First aid knowledge and application among commercial inter-city drivers in Nigeria

Adenike I. Olugbenga-Bello a,*, Oluwadiya K. Sunday b, Bret A. Nicks c, Olakulehin A. Olawale d, Adewole O. Adefisoye e

a Department of Community Medicine, Faculty of Clinical Sciences, College of Health Sciences, Ladoke Akintola University of Technology (LAUTECH), Osogbo, Ogbomoso, Oyo state, Nigeria
b Department of Surgery, Ekiti State University, Ado-ekiti, Nigeria
c Department of Emergency Medicine, Wake Forest School of Medicine, Winston-Salem, NC, USA
d Department of Surgery, Faculty of Clinical Sciences, College of Health Sciences, Ladoke Akintola University of Technology (LAUTECH), Osogbo, Ogbomoso, Oyo state, Nigeria
e Department of Community Medicine, Ladoke Akintola University of Technology (LAUTECH) Teaching Hospital, Ogbomoso, Oyo State, Nigeria

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Abstract
Introduction: Road traffic accidents have been responsible for an increasing number of deaths and disabilities worldwide, with a disproportionate growth in developing countries. While preventative measures are essential, integration of basic medical care in the pre-hospital setting is crucial given the limitations of pre-hospital emergency medical services within most low to middle income countries. Additional opportunities to provide immediate care at the point of injury have been explored but are not uniformly available. The objective of this study was to ascertain the current level of basic first aid knowledge and application of commercial inter-city drivers in Nigeria.

Methods: This cross-sectional cohort study was carried out among commercial inter-city drivers in Osogbo, Osun State, Nigeria from March - April 2009. Using a simple random sampling technique, 229 participants were uniformly interviewed using a pre-tested questionnaire.

Results: All participants were males with 102 (44.5%) having a secondary school education. The mean driving experience of participants was 26.1 years. A minority of participants (86; 37.6%) identified basic resuscitation priorities correctly. Most participants (183; 79.9%) believed that they could be trained and would be willing to apply first aid.

Discussion: Basic first aid knowledge and application are limited in the studied inter-city driver cohort. However, a majority believe they could be trained and would be willing to participate in
Patient care. Further efforts should be made to educate commercial drivers on the components of first aid, establish appropriate on-board resources, and measure outcomes.

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Abstract Introduction: Les accidents de la route sont responsables d’un nombre croissant de décès et d’invalidités dans le monde, avec une croissance disproportionnée dans les pays en développement. Alors que les mesures de préventions sont essentielles, l’intégration de soins médicaux de base en milieu préhospitalier est primordiale étant donné les limites dans les services d’urgence médicale préhospitaliers dans les pays à faible et moyen revenu. Des possibilités supplémentaires de fourniture de soins immédiats sur le lieu de l’accident ont été étudiées mais ne sont pas encore disponibles de façon uniforme. L’objectif de cette étude visait à identifier le niveau actuel des connaissances et de l’application des premiers secours chez les conducteurs professionnels interurbains au Nigeria.

Méthodes: Cette étude de cohorte transversale a été réalisée auprès des conducteurs professionnels interurbains à Osogbo, dans l’État d’Osun, au Nigeria, de mars à avril 2009. A l’aide d’une technique d’échantillonnage aléatoire simple, 229 participants ont été interrogés de façon uniforme à l’aide de questionnaires testés préalablement.

Résultats: Tous les participants étaient des hommes dont 102 (44,5%) avaient un niveau d’étude secondaire. L’expérience de conduite moyenne des participants était de 26,1 années. Une minorité des participants (86; 37,6%) a correctement identifié les priorités de base de réanimation. La plupart des participants (183; 79,9%) pensaient pouvoir être formés et seraient prêts à appliquer les premiers secours.

Discussion: Les connaissances et l’application des premiers secours est limitée dans la cohorte des conducteurs interurbains étudiés. Cependant, la plupart d’entre eux pensent pouvoir être formés et seraient prêts à participer à la prise en charge des patients. Des efforts supplémentaires doivent être faits pour éduquer les conducteurs professionnels sur les composants des premiers secours, établir les ressources globales adaptées, et mesurer les résultats.

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African relevance

- In developed economies, integration of pre-hospital trauma life support and emergency trauma care systems are responsible for a marked reduction in morbidity and mortality.
- Sadly these integrated trauma systems are lacking in most African countries.
- In Nigeria, the first person attending road traffic accidents is likely to be another driver.
- Training the drivers to administer first aid, may present an opportunity for improving the trauma care in Africa.

What’s new

- Commercial drivers in Nigeria have a poor understanding of basic first aid knowledge.
- Drivers are keen to be trained in delivering first aid at road traffic accidents.
- Training commercial intercity drivers as first aid lay providers is an important step in improving trauma care.

Introduction

The morbidity and mortality resulting from accidents are greater than any other disease entity worldwide.1–3 Road-traffic accidents (RTA) account for a substantial part of these accidents and are the most common cause of fatality from accidents in most parts of the world.1,3 Globally, more than a million people die each year from RTA and 20–50 millions are injured or disabled.3 A disproportionate number of victims are from younger age groups consequently causing an enormous loss of “potential life years” and negatively impacting the workforce.3 RTA injuries are the second leading cause of death—after AIDS1,3 and studies have shown that the incidence is increasing. Of RTA, automobile accidents are the most common cause, followed by motorcycle related accidents.4,5 Disability secondary to road traffic injuries now ranks ninth for the causes of disability, but is projected to rise to third by 2020 for a myriad of reasons.

