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OCCUPATIONAL INJURIES AMONG COMMERCIAL MOTOR DRIVERS IN BAUCHI, NIGERIA

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ABSTRACT

Background: Road traffic crashes and injuries mostly affect commercial drivers in Nigeria. These crashes and injuries are common in Bauchi, north-eastern Nigeria, where there is associated huge level of morbidity and mortality. The study examined road traffic accidents and injuries, the perceived causes and safety precaution among commercial drivers in a motor park in Bauchi. **Objectives:** The study assessed the: frequency of road traffic injuries and the body areas affected; the perceived causes of the road traffic crashes and injuries; the safety precautions among the commercial drivers and the perceived single most important measure to control the road traffic crashes and injuries. **Methods:** Self-designed interviewer-administered open-ended questionnaires were administered to a randomly selected sample of commercial drivers at Bauchi Central Motor Park. Data was analysed using SPSS version 23 and Microsoft Excel 2013. **Results:** The respondents (n=103) reported a high occurrence (daily rate of 4.9%) of non-specific (65.0%) road traffic injuries. They reported poor awareness (18.4%) of the recommended speed limit and poor practice of safe driving precautions. They perceived safe road infrastructure (50.5%) more than over speeding (5.8%) as single most important measure to control the crashes and injuries. **Conclusion:** Road traffic accidents and injuries occurred frequently among the respondents. They reported poor knowledge of the major cause of RTCs and injuries and perceived safe road infrastructure more than control of speeding for the control of these crashes and injuries. Most of them were unaware of the recommended speed limits, and did not practice safe driving precaution. A multi-faceted approach with emphasis on controlling vehicular speed should be utilised to address these gaps and optimize the occupational health of the commercial drivers.

KEYWORDS: Road Traffic Injuries, Road Traffic Crashes, Commercial Drivers, Occupation.

INTRODUCTION

The major occupational injuries among commercial motor drivers are road traffic injuries. Road traffic injuries are major contributors to the global burden of disease.[1] Annually, there are estimated 20-50 million injuries and 1.25 million deaths resulting from road traffic accidents (RTAs).[1] A road traffic crash, RTC, is defined 'as an event that produces injury and/or property damage, that involves a motor vehicle in transport and occur on a traffic way or while the vehicle is still in motion after running off the traffic way.'[3] RTCs contribute to 21.0% of total injury and 2.1% of total deaths globally.[4] Over 3,400 people die daily due to road traffic injuries.[5] These injuries mostly affect the group of 15-25years[6] and are major causes of mortality in the developing economies,[1] where transportation is mainly by road. In these countries, young and middle aged men work as commercial drivers as means of living. RTCs cost most countries about 3% of their gross domestic product.[7]

Although road traffic crashes are multifactorial,[8] vehicular speed is implicated in most cases[9] and is a major risk factor for the severity of morbidity and mortality.[10,11] The World Health Organisation estimates that over speeding contributes to about one-third of deaths from road traffic accidents, RTAs.[4] The speed-accidents are affected by the drivers' demographic profile, road environment[12] and traffic regulations.[13,14] The WHO also reports that without sustained action, road traffic crashes are predicted to become the seventh leading cause of death by 2030.[4]

In Nigeria, RTCs are major causes of trauma related deaths[15] and loss of properties. The Federal Road Safety Corps, FRSC, an agency responsible for ensuring road safety in Nigeria reports that 90% of RTCs are caused by human factors including speeding, lack of concentration while driving, driving under influence of drugs and alcohol, pedestrians, tiredness of drivers etc. It further reports that 10% of RTCs in Nigeria are caused by mechanical factors including bad vehicle engines, break

failures, faulty vehicular security system etc. The environmental factors of RTCs include bad road, bad weather conditions etc.[16,17] found that the human factor is the most potent contributor to motor vehicular crashes in Nigeria.[3] Identified poor road condition as the highest perceived cause of crashes among drivers.[18] found that the nature of the road, time and weather are some of the perceived major contributory factors to road accidents by drivers.

