and 60% seen in Ghanaian drivers (Abane, 1994). This suggests a very poor enforcement of the laws governing road traffic usage (administration of driving tests and processes of awarding licenses) in our environment. A lack of standardization of issuance of driver's licenses and administration of driving tests has been identified as a major contributor to road traffic crashes in Ghana (Forjuoh, 1998).

The perception of the aetiology of RTCs among road users may serve as a meeting point for institution of educational programmes depending on how close these perceptions approach reality. Our respondents identified impatience (52.6%) and over-speeding (40.7%) as the main factors responsible for RTCs; a finding largely in keeping with some studies across Africa where human behavioural factors have been identified as the main reasons for RTCs.

Such behavioural factors include over-speeding, careless driving, dangerous overtaking and driving under alcoholic influence with figures of 74-90% being quoted in Nigeria, Kenya, Tanzania and South Africa (Nzegwu et al 2007; Odero, 1995; Barengo, 2006 & Road Traffic Management Corporation South Africa, 2005). Most of the respondents believed in the protection offered by the usage of seat belts (89.3%) and crash helmets (84.3%) and though actual usage was not observed in this study, these figures are much higher than the rate of actual usage in the driving population.

In both Ibadan and Benin (cosmopolitan Nigerian cities), a 52% seat belt usage was observed, while in South Africa, an 81% national usage rate was observed (Iribhogbe et al 2008; Sangowawa et al 2006 & Olukoga et al 2005). Reasons for such low seat belt usage may include; lack of enforcement of the laws and in some cases, fatalistic orientation of the drivers such as seen in some South African and Ghanaian drivers (Peltzer et al 2003 & Forjuoh et al 1998). There was a significantly low level of belief in the use of crash helmets by the motorcycle riders in this study; a fact which is worrisome and may account for the low level of crash helmet use in our environment. It is the more worrisome because motorcycle transport has continued to occupy a significant portion of our daily transport life because of reasons we have elucidated earlier (Solagberu et al 2006). These reasons include the fact that motorcycles are cheaper than motorized 4-wheelers; they are the only means of transport to some streets and homes; their ability to circumvent traffic jams and finally, they serve as a viable source of income. Solagberu et al (2006) found that none of the motorcycle injury victims in their study had a helmet on and that 87.5% of the deaths from MCI were from head injuries. Efforts of the Federal Road Safety Commission (FRSC) should be consolidated by education of the populace and enforcement of laws to ensure an increased use of seatbelts and crash helmets.

The limitations of this study include the possibility of recall bias that is characteristic of surveys and the reliance on self-reported data which may also have led to an under estimation of the prevalence of risky driving behaviours in respondents. However, studies assessing self-report against objective measures of various health risk-taking behaviours have shown that confidential self-report provides accurate and reliable data (Wills et al 1997).

This study has shown that respondents who are younger than 30 years (young drivers) have more risk-driving behaviour than older people and more of the respondents with negative attitude towards protective role of safety devices had risk-driving behaviours than those with positive/supportive attitudes. Motorcycle riders also had significant risk-driving behaviours when compared to motorcar drivers. We posit to say that improved education of the populace and increased enforcement of the laws may positively change some of these behaviours.

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