

The Public Health Threat of Road Traffic Accidents in Nigeria: A Call to Action

Onyemaechi NOC, Ofoma UR¹

Department of Surgery, University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu, Nigeria, ¹Department of Critical Care Medicine, Geisinger Medical Center, Danville, PA, USA

Address for correspondence:

Dr. Onyemaechi NOC,
Department of Surgery, University
of Nigeria Teaching Hospital,
Ituku-Ozalla, Enugu, Nigeria.
E-mail: bisionyemaechi@yahoo.com

Abstract

Public health experts worldwide concede that there is a global epidemic of road traffic accidents (RTA). Globally, RTA is the leading cause of injury-related deaths. In Nigeria, injuries and deaths resulting from RTA are on the rise and are Nigeria's third-leading cause of overall deaths, the leading cause of trauma-related deaths and the most common cause of disability. Do RTA constitute a public health problem in Nigeria? If so, is there a pragmatic approach to combat this problem? A systematic literature search using the advanced features of various databases such as PubMed, Scopus, Embase, Google, and directory of open access journals was carried out using the key words " RTA, public health problem, government response, Nigeria." Out of initial 850 articles retrieved from the search 15 articles that suited the study were included in this review. There is need to view RTA s as an issue of urgent national importance that needs urgent attention aimed at reducing the health, social, and economic impact. Policy makers at the various levels of government need to recognize this growing problem as a public health crisis and design appropriate policy responses that will back up with meticulous implementation.

Keywords: Nigeria, Public health problem, Road traffic accidents

Introduction

According to data recently released by the World Health Organization (WHO),^[1] an estimated 55 million people died worldwide in the year 2011. Of these, 1.3 million were due to road injuries, equating to roughly 3500 each day from road traffic injuries. By these statistics road traffic accidents (RTA) ranked among the top 10 leading causes in 2011, a reality that was not existent a decade ago almost at par with chronic diseases such as HIV/AIDS and diabetes mellitus. By 2030, car accidents will be the fifth leading cause of death in the world, if this trend were to continue.^[2] Globally, RTA is the leading cause of injury-related deaths.^[3]

Public health experts worldwide concede that there is a global epidemic of RTA. The incidence, however, is higher in developing countries.^[4-7] According to the WHO, low- and

middle-income countries accounted for 92% of road traffic deaths but had only 53% of registered vehicles in 2011. In Nigeria, injuries and deaths resulting from RTA are on the rise,^[8,9] and account for the highest proportion of deaths on the Africa continent. Road accidents are Nigeria's third-leading cause of overall deaths, the leading cause of trauma-related deaths and the most common cause of disability.^[10-13] According to the WHO, the country has 1042 deaths a year for every 100,000 vehicles, one of the highest rates of road fatalities in the world; the equivalent figures for the United States and Britain are 15 and 7, respectively.^[14] Statistics show that there is a rising incidence of RTA in Nigeria and other developing countries with adverse physical and socioeconomic implications. However, there is yet to be a comprehensive and integrated approach to combat this menace. For effective interventions to be developed, the process begins with

Access this article online

Quick Response Code:



Website: www.amhsr.org

DOI:
10.4103/amhsr.amhsr_452_15

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Onyemaechi N, Ofoma UR. The public health threat of road traffic accidents in Nigeria: A call to action. *Ann Med Health Sci Res* 2016;6:199-204.

providing an explicit statement of questions using the PICO model of problem identification, interventions, comparisons, and outcome.

Methods of Literature Search

A web-based literature search using the advanced features of various databases such as PubMed, Scopus, Embase, Google, and directory of open access journals was carried out independently by the two reviewers. The key words used were: RTA, public health problem, government response, Nigeria. Only studies published in English before the time of search, September 2014 were included in the study. The search retrieved 850 results. Data from these studies were extracted and assessed for inclusion. The criteria for inclusion in the review were: clinical and epidemiological studies on RTA, studies that focused on road traffic safety and prevention of RTA. A total of 15 articles that suited the study formed the evidence base on which this call for action is founded. In addition to the published articles, 10 website resources were also used. Figure 1 shows the flow chart of the article selection process. The risk of bias of the study was assessed using the Cochrane Collaboration’s tool for assessment of risk of bias. Table 1 shows the characteristics of the selected studies.