The burden of RTCs and injuries among drivers in Bauchi, north-eastern Nigeria is enormous. The Federal Road Safety Corps (FRSC) Bauchi Sector Command documents the RTCs that occur along the five major routes that drivers ply to and from Bauchi.These routes are Bauchi-Jos; Bauchi-Kano; Bauchi-Dass; Bauchi-Maiduguiri and Bauchi-Gombe. From the FRSC records, in 2015, 44 RTCs occurred along the routes; involved 9 buses and 27cars; injured 128 persons and resulted in the deaths of 63 persons. In 2016, 47 RTCs occurred along the routes; involved 14 buses and 31cars; injured 171 persons and resulted in the deaths of 57persons.In 2017, 62 RTCs occurred along the routes; involved 19 buses and 41cars, injured 273 persons and resulted in the deaths of 43 persons. Over half (56.6%) of these RTCs involve commercial vehicles.[19,20]

It remains unclear why the road traffic crashes and injuries continue to be high among the commercial drivers in Bauchi. Therefore, the study was aimed at examining the road traffic accidents and injuries, the causes and safety precaution among the commercial drivers in Bauchi, north-eastern, Nigeria. The objectives of the research were to assess the: frequency of road traffic injuries and the body parts affected; perceived causes of road traffic crashes and injuries; safety precautions among the drivers and the perceived single most important measure to control road traffic crashes and injuries.The study provides crucial information on the perceived causes of RTCs and injuries and the extent of practice of safety precaution among the commercial drivers. The data obtained from the study is important in designing interventions aimed at reducing road traffic crashes and injuries and therefore optimize the occupational health of these commercial drivers for maximum performance.

METHOD

The study was a descriptive cross-sectional study that was conducted among the commercial taxi and bus drivers that ply to and from Bauchi Central Motor Park, Muda Lawal, Bauchi. Bauchi is the capital city of Bauchi, located on the geographical coordinates of 10.3014159° N, 9.846282° E[21] in north-eastern Nigeria. Bauchi Central Motor Park, Muda Lawal, Bauchi was established from part of the popular Muda Lawal Market of Bauchi in 1997.The study population was made up of an estimated 1,000 commercial drivers of five- seater taxi cars and seven-seater buses who ply to and from Kano, Jos, Dass, Maiduguiri and Gombe cities etc. to the motor park.. These commercial drivers are under the aegis of Bauchi branch of National Union of Road Transport Workers (NURTW).[22]

The research tool for the study was an interviewer-administered open-ended questionnaire on a randomly selected sample of consented commercial drivers that ply from the motor park. The study was conducted on consented commercial drivers that were available at the motor part during the four-day data collection in October 2017. The design of the questionnaire was to obtain a wide range of information from the respondents. The sample size utilised was higher than the calculated sample size using the Taro Yamane formula. Research ethics was observed throughout the study. The ethical clearance for the study was obtained from the Bauchi State Ministry of Health Research Ethics Committee. Permission was obtained from the executives of the drivers' union of the Bauchi Central Motor Park. Research consent was obtained from each respondent. Two research assistants participated in the data collection. The data analysis was conducted using Microsoft Excel 2013 and SPSS version 23.

RESULTS

103 copies of correctly filled interviewer-administered open-ended questionnaire were utilised for the study.

3.1 Socio-demographic profile of the respondents

The result for the socio-demographic profile of the respondents is shown in table 1 below.

Table 1: Socio-demographic profile of the respondents.

