Innovations

Road traffic accident casualties and safety culture on Nigerian roads: the way forward

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Abstract
Nigeria, Africa's largest country and economy by population and gross domestic products (GDP), loses as much as three percent of her GDP to road crashes. Growing vehicle ownership and rapid urbanisation across the continent are factors which have increased the incidence of road accidents. World Bank, has underscored the significance of reducing road traffic deaths and injuries as that would result in substantial long-term income gains for Nigeria and other low and middle income countries. Apart from the human losses that accident brings, road accidents are not economically sustainable. Studies estimate that road accidents come at a cost equivalent to about 3% of the gross domestic product (GDP) in countries with a high GDP per capital. Nigeria loses about 80billion naira annually to road accidents. Of all subjects that are involved in road traffic accidents in Nigeria, 29.1 percent suffer disability and 13.5 percent are unable to return to work. It has been projected that road traffic injuries will be the second most common cause of disability – adjusted life year loss in developing countries by the year 2030.

Keywords: 1.*Accident; 2.casualties; 3.roads; 4.Nigeria; 5.culture;6. inattention.*

1.0 Introduction

In Nigeria an average of 12 people died daily in 2019 road accidents crashes. In all 4,163 people were killed in crashes during the period. However, 59,724 people were involved in the road crashes in which 14,425 vehicles were involved, while 27,408 were injured in the accidents and 27,523 escaped without injuries (FRSC, 2020)

The World Health Organisation's 2018 Global status report on road safety shows that one out of every four road crashes that occur in Africa are reported in Nigeria. Every four hours, no fewer than two lives are lost on Nigerian roads. And every year about 20,000 of the 11,654 million vehicles in the country are involved in accidents (Okogba, 2018; National Bureau of Statistics, 2019, FRSC, 2018).

The number of lives lost to road traffic accidents from January 2013 to June 2018 are as follows: 2013 – 5,539; 2014 – 4,430; 2015 – 5,400; 2016 – 5,053; 2017 – 5,049; 2018 – 5,449. This tally indicates that in 2018, no fewer than 126 lives had been wasted in road crashes. Summation of these figures gives a heartrending total of 28,195 lives crushed in 68 months, an equivalent of 415 lives per months, 14 persons day, and two lives every four hours. This makes Nigeria one of the countries with very high road fatalities in the world.

There were 33.7 deaths per 100,000 people in Nigeria every year, making Nigeria one of the countries with the highest number of fatality in Africa. Zimbabwe has the worst road fatality in the world with 74.5 deaths per

100,000 inhabitants. The world average is 17.4 Africa is 26.6, and according to the International Transport Forum (ITF), road safety annual report for 2018 while Norway has the least road fatality with two deaths per 100,000 inhabitants (FRSC, 2018; WHO, 2018; Atubi, 2020).

The number of registered vehicles in Nigeria in 2018 was put at 11,653,871 with an estimated population of 198 million, the vehicle per population ratio was 0.06 (NBS, 2018). Since most crashes involves at least two vehicles and given that 10,026 crashes were recorded in 2017, it means that at least 20,000 of the 11,654 million registered vehicles were affected in the crashes. The figure would be more, if multiple auto crashes were included.

Approximately 1.25 million people die each year on the world's roads, and between 20 and 50 million sustain non-fatal injuries. The global status report on road safety is the first broad assessment of the road safety situation in 178 countries, using data drawn from a standardized survey. The results show that road traffic injuries remain an important public health problem, particularly for low – income and middle – income countries like Nigeria (WHO, 2017).

By most accounts, speed has been identified as a major cause of road traffic accidents; influencing the risk of occurrence and the severity of injuries arising from such accidents.

Speed contributes to almost 30 percent of deaths on the road in high – income countries and about 50 percent in low-income nations, including Nigeria (WHO, 2017). In the 2016 RTC report, 379 persons died and 2,338 others sustained varying degrees of injuries in November while 391 died and 2,557 were injured in October.

This statistics informed the speed control policy of the Federal Road Safety Commission (FRSC) which first phase was inaugurated nationwide on February 1, 2017. The policy prescribes the installation of speed limiting device in vehicles to keep them within limits stipulated by the Nigeria highway code. It means that no matter how the driver tends to accelerate, his vehicle cannot exceed the speed limit programmed in the device.