Why Does Road Traffic Accidents Deserve the Government’s Time, Energy and Focus?

In Nigeria, injuries and deaths resulting from RTA are on the rise and are Nigeria’s third-leading cause of overall deaths, the leading cause of trauma-related deaths and the most common cause of disability.^[11] The situation is especially problematic in Nigeria because of poor traffic infrastructure, poor road design, poor enforcement of traffic rules and regulations, a rapidly growing population, and subsequent number of people driving cars. As Nigeria’s economy grows, the volume of traffic is expected to rise, from 8 million vehicles in 2013–2040 million by 2020.^[14]

RTA has physical, social, emotional, and economic implications. Fatalities, physical disability, and morbidity from road accidents predominantly affect the young and the economically productive age groups.^[15-17] Survivors often endure a diminished quality of life from deformities and disabilities, posttraumatic stress and lost personal income, in a country not well known for exceptional rehabilitation services. The rest of the populace lives in perpetual and pervasive fear of traveling occasioned by not feeling safe on the roads. The

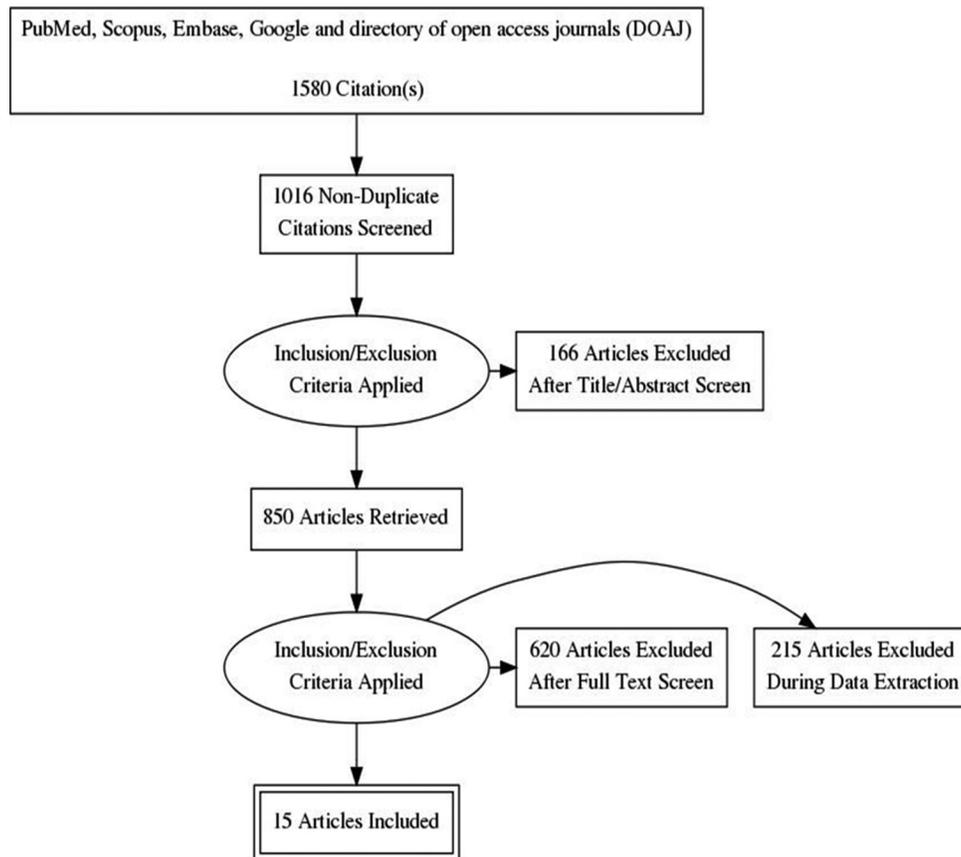


Figure 1: Flowchart of article selection process

Table 1: Summary of the characteristics of the included articles

Number	Authors	Year of publication	Country	Study type	Study sub-type
1	Krug <i>et al.</i>	2000	USA	Epidemiological	Noninterventional
2	Odero <i>et al.</i>	1997	Kenya	Epidemiological	Noninterventional
3	Nordberg <i>et al.</i>	2000	Kenya	Epidemiological	Noninterventional
4	Asogwa <i>et al.</i>	1978	Nigeria	Epidemiological	Noninterventional
5	Ezenwa <i>et al.</i>	1986	Nigeria	Clinical	Noninterventional
6	Ekere <i>et al.</i>	2004	Nigeria	Clinical	Noninterventional
7	Nwadinigwe <i>et al.</i>	2005	Nigeria	Clinical	Noninterventional
8	Solagberu <i>et al.</i>	2003	Nigeria	Clinical	Noninterventional
9	Akinpelu <i>et al.</i>	2006	Nigeria	Clinical	Noninterventional
10	Labinjo <i>et al.</i>	2009	Nigeria	Epidemiological	Noninterventional
11	Julliard <i>et al.</i>	2010	Nigeria	Epidemiological	Noninterventional
12	Marburger <i>et al.</i>	1987	Germany	Epidemiological	Noninterventional
13	Routley <i>et al.</i>	2007	China	Epidemiological	Noninterventional
14	Evans <i>et al.</i>	1996	USA	Epidemiological	Noninterventional
15	Oluwadiya <i>et al.</i>	2005	Nigeria	Clinical	Noninterventional

overall effects of these injuries constitute social economic and psychological losses of great magnitudes.