Sex	**Frequency**	**Percentage**
Male	103	100.0
Female	0	0
Total	103	100.0
Age	**Frequency**	**Percentage**
20 - 29 years	12	11.7
30 - 39 years	41	39.8
40 - 49 years	27	26.2
50 - 59 years	16	15.5
60 years and above	7	6.8

Total	103	100.0
Marital Status	**Frequency**	**Percentage**
Single	3	2.9
Married	97	94.2
Divorced	3	2.9
Total	103	100.0
State of Origin	**Frequency**	**Percentage**
Bauchi	84	81.6
Kano	3	2.9
Jigawa	9	8.7
Gombe	2	1.9
Katsina	2	1.9
Jos	1	1.0
Nassarawa	1	1.0
Kaduna	1	1.0
Total	103	100.0
Highest Educational Qualification	**Frequency**	**Percentage**
No formal Education	28	27.2
First leaving Certificate	39	37.9
WAEC/NECO/SSCE/GCE	33	32.0
HND/BSC	3	2.9
Total	103	100.0
Job Duration	**Frequency**	**Percentage**
1 - 5 years	11	10.7
6 - 10 Years	21	20.4
11 - 15 years	23	22.3
16 - 20 years	17	16.5
above 20 years	31	30.1
Total	103	100.0

(Researcher's data computation 2018 using SPSS version 23 and Microsoft Excel 2013,n=103).

All the respondents were males. Majority (94.2%) of respondents were married while 2.9% were either not married or divorced.

Majority of the drivers (39.8%) were within the age bracket of 30-39years of age. The least (6.8%) response was for ages 60 years and above. Responses from the age brackets of 20-29,40-49 and 50-59 years were 11.7%,26.2% and15.5% respectively.

Most (81.6%) of the responses were from Bauchi State. The least responses for state of origin, (1.0%), were for Jos, Nassarawa and Kaduna states each. Other responses were 2.9 % for Kano, 8.7% for Jigawa state and 1.0% response each for Gombe and Katsina states.

Close to a third (27.2%) of the respondents had no formal education. 37.9% and 32.0% of respondents had First leaving Certificate and WAEC/NECO/SSCE/GCE respectively as the highest educational qualification. The least response (2.9%) had HND/BSC.

About a third (30.1%) of respondents admitted that they had worked as commercial motor drivers for over 20 years. 10.7% had worked for 1-5 years, 22.3% for 11-15 years and 16.5% for 16-20years in the commercial motor driving.

3.2 Frequency of road traffic injuries and body parts affected

The response to the frequency of road traffic injuries is shown in the chart below.

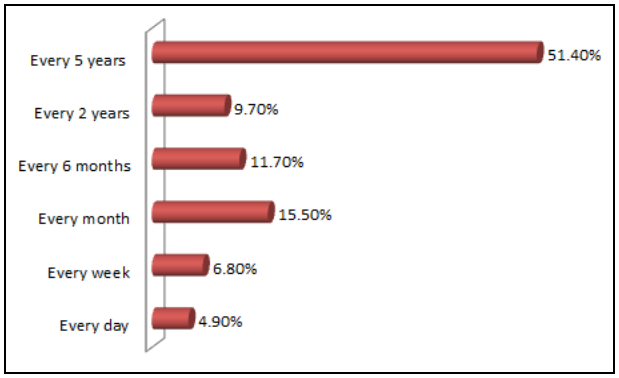

Figure 1: Response to frequency of road traffic injuries (Researcher's data computation 2018 using SPSS version 23 and Microsoft Excel 2013,n=103).

From figure 1 above, the highest response (51.4%) was every five years while the least response (4.9%) was every day. Responses for 2yearly, 6monthly, monthly and weekly occurrence of road traffic injuries were 9.7%, 11.7%.15.5% and 6.8% respectively.

The response to body areas affected by the RTCs is shown in the bar chart below.

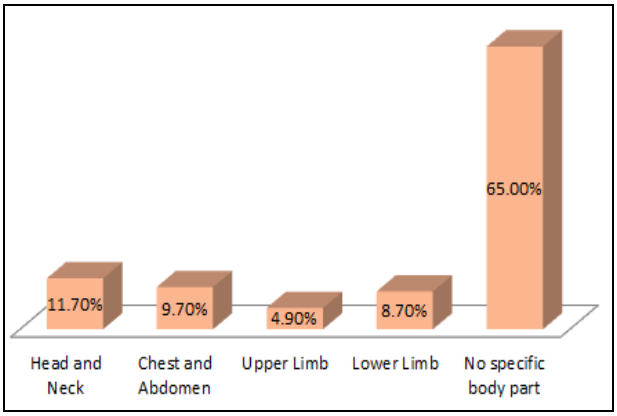

Figure 2: Response to body areas affected by road traffic accidents(Researcher's data computation 2018 using SPSS version 23 and Microsoft Excel 2013, n=103).