For private cars, the code stipulates a maximum speed limit of 80kilometre per hour (km/h) on highways and 100km/h on express ways.

Taxis and buses are expected to maintain speed limit of 80km/h and 90km/h on highways and expressways respectively. The code limits tankers and articulated vehicles to 50km/h on highways and 60km/h on expressways.

Although there has been some improvements made by the FRSC in conjunction with the police force but there are still lots of room for improvement. Presently, both of them do not have sufficient resources for checking speed violations, careless and dangerous driving and parking offences among others. Unfortunately, such an important issue as reducing road traffic accidents in Nigeria has not yet received the adequate attention that it deserves.

Indeed, so serious have the problems of road accidents become in recent time that driving on the roads is one of the most closely regulated activities in the world today. The worrisome aspect is that 90% of the statistics are from developing countries like Nigeria. Before 2030, deaths from road traffic accident (RTA's) will surpass cerebrovascular disease, tuberculosis and HIV/AIDS. Mr. Vice Chancellor, Sir, other studies on road traffic accidents patterns include (Atubi 2010a; 2010b; 2010c; 2011b, 2011g; 2012b, 2012g; 2012w; Atubi 2013d, 2017 and 2018).

It is estimated that the macro-economic burden of road injuries for 166 countries shows that between 2015 and 2030, road injuries will cost the world economy $1.8 trillion through a combination of diversion – healthcare expenditure that would otherwise have been used for savings or investment and losses in employment due to mortality and morbidity. This figure is more than the aggregate GDP of Canada (the World's tenth largest economy) in 2017. The economic burden of road injuries is equivalent to an annual tax of 0.12% on global GDP during this period (World Bank, 2019). See Table 1.

Table 1: Comparison of Macroeconomic loss and lifetime disease burden by World Bank Region and country income group

	Population in 2015 Million (Global %)	Product in 2015, Billions of constant 2010 USS (Global %)	Economic loss in 2015-30 billions of constant 2010 USS (global %)	Disability adjusted life years in 2015, million (global %)
By World Bank Region				
East Asia and Pacific	2251 (31.3%)	20236 (27.3%)	560 (31.1%)	21.5 (32.2%)
Europe and Central Asia	906 (12.6%)	22.466 (30.3%)	345 (19.2%)	5.8 (8.7%)
Latin America and Caribbean	584 (8.1%)	5339 (7.2%)	115 (6.4%)	5.8 (8.7%)
Middle East and North Africa	404 (5.6%)	3146 (4.2%)	103 (5.8%)	5.8 (8.6%)
North America	356 (4.9%)	18500 (25.0%)	515 (28.6%)	2.6 (3.9%)
South Asia	1744 (24.2%)	2796 (3.8%)	121 (6.7%)	15.9 (23.8%)
Sub-Saharan Africa	950 (13.2%)	1621 (2.2%)	38 (2.1%)	9.5 (14.1%)
By World Bank Country income group				
Low income	621 (8.6%)	374 (0.5%)	11.0 (0.6%)	6.8 (10.1%)
Lower-middle income	2856 (39.7%)	5812 (7.8%)	202 (11.2%)	26.8 (40.1%)
Upper middle income	2521 (35.0%)	18952 (25.6%)	621 (34.6%)	26.0 (38.9%)
High income	1196 (16.6%)	48966 (66.1%)	963 (53.6%)	7.3 (10.9%)
Global (166 countries)	7195 (100%)	74103 (100%)	1797 (100%)	70.0 (100%)

Source: World Bank, (2019)

Again Atubi (2020c) examined the economic burden of road traffic accidents in Nigeria. As can be seen, road traffic accidents are a global problem resulting in deaths, physical injuries, psychological problems and financial losses. These financial damages have immediate consequences and long term consequences on the victims and their families. Curbing road traffic injuries would not just be a victory for the transport sector but a significant milestone for global development, with immediate and far reaching benefits for public health, wellbeing, and economic growth.