In 2003, the direct global economic cost of RTA was estimated at USD 518 billion/year with USD 100 billion of that occurring in poor developing countries.^[18] The WHO estimates the national cost of RTA to be between 1% and 3% of the gross domestic product.^[19] In Nigeria, about 80 billion naira is lost to RTA annually.^[20] This economic cost includes the cost of property and public amenity damaged, the cost of medical treatment, and the cost of productivity lost due to the accident. This is a huge economic loss particularly for a country plagued with poverty.

Despite the statistics of RTA in Nigeria, it has not received all the attention it deserves. There is need to view RTA as an issue of urgent national importance that needs urgent attention aimed at reducing the health, social, and economic impact. Policy makers at the various levels of government need to recognize this growing problem as a public health crisis and design appropriate policy responses that will back up with meticulous implementation.

Response by the Nigerian Government

Following a critical survey of the increasing burden of RTA on the world economy, the UN general assembly in 2010 adopted a resolution which proclaimed a decade of action for road safety.^[21] The goal of the decade (2011–2020) is to stabilize and reduce the increasing trend in road traffic fatalities, saving an estimated 5 million lives over this period. To guide countries on taking concrete national level actions to achieve this goal, a global plan of action was developed.^[22] This provides a practical tool to help governments develop a national plan of action. National activities should be based on 5 key pillars which include: road safety management, safer roads and mobility, safer vehicles, safer road users,

and postcrash response. We will assess the response of the Nigerian government to the public health threat of RTA using these yardsticks.

Road safety management

The government response to road safety management can be evaluated by examining the institutional and legislative frameworks. The Federal Road Safety Commission (FRSC) is the lead agency in Nigeria on road safety administration that was established in 1988. Their statutory functions include: making the highways safe for motorists and other road users; recommend works and infrastructures to eliminate or minimize accidents on the highways and educating motorists and members of the public on road discipline. They also have the mandate to prosecute persons who have committed traffic offenses.