Most(65.00%) of the respondents admitted that there was no specific body areas that were injured by RTCs.The least(4.90%) response admitted that the upper limb was mostly injured by RTCs.Responses for road traffic injuring affecting head and neck;chest and abdomen and lower limb were 11.70%,9.70% and 8.70% respectively.

3.3 Perceived causes of road traffic injuries

The response to the perceived causes of road traffic injuries is shown in the table below.

Table 2: Response to perceived causes of road traffic injuries.

Perceived causes of road traffic crashes and injuries	Frequency
Driving into pot holes on the highway	56.50%
Head on-collision with another vehicle	33.30%
Burst tyre(s)	0.10%
Hitting pedestrian(s) along the highway	0.10%
Total	100.00%

(Researcher's data computation 2018 using SPSS version 23 and Microsoft Excel 2013, n=103).

From table 2 above, most (56.5%) of the respondents admitted that road traffic crashes and injuries occurred due to pot holes on the highway while the least response (0.1%) admitted that RTCs were cause by burst tyre(s) or hitting pedestrians on the highway. About a third (33.3%) of the respondents admitted that head–on collision was the perceived cause of road traffic crashes and injuries.

3.4 Safety precautions among the drivers

The responses to awareness of speed limit on the highway is shown in the chart below.

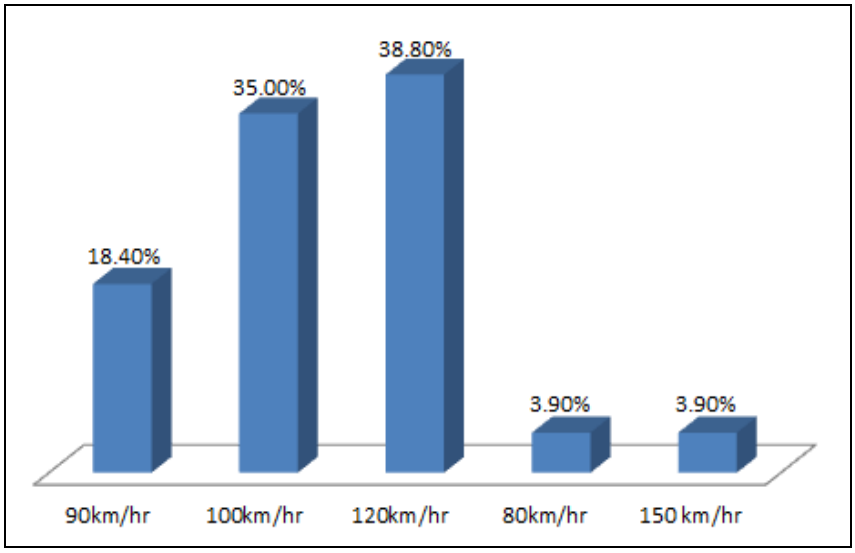

Figure 3: Responses to awareness of speed limit on the highway (Researcher's data computation 2018 using SPSS version 23 and Microsoft Excel 2013, n=103).

Majority(38.8%) of the respondents admitted that 120km/hr is the recommended speed limit on the highway in Nigeria. The least response(3.9%) admitted that 80 km/hr or 150km/hr is the speed limit on the highway. Responses for 100 km/hr and 90km/hr as the speedlimit at the highway were 35.0% and 18.4% respectively.

The responses to practice of other selected safety precautions in motor driving is shown in the bar chart below.