2.0 Phases of accident

Accident as we all know are caused and as much they don't just happen, the critical evaluation of accident phenomenon clearly indicate three specific phases. The three phases is the total consumption of an accident at any point when it is recorded. The phases as a matter of fact are interwoven and occur sequently after each other. These phases are pre-accident phase, the accident phase, and the post-accident phase of highway safety.

i. **Pre-Accident Phase:** The pre-crash phase groups together all preventive or precautionary measures aimed at controlling or abating road accidents. Under this phase, falls all the contributory factors like the environment, the vehicle, the road users/persons, and the preventive or precautionary measures taken to normally avert accident. It is an indication of several conditions that are capable of causing accident. In other words, it implies all situations and circumstances preceding the occurrence of an accident. We can as well evaluate certain conditions that are capable of causing an accident before they are recorded. In short, this phase is concerned with accident avoidance.

ii. **The Accident Phase:** Once the pre-crash phase cannot be averted, the crash phase is the actual occurrence of the accident, when the mechanical device is involved in actual collision resulting in an accident, the type of outcome from the accident to the victim also belongs to this phase. Similarly, is the spot of which the accident occurred and the time of the day, which are all major indices of the crash phase. Research had demonstrated that up to 80% reduction in deaths of drivers and passengers can be achieved through the use of safety belts alone (Final Rule, 1984; Mueller et al, 1988; Rivera, et al, 2000). The focus of this second phase, therefore, is on injury prevention.

The following actions should be taken during road traffic accident:

Assess the Situation:

- Locate the victim
- Examine the victims quickly
- Prevent further risk of fire, explosion, road traffic
- Keep the vehicle stationary
- Switch off engine, fuel and battery connection
- Display warning signals
- Send for help

Care of the Victim:

- Rescue the trapped casualties
- Look for breathing, heart function and consciousness
- Care for unconscious cases first
- Take care of bleeding and fracture
- Use car first aid kit if available
- Transport casualty to nearest hospital

Care of the Vehicle:

- Keep the vehicles immobilized and in safety custody
- Protect the property from damage
- Take help of local people
- Inform police

ii. **Post-Accident Phase:** The post-crash phase can be described as the process of evaluating or assessing the consequences of road accidents. Such evaluation is based on socio-economic, environmental and political effects, using quantifiable and qualitative analytical tools. In this phase, we are concerned with saving those who need not die, with reducing hospitalization, permanent disability and unnecessary deaths. Indeed, the focus is on accessibility to adequate and prompt emergency communications, transportation and medical care, that determine the livelihood of the continuing survival of the survivors of the crashes. Therefore, the concern of this phase is on severity reduction, which would include the availability and competence of ambulance drivers and attendants in handling victims at accident scenes and the receptivity of hospital staff to accident victims who are not accompanied by police officers.

3.0 Theoretical framework

3.0.1 The epidemiological model of road traffic accident

It was developed and used in medical services but was modified and used in accident study. Road traffic accident is a multifaceted phenomenon with diverse causal factors. The effectiveness of any road safety measures hinges squarely not only on the appreciation of the complex nature and multi-dimensional aspects of road accident occurrence but also on how the numerous causal factors can be manipulated to reduce traffic accidents on the roads. Road Traffic Accidents as a transportation problem is complex because of the interactive nature of the system and components involved However, the road traffic system is made up of three components viz:

1. The road user – Human
2. The vehicle - Mechanical
3. The road - Environment

The collective action of these various components is a system where each is functioning independently so as to complement the functions of the others in order to realize a desired result. Any defect or malfunctioning in one of the three components may result in a defect in the entire system, which may lead to a breakdown and could cause road traffic accident. Figure 1 depicts what Epidemiological model is all about.

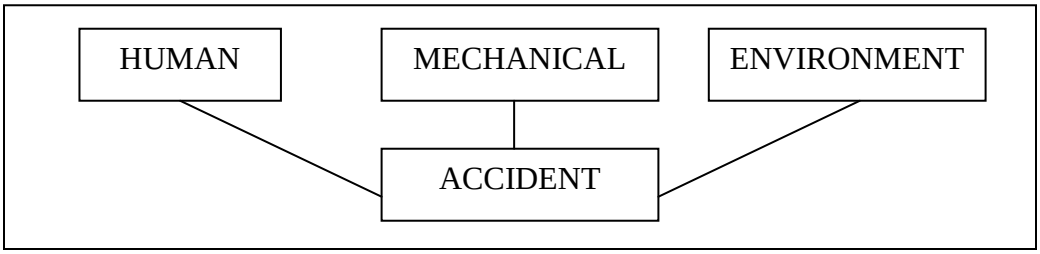

Fig. 1: Epidemiological Model of Road Traffic Accident

Source: Jegede, 1989, p. 68 and Atubi 2006, P. 49)

According to the epidemiological concept the "**Host**" is the person or persons involved in the road traffic accident. The human factor is superimposed in other traffic accident causation factors because he is the one who designs, develops and maintain roads and vehicles, hence human factor is the prime mover of Road Traffic Accident (RTA). The "**AGENT**" is the motor vehicle while the "**ENVIRONMENT**" is the sum of physical and social conditions that contribute in one way or another to the occurrence of the traffic accident. In as much as these factors jointly or individually contribute to road traffic accidents on our roads.