It must be admitted that the FRSC has done a lot of work on road safety campaigns and implementation of traffic safety regulations in Nigeria. Before their establishment, there was no concrete and sustained policy action to address the road safety question. Earlier attempts by some states and other government agencies were isolated and uncoordinated. However, with staff strength of about 18,000 men and officers, it would appear that the commission is currently overwhelmed with the task of keeping Nigerian roads safe. Poor funding, lack of motivation, and corruption are some of the challenges facing the commission. The public awareness and road safety campaigns must be robust and sustained all-round the year and not limited to only festive seasons as is currently the practice. The enforcement of the existing traffic safety laws must be pursued vigorously and offenders severely punished to serve as a deterrent to other road users.

In terms of legislative framework, many traffic safety laws exist in Nigeria, but their enforcement remains poor. Data from the WHO global health observatory repository 2011

show that Nigeria has a seat belt law which is applicable to drivers only.^[23] There is also drink-driving law which is hardly enforced. At present, there is no child restraint law in existence, but there is a national speed limit law for both urban and rural roads of 50 km/hour. A law on the use of motorcycle helmet for all passengers and applicable to all road types exists, but the level of enforcement is very low. There is a need for a child restraint law in Nigeria, and the law on seat belt must be reviewed to apply to all occupants. Above all, the enforcement of all these laws must not be compromised in order to achieve the desired results.

Safer roads and mobility

A journey through the highway and major roads in Nigeria, particularly in the South-Eastern region, reveals that the road infrastructure is in great disrepair.

With a total of road network of 194,394 km, Nigeria has the largest road network in Sub-Saharan Africa. Most of these roads were built more than 30 years ago when the volume of vehicular traffic was low, and there were alternative means of transportation such as railways. However, the rate of increase in vehicular traffic has not been matched with a commensurate rate of road construction.

In addition, with a moribund railway systems and waterways as alternative means of transportation, the burden on the roads has continued to increase as a result of increased motorization. The resultant effect is the breakdown of roads and increased rate of road crashes. The current rehabilitation of road and railways by the government will hopefully create safer roads and open up alternative means of transportation and consequently decrease the rate of road crashes in Nigeria.

Safer vehicles

The use of old and rickety vehicles that are not roadworthy contributes significantly to the rate of road crashes in Nigeria. In 2004, the national vehicle inspection scheme (a component of road transport safety standardization scheme) created by law in the National Road Traffic Regulations was introduced to ensure that only roadworthy vehicles are allowed to ply the roads.^[24] It involves routine vehicle inspection on the highways as well as postcrash inspection. The FRSC and the vehicle inspection officers collaborate in this responsibility. However, the law in its current form applies only to fleet operators, i.e., organizations, companies, government ministries and agencies, and road transport company owners with a minimum of 5 vehicles in their fleet. The smaller transport companies (with <5 vehicles), privately owned vehicles and other means of road transport such as tricycles and motorbikes were not captured in this law. This is a major shortcoming in this law because any unsafe vehicle on the road constitutes a hazard to every road user. It, therefore, requires an urgent review and judicious enforcement with appropriate punishment for erring motorists.

Data from global health observatory repository of the WHO show that Nigeria has an estimated 12.5 million registered vehicles.^[23] This number is very high when compared with the figure from other countries with similar demographic and socioeconomic statistics such as Pakistan and Bangladesh. This figure may be traceable to government's review in 2010 of the ban on importation of used vehicles by increasing the age limit from 10 to 15 years. This policy may have paved the way for the importation of old vehicles that are not roadworthy into the country with consequent increased motorization and increased rate of road crashes. There must be a strict regulation of importation of vehicles in Nigeria to ensure that only safe vehicles are brought into the country.

Safe road users

The awareness and adherence to traffic safety regulation by road users is an important factor in reducing the frequency of RTA. The enforcement of road safety laws like the use of seat belt has been associated with significant reduction in the fatality and severity of injury after a road crash.^[25-29] Although road safety laws exist in Nigeria, the level of implementation by road users is quite low.