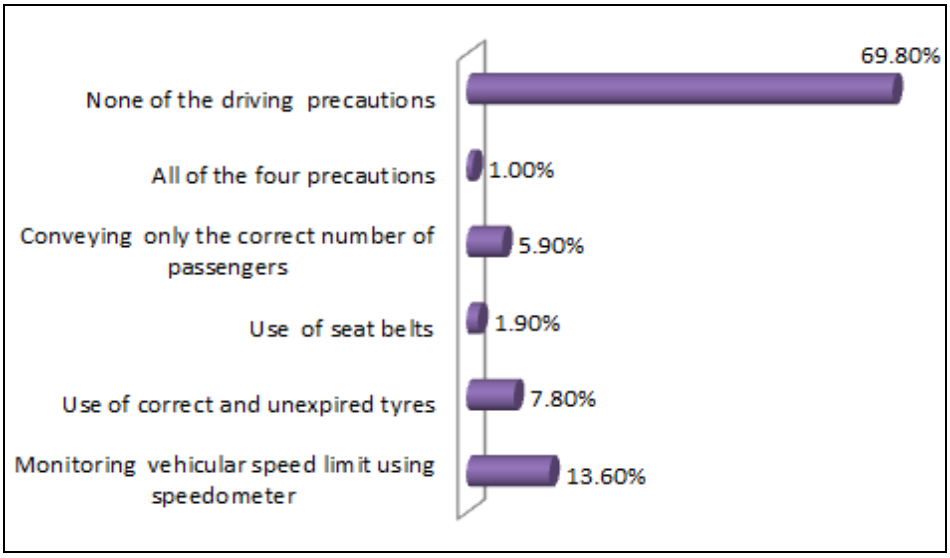

Figure 4: Responses to practice of safety precautions (Researcher's data computation 2018 using SPSS version 23 and Microsoft Excel 2013, n=103).

From figure 4, majority (69.8%) of the respondents admitted that they were not observing any of the four safe driving precautions presented to them. The least response(1.0%) admitted that they observed all the four selected safe driving precautions.13.6% of respondents admitted that they monitored their vehicular speed using the speedometer. Responses to the use of correct and unexpired tyres; use of seat belts and conveying only the correct number of passengers were 7.8%,1.9% and 5.9% respectively.

3.5 Perceived single most important measure to control road traffic crashes and injuries

The responses to perceived most important measure to reduce RTCs and injuries is shown in the bar chart below:

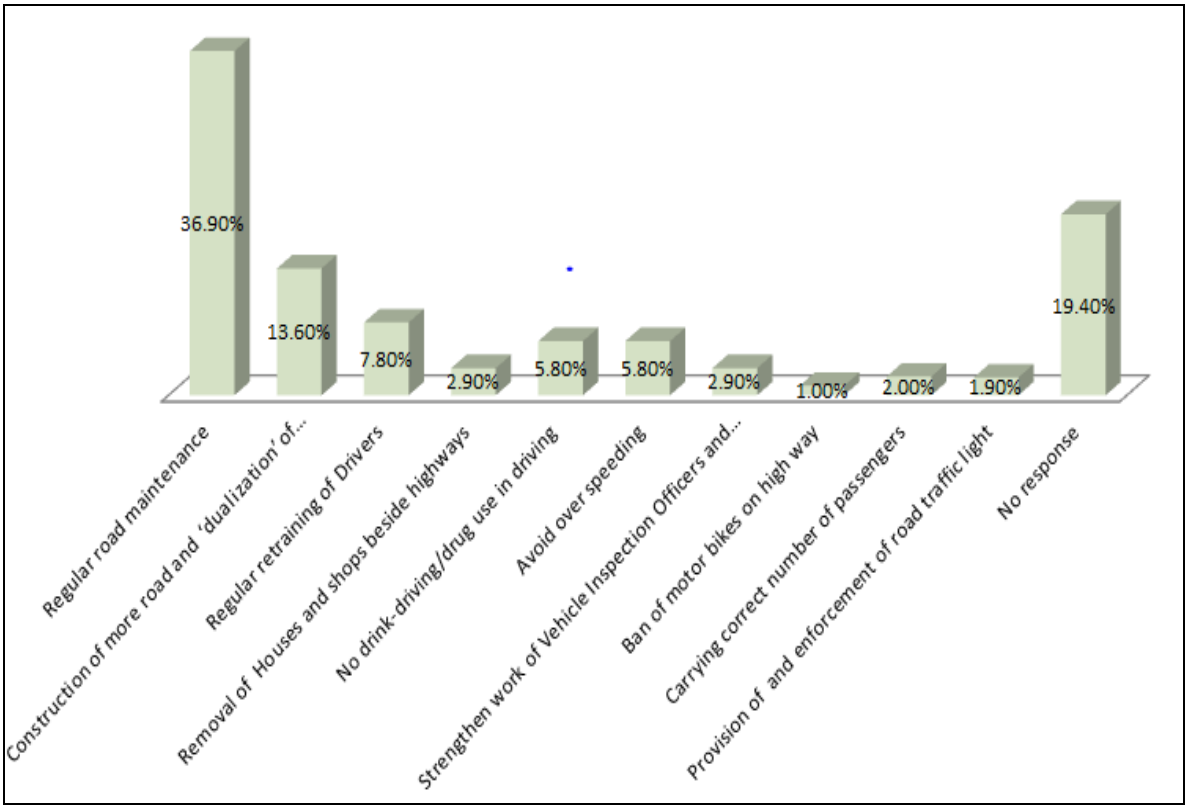

Figure 5: Response to perceived single most important measure to control RTCs and injuries (Researcher's data computation 2018 using SPSS version 23 and Microsoft Excel 2013,n=103).

From figure 5 above, most of the perceived single most important measure to control RTCs and injuries centred on road infrastracture. 36.9% and 13.6% of respondents perceived regular road maintenance and construction of more roads with dualization of some narrow roads respectively as the single most important measure to control RTCs.The least response(1.0%) perceived that a ban on motor bikes on the highway is the most important measure to reduce RTCs. As many as 19.4% of the respondents had reported no perception of the most important measure to control RTCs and injuries.The least response,1.9%, perceived that the the provision and utilisation of traffic lights are the most important measures to reduce RTCs. The response to conveying of the correct number of passengers was 2.0%.The response to strengthening the functions of the Vehicle Inspection Officers (VIOs) and FRSC was 2.9%.This(2.9%) was the same for removal of houses and shops beside the highways.The response to avoidance of over speeding and non- use of alcohol and drugs for driving was 5.8% while the response to regular retraining of drivers was 7.80% .

4.0 DISCUSSION

The study examined the road traffic injuries,causes and safety precaution among a sample of commercial drivers in motor park in Bauchi,Nigeria.The respondents were all males who were mostly married.

The study found an approximately 5% daily occurrence of road traffic injuries among the respondents.It also found a 51.4% five-yearly occurrence of the road traffic injuries. The latter finding is not consistent with the study by[23] which found a 11.4% five year prevalence among drivers in a tertiary institution in Nigeria.The higher rate in the study may have been contributed by a relatively less educated respondents in the study compared to the study by[23,24] found that RTCs are commoner among non-formally educated drivers than the educated ones.

The study indicated that the majority(65.0%) of the respondents had no specific body part injured by RTCs.This could imply that multiply body parts were injured from the RTCs.The response to lower limb injuries from RTCs was 8.7%.The latter finding is lower than the 12.1% found among motocyclists by.[18] The higher rate in[18] may have been contributed by the greater exposure of the lower limbs of motocyclists to hazards than motor drivers who are better protected inside the vehicles.

Majority (56.5%) of the RTCs were reportedly caused by pot holes on the highways.This finding is consistent with the studies conducted by.[25,26] The study underscore therefore comfirms the huge effect of unsafe road infrastracture on the occurrence of RTCs reported in other studies in Nigeria.