3.0.2 Relational and Distraction Theory

Although, Abrains (2011) proposed a relational theory that considers music therapy a discipline suggesting that humans can express their humanity and health in a way that is musical but not located within the medium of sound. Despite this theoretical attempt to relate music as a therapy however, fundamentally there is empirical evidences that its use while driving may constitute a driving distraction which may impair some basic cognitive driving behaviuor such as longitudinal control with emphasis on speed and following vehicular distance; lateral control as regards with emphasis on speed and following vehicular distance; lateral control as regard lane keeping and steering measures and reaction time involving the duration within which one is expected to respond to an unexpected eventuality while driving. These are cognitive behavioral conditions required for an effective and safe driving. Against this backdrop distraction theory is hereby proposed as the framework for the anticipated causal relationship between the art of dialogic music communication and cognitive driving behaviours.

Distraction Theory

Music may act as a distraction and the presence of any music will in effect, decrease productivity. Although, distraction may appear to have a negative meaning, in reality, distraction can either be positive or negative. This model stems from pain research where a beneficial effect of music is to emotionally engage the patient and take the mind of the patient off the painful condition or treatment (Mitchell & MacDonald, 2006). Issues such as listening to music and the dangers of using cell phones while driving call for understanding of the extent to which such dual-task performance will lead to decreases in attention and time-sharing ability. Multiple resource theory is one approach towards understanding this phenomenon.

4.0 Types of drivers inattention

For the purpose of this study, the types of inattention were broken down into technology-based distracters (e.g. mobile phones, route navigation and CD players) and non-technology based distracters (e.g talking to passengers, eating/drinking and smoking).

Technology-Based Inattention

Use of mobile phones; mobile phone was first introduced into the Nigeria market in the mid-2000 and have since experienced dramatic growth. Over the years, mobile phone subscription sales have increased. Cell phones are useful technology to people on the move, including people operating motor vehicles. In Nigeria, the number of road accidents caused by use of mobile phone while driving is on the increase. Using a mobile phone while driving can distract drivers visually, physically, aurally, and/or cognitively. Greenberg et al, (2003) found that text messaging while driving was a significant inattention for drivers. Physical and visual inattention is particularly pronounced when operating a hand-held phone, but can also occur when using a hands-free phone.

Regardless of whether the phone is hands-free or hand-held, drivers are forced to remove their eyes from the road and their hands off the wheel to reach for the phone and initiate a connection by either dialing a number or answering an incoming call. Handheld phones have the additional physical inattention of requiring the driver to drive one handed while holding the phone to their ear during a conversation (Redelmeier et al, 2003). Distracted driving remains a significant and high-profile traffic safety concern, with cell phone use and text messaging among its most visible manifestations. As more in-vehicle and portable devices flood the market, there has been growing concern regarding the safety implications of using such devices while driving.

In response, a large and rapidly growing body of research has examined the impact of devices, particularly mobile phones, on driving performance (Abdalla, 2002). Motorists receiving and making calls, reading and sending text messages has led to an increase in traffic accidents and its consequences. Driving while talking on cell phones-hand held and hands-free increases risk of injury and property damage crashes (Redelmeier et al, 2003; FRSC, 2018). It is not as if cell phones use while driving is the most dangerous or risky thing people can do but because of the prevalence of their use, they are the inattention usually involved in most crashes. Drivers using phones have slowed reaction times and difficulty controlling speed and lane position. It has become so popular that these days that we don't realize when, where and how often we are utilizing our "cellular phones". There may also be social pressures (e.g. when talking to the boss) to maintain a telephone conversation despite the pressure of potential hazards.