There is need to ensure that only drivers who are trained and certified are allowed to drive in Nigeria. Sadly, this responsibility of the FRSC has not been effectively discharged. Individuals are issued driver's license without any certification of their driving competence and fitness to the extent that even blind or lame persons may be in possession of driver's license. The citizens more or less see a driver's license as a tool for identification and not for the purpose for which it is intended. The consequence is that incompetent and unfit persons may be certified to drive and this could spell disaster. Above all, public enlightenment programs aimed at educating road users on the safe use of roads should be vigorously pursued.

Postcrash response

After a road crash, an organized prehospital care, as well as prompt medical attention, has proven to reduce the morbidity and mortality among the victims.^[30] In Nigeria, the state of posttrauma response is very poor.^[31,32] Only a few cities such as Abuja, Lagos, and Port-Harcourt have an organized emergency medical service. The FRSC is also ill-equipped to carry out this responsibility.

Solagberu *et al.*^[31] in their study in Ilorin described a poor state of prehospital care of accident victims in Nigeria. Only 40.4% of the road traffic victims were brought to the hospital by either the Police or FRSC. None of the victims was brought to the hospital with airway protection or support of circulation of equipment. The policy of building so called "Accident Clinics" on the highways by the FRSC for giving first aid to the victims of RTA in our opinion constitutes misplaced priority and waste of resources. These clinics lack the necessary personnel and facilities to care for these victims. These resources could be

well utilized in training of their personnel in rescue operations and provision of state of the art equipment for effective emergency medical services.

At the moment, there are only 3 national orthopedic hospitals and one national trauma center in Nigeria. This number is grossly inadequate to cope with the burden of trauma arising from road traffic crashes in a country of approximately 160 million people. There is a need for the establishment of more trauma centers dedicated to trauma care. In fact, all the tertiary health institutions in the country should be designated national trauma centers and subsequently equipped for effective trauma care services. This will help to provide the much needed posttrauma care to the rising number of RTA victims.

In addition, healthcare should be made easily accessible to all citizens of Nigeria through a comprehensive health insurance scheme. This will enable RTA victims to access healthcare without having to pay by “out of pocket” method for their treatment, a practice which has compelled the poor victims to seek alternative care from the traditional bonesetters with attendant complications.

What Can Physicians Do? The Public Health Approach

Complex problems require well thought out and methodical solutions. In the health domain, solutions to public health problems deserve to be approached from a public health perspective. The Centers for Disease Control and Prevention describe the public health approach as a four-step model: define the problem, identify risk and protective factors, develop and test prevention strategies, and ensure widespread adoption of effective programs.^[33] The public health approach has resulted in a successful reduction in motor vehicle deaths in developed countries.^[34]

Defining the problem

Despite Nigeria’s high burden of RTAs, defining the full magnitude of the problem has been hampered by a lack of systematic information and robust empirical scientific data. There is very limited information on national patterns, distribution, and outcomes of RTAs across the country. For many published studies relating to RTAs in Nigeria are limited to single hospital or urban settings.^[15,35,36] Even the statistics of Nigerian deaths from RTAs provided by the WHO are hugely approximated.

Lack of systematic data generation mechanisms both at the national and state level leads to limitations in designing appropriate intervention strategies to deal with the problem in the country. Nigeria does not have an established national traffic accident database. There is no framework for accurate reporting of road traffic incidents, involved casualties, the probable physical and environmental determinants of each

accident, where they occurred, under what circumstances. These are crucial and important scientific data elements that constitute a trauma database.

Adopting a public health approach with a view to tackling Nigeria’s RTA burden mandates the creation of data systems that provide detailed, robust, consistent, and comparable information across accident sites nationwide over time. Analyses of such data will be crucial for highlighting the problem and for developing, testing, targeting, and evaluating interventions. Research efforts must also be channeled toward improving our understanding of the societal implications of the social and economic consequences of deaths, injuries and long-term disabilities from RTAs.