The study indicated that 18.4% of respondents were aware that 80km/hr is the recommended speed limit on the highway for taxis and buses in Nigeria. Majority (38.8%) admitted that 120km/hr is the recommended speed limit.Vehicular speed is a major contributor to road traffic injuries and deaths from RTCs.[7] Found that a 1km/hr increase in speed can cause as much as 3% and 4-5% increases in RTCs and fatal RTCs respectively. The risk of a healthy pedestrian dying from from an RTC from a vehicle moving at 50km//hr is less than 20%.[7] However,this increases to up to 60% if it occurs at 80km/hr.[7] The FRSC of Nigeria recommends 100km/hr as the highest speed limit in Nigeria.This applies only to private cars on the expressways.The speed limit for for taxis and buses on the expressways is 90km/hr. The speed limit for private cars, taxis and buses on the expressways is 80km/hr while the speed limit is 50km/hr for private cars,taxis and buses at road build up.[27] The FRSC reports that speed violation is the highest causative factor of RTCs in Nigeria with commercial drivers involved in 56.6% of these RTCs.[19] Hence there the study established a clear unawareness of the speed limit on the highways by majority of the respondents.

Furthermore, the study indicated a poor level of practice of safe driving precautions among the responents. Only 1.0% of the respondents admitted the use of all the four selected safe driving precautions. About 70.0% of them did not practice any of the four precautions. These precautions are the use of seat belts, use of correct and unexpired tyres, conveying only the correct number of passengers in the commercial vehicles and monitoring of speed with the speedometer to monitor safe speed limits. The poor use of seat belts as indicated by a 1.9% response calls for sustained change of the drivers' perception and utilisation of the seat belts.Seat belts are the safest protection of the drivers and other passengers inside the vehicles[16] and restraining the occupants of vehicles from being thrown out by force of inertia during collision.[18] They have been found to reduce road traffic deaths to 40-50% and 25-75% for front and rear occupants of vehicles respectively.[27]

The study indicated that most of the respondents perceived safe road infrastracture as the single most important measure to control road traffic crashes and injuries. While 36.9% response was for regular road maintenance, 13.9% response was for construction of more roads and dualisation of some roads.These responses on safe road infrastracture, add up to 50.5%. This is in contrast to only 5.8% response who perceived that avoidance of overspeeding is the the single most important measure to control RTCs and road traffic injuries. This finding clearly underscores the wrong perceiption that the drivers had on the major causes and therefore control of RTCs and injuries on Nigeria roads. The FRSC has consistently found that that speed violation is the single most important causative factor in RTCs and injuries in Nigeria.[19] The study however indicated that the commercial drivers do not share the

perception. Instead, these commercial drivers appear to attach much less value to overspeeding than unsafe road infractracture as the major cause of RTCs and injuries. Arguably, the respondents would expect a drastic reduction in RTCs if the roads are maintained regularly and widened at certain areas. This is not necessirily true. Infact[18] found that drivers tend to overspeed on smooth roads.A multifaceted strategies should be utilised and sustained to address these identified gaps in the drivers' perception and driving culture that militate against road safety. The FRSC of Nigeria should strengthen there campaign for safe drive and enforce that drivers maintain the recommended speed limit, and prosecute traffic offenders accordingly.

The study had some limitations. Data on the details of the morbidity were not obtained. Data on mortality were only based on the data records of the FRSC which may have missed some RTCs and injuries due to oversight. Important information may have been missed from responents who were not present at the study site during the survey. Some of the responses may have been biased.However, the study utilised the interviewer-based, open-ended questionnares, with other stategies to optimize the validity of the data.

CONCLUSION

The respondents of the study reported a high occurrence of road traffic injuries which mostly affected non-specific body areas. The injuries were mostly caused by perceived poor road infrastracture. They reported poor awareness of recommended speed limit and poor practice of safe driving precautions. The respondents reported poor perception of over speeding as the single most important cause of road raffic crashes and injuries. The huge burden of these RTCs and injuries could be addressed through a multi-faceted approach including change of practice through health education,maintenance of safe road infrastracture and enforcement of traffic laws. These strategies should emphasize on limiting vehicular speed on the roads and maximize road safety and occupational health of the drivers.

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