Using mobile phones can cause drivers to take their eyes off the road, their hands off the steering wheel, and their minds off the road and the surrounding situation. It is a type of inattention known as cognitive inattention which appears to have the biggest impact on road accident. Regardless of whether the phone is hand-held or hands-free, there is strong evidence that the actual task of conversing on the phone, whether it be listening or talking, while driving places significant cognitive demands on drivers and distracts them from concentrating on the safe operation of the vehicle and any hazards arising in the road environment (Papantoniou, 2015).

The use of mobile phone impairs lane position maintenance, appropriate and predictable speed, appropriate following distances from vehicles in front, judgment and acceptance of safe gaps in traffic, and general awareness of other traffic. Adjusting radio or cassette control; entertainment systems particularly radios and CD players, are common features in most cars and the popularity of more complex systems such as television and video is also

increasing. Studies reviewed suggest that tuning or manipulating, or even simply listening to the radio or CD player while driving, can distract the driver and degrade driving performance. Some studies even suggest that performing these tasks is more distracting than dialing or talking on a mobile phone.

Despite the increasing popularity of rear seat televisions and videos, little is known about whether and how these systems distract drivers. It is likely that radio-use places different demands on drivers depending on the nature of the specific task they are performing and the type of interface used. Tuning a station, for example, is likely to be associated with increased physical and visual inattention, while listening to the radio is likely to create more of a cognitive or auditory inattention (Pedan & Hyder, 2012). Adjusting a radio, CD or cassette player was found to be one of the major causes of inattention related crashes in Nigeria (FRSC, 2018). This is common among teenage drivers in Nigeria and it results in considerable physical and cognitive inattention and reduced driving performance. Some people get so carried away with their radio and cassette controls that they find it difficult to react quickly to some situations on the road.

Route Guidance Systems

Entering destination information is believed to be the most distracting task associated with the use of a route guidance system; however, use of voice input technology can reduce the inattention associated with this task. Route guidance systems that present navigation instructions using voice output are less distracting and more usual than those systems that present the information on a visual display. Route guidance system with voice recognition technology are a more ergonomic and safer option than systems that require visual-manual entry. Route guidance systems that provide turn-by turn instructions, rather than presenting complex holistic route information, are less distracting to the driver and present the most useable means of navigation.

Email and Internet Facilities

Some researchers believe that speech-based email systems have the potential to distract drivers and undermine road safety. As a result, a growing number of system designers are recognizing that speech-based systems are not a panacea for driver inattention and are focusing on developing alternative interfaces such as those that rely on tactile feedback.

Entertainment Systems

The process of tuning a radio while driving appears to have a detrimental effect on driving performance, particularly for inexperienced drivers. Research suggests that simply listening to radio broadcasts while driving can impair driving performance. Research suggests that operating a CD player while driving is more distracting than dialing a mobile phone and eating, however the use of voice-activation may minimize this inattention.

Non-Technology-Based Inattention

Drivers often engage in a number of non-technology based activities which have the potential to distract them from the driving task and increase the risk of a crash. The range of non-technology-based activities that are performed while driving is endless, however, some of the main activities that drivers engage in include children/infant inattention, eating, drinking, smoking and talking to passengers.

Child/Infant Inattention

The effects of attending to children while driving is very important, when attending to children, you tend to take your eyes off the road and this affects vehicle control. It leads to physical inattention. Turning around to talk and attend to children in the backseat of the car while driving is very dangerous. Having one or more children in the car is 12 times more distracting than talking on a mobile phone while driving (Council, 2011). Do not try to handle children while driving. It is better to stop and attend to children or have another adult in the car do it for you.

Eating/Drinking

Eating and drinking are activities that are commonly carried out by drivers. While eating and drinking are deemed acceptable activities while driving, and no legislation exists prohibiting drivers from carrying out these activities, eating and drinking can create a physical and visual inattention for drivers as it requires them to remove their eyes off the road and one or both hands off the steering wheel for extended periods of time. When a spill occurs, the process of eating and drinking can become even more distracting. Inattentions like eating/drinking can become a problem for drivers who can't react quickly to a sharp curve. Driving and eating is very dangerous. Eating while operating a vehicle has become a norm in Nigeria, it can make steering a car impossible. The dangers are there but drivers ignore them. You are safer when you stop to eat/drink. When you eat, you are chewing, swallowing, opening packages, unwrapping and re-wrapping food and cleaning yourself and the vehicle. This is truly multitasking and is too dangerous.