Physicians have a role and responsibility to protect and safeguard health. The health of the public is not an exception to this role. Worldwide, physicians have been at the frontline of public health advocacy with respect to health promotion strategies such as smoking bans, seat belt use, and other aspects of road injury mitigation. Nigeria is Africa’s most populous country and our raw RTA statistics are pretty much unacceptable. As a matter of urgency, Nigeria’s physician bodies should initiate advocacy efforts directed at engaging the Ministry of Health, nongovernmental organizations, other health-care providers, industry and other stakeholders toward efforts geared at establishing a national trauma database for systematic data generation and creation of a national platform to aggregate research inputs and resources. These efforts must be simultaneously accompanied by intensified and refocused efforts by the government and other stakeholders at other interventions to mitigate the problem of RTAs, including mass safety awareness and educational initiatives targeted at key demographic groups, improvements in access to healthcare and in trauma management systems to reduce the intensity of injuries suffered by the victims. According to the WHO, low- and middle-income countries account for 92% of road traffic deaths worldwide. Nigeria has only been used as a case study to exemplify the burden of RTA. Therefore, many of the features raised in this call for action are applicable to other low-income countries.

Conclusion

There is an increasing burden of RTA and injury-related deaths globally. Nigeria has one of the highest rates of road traffic fatalities in the world. The response of the government in controlling this scourge has been inadequate. By taking a public health approach to the prevention of RTA, we have the opportunity to have a broader influence on the physical, social, emotional, and economic manifestations of this scourge. We can use data generated systematically to identify the burden and risk factors, design and test interventions that will address these, and then translate the interventions for implementation in the community.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. The 10 Leading Causes of Death in the World, 2000 and 2012; 2013. Available from: <http://www.who.int/mediacentre/factsheets/fs310/en/index.html>. [Last accessed on 2016 Mar 10].
2. Global Status Report on Road Safety; 2013. Available from: http://www.who.int/violence_injury_prevention/road_safety_status/2013/en/. [Last accessed on 2016 Mar 15].
3. Krug EG, Sharma GK, Lozano R. The global burden of injuries. *Am J Public Health* 2000;90:523-6.
4. Odero W, Garner P, Zwi A. Road traffic injuries in developing countries: A comprehensive review of epidemiological studies. *Trop Med Int Health* 1997;2:445-60.
5. Bener A. The neglected epidemic: Road traffic accidents in a developing country, State of Qatar. *Int J Inj Contr Saf Promot* 2005;12:45-7.
6. Huang CM, Lunnen JC, Miranda JJ, Hyder AA. Road traffic injuries in developing countries: Research and action agenda. *Rev Peru Med Exp Salud Publica* 2010;27:243-7.
7. Nordberg E. Injuries as a public health problem in sub-Saharan Africa: Epidemiology and prospects for control. *East Afr Med J* 2000;77 12 Suppl: S1-43.
8. Asogwa SE. Road traffic accidents: A major public health problem in Nigeria. *Public Health* 1978;92:237-45.
9. Ezenwa AO. Trends and characteristics of road traffic accidents in Nigeria. *J R Soc Health* 1986;106:27-9.
10. Ekere AU, Yellowe BE, Umune S. Surgical mortality in the emergency room. *Int Orthop* 2004;28:187-90.
11. Solagberu BA, Adekanye AO, Ofoegbu CP, Udoffa US, Abdur-Rahman LO, Taiwo JO. Epidemiology of trauma deaths. *West Afr J Med* 2003;22:177-81.
12. Akinpelu VO, Oladele AO, Amusa YB, Ogundipe OK, Adeolu AA, Komolafe EO. Review of road traffic accident admissions in a Nigerian tertiary hospital. *East Cent Afr J Surg* 2006;12:63-7.
13. Nwadinigwe CU, Onyemaechi NO. Lethal outcome and time to death in injured hospitalised patients. *Orient J Med* 2005;17:28-33.
14. Driving in Nigeria, Time for a Test; 2013. Available from: <http://www.economist.com/news/middle-east-and-africa/21579057-why-nigerias-roads-can-be-terrifying-time-test>. [Last accessed on 2014 Sep 21].
15. Ekere AU, Yellowe BE, Umune S. Mortality patterns in the accident and emergency department of an urban hospital in Nigeria. *Niger J Clin Pract* 2005;8:14-8.
16. Labinjo M, Juillard C, Kobusingye OC, Hyder AA. The burden of road traffic injuries in Nigeria: Results of a population-based survey. *Inj Prev* 2009;15:157-62.
17. Hyder AA, Labinjo M, Muzaffar SS. A new challenge to child and adolescent survival in urban Africa: An increasing burden of road traffic injuries. *Traffic Inj Prev* 2006;7:381-8.
18. WHO. World Report on Road Traffic Injury Prevention 2004. Geneva: WHO; 2004.
19. Road Traffic Accidents; 2013. Available from: <http://www.who.int/mediacentre/factsheets/fs358/en/>. [Last accessed on 2014 Sep 21].
20. Juillard C, Labinjo M, Kobusingye O, Hyder AA. Socioeconomic impact of road traffic injuries in West Africa: Exploratory data from Nigeria. *Inj Prev* 2010;16:389-92.
21. WHO. Global Plan for the Decade of Action for Road Safety 2011-2020. Geneva: WHO; 2011.
22. WHO. Global Plan for the Decade of Action for Road Safety 2011-2020. Geneva: WHO; 2010.
23. WHO. Road Safety Status: Country Profiles. Nigeria: WHO; 2015. Available from: www.who.int/violence_injury_prevention/road_safety_status/2015/en/. (accessed on 20th March 2016)
24. Federal Road Safety Commission. Road Transport Safety Standardization Scheme; June 2009.
25. Evans L. Safety-belt effectiveness: The influence of crash severity and selective recruitment. *Accid Anal Prev* 1996;28:423-33.
26. Evans L. The effectiveness of safety belts in preventing fatalities. *Accid Anal Prev* 1986;18:229-41.
27. Marburger EA, Friedel B. Seat belt legislation and seat belt effectiveness in the Federal Republic of Germany. *J Trauma* 1987;27:703-5.
28. Routley V, Ozanne-Smith J, Li D, Hu X, Wang P, Qin Y. Pattern of seat belt wearing in Nanjing, China. *Inj Prev* 2007;13:388-93.
29. Cummings P, Wells JD, Rivara FP. Estimating seat belt effectiveness using matched-pair cohort methods. *Accid Anal Prev* 2003;35:143-9.
30. Mock CN, Jurkovich GJ, nii-Amon-Kotei D, Arreola-Risa C, Maier RV. Trauma mortality patterns in three nations at different economic levels: Implications for global trauma system development. *J Trauma* 1998;44:804-12.
31. Solagberu BA, Ofoegbu CK, Abdur-Rahman LO, Adekanye AO, Udoffa US, Taiwo J. Pre-hospital care in Nigeria: A country without emergency medical services. *Niger J Clin Pract* 2009;12:29-33.
32. Oluwadiya KS, Olakulehin AO, Olatoke SA, Kolawole IK, Solagberu BA, Olasinde AA, *et al.* Pre-hospital care of the injured in South Western Nigeria: A hospital based study of four tertiary level hospitals in three states. *Annu Proc Assoc Adv Automot Med* 2005;49:93-100.
33. Centers for Disease Control and Prevention. The public health approach to violence prevention 2015. Available from: <https://www.cdc.gov/violenceprevention/overview/publichealthapproach.html>. [Last accessed on 2016 Mar 18].
34. Centers for Disease Control and Prevention (CDC). Motor-vehicle safety: A 20th century public health achievement. *MMWR Morb Mortal Wkly Rep* 1999;48:369-74.
35. Adogbu PO, Ilika AL, Asuzu AL. Predictors of road traffic accident, road traffic injury and death among commercial motorcyclists in an urban area of Nigeria. *Niger J Med* 2009;18:393-7.
36. Elechi EN, Etawo SU. Pilot study of injured patients seen in the University of Port Harcourt Teaching Hospital, Nigeria. *Injury* 1990;21:234-8.