Smoking

Smoking is a common activity among drivers, however it can distract drivers as they remove their hands from the wheel to light a cigarette, hold it for an extended period of time and put it out. Glassbrenner (2005) also revealed that smokers have an increased crash risk compared to non-smokers and this greater risk remains when age, gender, education, alcohol consumption and driving experience are accounted for. Again, the studies reviewed by Christie offered a range of explanations for the smoking crash risk association, ranging from smoking being a physical inattention to decrements in driving performance due to high levels of carbon-monoxide. Regardless of the exact cause of smokers' increased risk of being involved in a crash, it is clear that smoking while driving is a hazard. Indeed, research conducted by Stutts et al, (2003) revealed that smoking was a source of inattention in 0.9% of inattention-related crashes, while equated to approximately 12,780 crashes over the 5-year period examined.

As grievous as these inattentions and impediments are, they are being heaped on the already poor state of our roads country-wide, the often less than satisfactory state of our vehicles and our unskilled drivers, who in their ignorance believe they know it all. Distracted driving occurs when a driver is delayed in the recognition of information necessary to safety maintain the lateral and longitudinal control of the vehicle due to some event, activity, object or person, within or outside the vehicle by compromising the driver's auditory, biomechanical, cognitive or visual faculties, or combinations thereof (Wickens, 2014). Any activity that competes for the driver's attention while driving has the potential to degrade driving performance and have serious consequences for road safety.

Must accidents are as a result of the driver being inattention, or distracted. As more wireless communications, entertainment and driver assistance systems proliferate the vehicle market, the incidence of inattention related crashes is expected to increase. Research by the National Highway Traffic Safety Administration (2011), estimates that driver inattention in its various forms, contributes to approximately 25% of police reported crashes. Driver inattention is one of the driving inattention and is claimed to be a contributing factor in over half of inattention crashes (Stutts et al, 2003). The purpose of this research is to raise awareness about distracted driving and to promote research and action related to it. It tries to summarize what is known as driver inattention, the risk to safe driving behavour and what can be done to reduce road traffic accident in Nigeria.

In addition to the above mentioned forms of inattention, the NHTSA recognizes 13 sources of inattention (World Bank, 2018). These include: eating or drinking; outside person, object or event; adjusting radio, cassette, or CD; other occupants in vehicle; moving object in vehicle; smoking related; talking or listening on mobile phone; dialing mobile phone; using device/object brought into vehicle; using device/controls integral to vehicle; adjusting climate controls; other inattention; and unknown inattention.

5.0 Policy implications/way forward

With a daily average of 76 fatalities and 104 causalities and 14.2 deaths per 100,000 population for the year 2004 from road traffic accident, Nigeria seems to have increased its fatality rate per accident even though the absolute number of the accident seems to have decreased. The establishment of the Federal Road Safety

Commission to evolve a scientific and cultural relevant programme to meet the objective of its role as enunciated in degree No. 45, 1988 is another in the efforts of government to increase safety measures in Nigeria. One factor that has worsened this accident rate is the use of poorly maintained vehicle occasioned by the structural adjustment policy of 1989. This is further worsened by lack of genuine spare parts, and the flooding of the market by fake spare parts. These further put the life of the drivers and passengers at greater risk. Similarly, the cost of tyres which has been put beyond the reach of the average car owners has led a lot of people to their untimely death. Inability to change these bad tyres lead to blowouts. This situation therefore have turned many a vehicle to "mobile coffins". However some of the interventions for Nigeria include;

i. Seat Belts

No matter how you will drive there is always a chance that you will be involved in an accident. You cannot predict when it may happen. From statistical analysis of road traffic accidents in Nigeria since independence the chance that one will be injured in an accident in his life time is 1:3; that he may be killed in an accident is 1:9. The best protection inside the vehicle is the use of seat belts (Federal Road Safety Commission Highway Code, 1997). Similarly, the use of seat belts in Nigeria was optional, hence many vehicles are not fitted with seat belts. In those that have them, they are not being utilized by drivers and passengers alike. But currently, the Federal Road Safety Commission has made the use of seat belts compulsory to all motorists with effect from July 1st 2005. In most developed nations especially Britain, a lot of money has been sunk into the implementation of the use of seat belts. The seat belt is an example of an active intervention for occupants because it requires some action on the part of the users. Its effectiveness in preventing injury and death in motor vehicle collisions has been well established by many earlier research studies.

ii. Motorcycle Helmets

Safety helmet worn in the correct way and properly fastened in the most effective way could increase your chances of surviving an accident (Federal Road Safety Commission Highway Code, 1997). In the time past, various laws were enacted by Federal, State and Local governments to curb the excesses of the riders. These include the National Road Traffic Regulation of 2004 and FRSC Establishment Act 2007 to mention but a few. The acquisition of motorcycle helmets is well within the budgets of the people who afford motorcycles in this country. In addition, promulgating helmet laws has been associated with significant decrease in mortality and injuries sustained from motorcycle crashes (Fasakin, 2000; Fasakin, 2002). When a motorcycle is acquired, purchase of an approved helmet should be encouraged or even mandatory in low-income countries (LICs) given the feasibility and potential sustainability of this intervention.

Just like seat belts have proven effective in motor vehicle crash related injury reduction, motorcycle helmets have proved effective in motorcycle crash related injury reduction making motorcycle helmet laws a strategy with proven effectiveness. Infact, recent research findings in setting other than the United States corroborate the evidence for the effectiveness of mandatory motorcycle helmet laws (Tsai et al, 2000; Conrad et al, 2001; Atubi, 2006).

iii. Speed Limits

Drivers often think that the faster they drive, the more they impress themselves and others. They fail to remember that anybody's tyre can burst that accidents at high speed are more disastrous than accidents at low speed; that the vehicle is a machine and can fail at any time. At 100kmph, your vehicle moves at 28 metres per second, just imagine where you could be in only one second if you veer off the road which is usually less than 12 metres wide. (Federal Road Safety Commission Highway Code, 1997; Atubi, 2020b). The Federal Road Safety Commission also imposed speed limit for all categories of vehicles i.e. 100kmph maximum speed for all private cars, 90kmph for commercial vehicles and 60kmph for trucks. But common sense often dictates lower speed limits. Speeding on highways is a major cause of traffic crashes. The effect of speed on causing traffic related crashes, injuries and deaths has been documented in many settings (Farmer et al, 1999; Posada et al, 2000). For example, the 1995 repeal of the United States national maximum speed limit, allowing states to raise interstate speed limits, resulted in a 15%

increase in fertilities in 24 states that raised speed limits. In Adelaide, Australia the risk of severe crash involvement was found to increase as vehicles speed increased (Moore et al, 1995). Infact, the over 20% reduction in traffic crashes and deaths in Brazil has been partly attributed to speed limits which have been posted on many roads since 1998 (Polidefigueiredo 2001).

iv. Public Education Targeting Motorists

Your safety depends on what you see and how you react. If you need spectacles to meet the official eye sight standard, wear them. It is an offence to drive with uncorrected defective vision. For example, a Nigerian study found a third of taxi drivers to have poor vision. Although the findings from a 1999 study revealed the ineffectiveness of driver education for young drivers (Vernick et al, 2001), there is some evidence that general public education along with some behavioural modification that targets motorists may have some impact on road safety. One area is education of motorists on posted traffic signs. A recent study in three countries i.e. United States, Sweden and United Kingdom, showed that comprehension of 28 posted traffic signs for drivers were related to years of driving experience (Al-madani, 2020)

v. Database Development and Information Sharing

Whilst each agency requires developing a data base for effective planning of its operations, inter-agency collaboration and information sharing are also important to widen the prism of evolving one big road safety net spread all over the country

vi. Traffic Control by Signs

A thorough knowledge of traffic signs, signals, road and markings together with signals by authorized traffic officers are to ensure a smooth and safe traffic flows. You must know them and be able to recognize them immediately. In the case of regulatory signs such as stop at intersection, stop police, stop highway survey, no left turn, no right turn, No "U" turn, No entry for lorries, no waiting, etc, you must obey them without hesitation.

vii. Research on causes of road traffic accidents in the country, especially their spatial and temporal patterns on a regular basis is recommended.

6.0 Conclusion

All over the world the phenomenon of road traffic accident has become the most serious traffic problem in need of a pragmatic solution. In Nigeria, this problem has been difficult to address probably because of the country's level of development. Roads are often built through areas where economic activity already exists, thus creating conflict over space between road users and the local population. People also tend to settle near roads because of the increased economic activity. This is a dynamic process involving changing populations, changing settlements, changing migration patterns and changing needs, yet these changeable solutions are generally not considered in the design and construction of roads.

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