While the problem of deaths and injuries as a result of RTA is acknowledged as a global phenomenon, it is not a new phenomenon. Previous work within low to middle income countries (LMIC) identified both prevention and care application at the point of injury as vital to reducing the impact of RTA.5–9 However, despite such efforts, the increasing mobility of many populations in LMIC, limited passenger safety regulations, limited road infrastructure, poor roadway safety features, poor driving practices and lack of established pre-hospital care processes have led to the increasing incidence of RTA-associated morbidity and mortality.1,5,11 In addition, the World Health Organization (WHO) includes vehicle overloading, poor maintenance, over speeding, incorrect
over-taking procedures, excessive speed at roadway turns, and substance abuse while driving as contributory. Other factors include age of the driver, driving experience, seatbelt use non-compliance, and accident recidivism among others. Appropriately, authorities in virtually all the countries of the world remain concerned about the increasing number of people killed and seriously injured on their roads.

In middle and upper-income countries, integration of pre-hospital trauma life support and integrated emergency medicine and trauma care systems are responsible for marked reduction of morbidity and mortality following trauma. Unfortunately, these integrated trauma systems are lacking in many low and middle-income countries. A number of publications have advocated lay person assistance at the accident scene. In Nigeria, frequently the first person on the scene is likely to be another driver, and may prove to be the ideal population to be singled out for training. This study focuses on intercity drivers because it accounts for a large number of drivers, routes and population movement and therefore may represent the greatest opportunity for road traffic accident care intervention.

Materials and methods

This cross-sectional cohort study, after being approved by the institutional review board of the Lautech Teaching Hospital Osogbo was conducted in the motor parks of Osogbo (capital of Osun State in southwestern Nigeria) associated with intercity journeys. The study population included resident, intercity bus and taxi drivers – members of the driver’s trade union in Osogbo with driving experience of 2 years or more. Simple random sampling method by binomial (Yes/No) balloting was used to identify those within this cohort to participate in the study. Verbal consent to participate in the study was then obtained prior to initiation of the questionnaire.

Two hundred and twenty-nine questionnaires were either self-administered when the participants could read or by systematic interviewer method when participants were not able to read. Uniformly trained questionnaire medical student proctors were present during the administration of the study. Pretesting and question validation were sought by the authors among bus drivers in an intercity garage in Ikirun, a neighbouring town of Osogbo. This was drafted using relevant literature and reviewed by both an epidemiologist and a trauma surgeon to further ensure interpretability and uniformity. Necessary adjustments were made before the instrument was used for the main study. Uniform language translation to Yoruba was performed when needed within the study cohort. Information collected focused on driving experience and knowledge, practice and perspective of first aid. Basic statistics for categorical and continuous data were analysed using IBM Statistical Package for the Social Sciences (SPSS), version 15.

Results

Of two hundred and forty-one questionnaires administered, 229 were completed and analysed. Both open and close-ended questions were employed. All participants were male with an average age of 45.9 ± 7.9 (SD) years. Twenty six (11.4%) had no formal education while 81 (35.4%), 102 (44.5%) and 8 (3.5%) had primary, secondary and post-secondary school education respectively. Twelve (5.2%) did not indicate their level of education.

Driving experience

The mean driving experience of the participants was 26.1 years, ranging from 20 to 42 years. One hundred and ninety-eight (86.4%) were making one trip per day while the remaining 31 (13.6%) were making two trips per day. Thirty-six (15.7%) had witnessed RTA before; 23 (10.0%) witnessing it once, 12 (5.2%) twice and one respondent had witnessed RTA four times.

Definition and perceived components of first aid

Participants were asked an open-ended question regarding the definition of first aid. Of the participants, seventy-nine (34.5%) defined first aid as what is done for the patient at the accident site. Others defined it as getting the patient to the nearest hospital or care site (22; 9.6%), controlling bleeding (7; 3.1%), providing oral hydration (6; 2.6%), and giving medications such as Phenstic® or Panadol® (4; 1.8%). The remaining participants were uncertain.

The open-ended question was followed by a series of closed-ended questions to further ascertain perceived components of first aid, as seen in Table 1. When asked about who should give first aid, a majority (172; 75.1%) believed that scene bystanders should do so. A minority (57; 24.9%) believed that only policemen, the federal road safety officers or healthcare workers should initiate care. A simple majority (142; 63.8%) believed first aid should be initiated as soon as possible, while 33 (14.4%) believed it should not be started until after arriving at the hospital.

Prioritization and application of basic first aid concepts

Participants were asked to prioritize the basic first aid concepts of breathing maintenance, haemostasis and fracture splinting. A majority (128; 59.9%) correctly prioritized airway management first, while only 37.6% identified the correct order for all the three care areas. Table 2 reflects the participant’s knowledge of breathing patterns such as tachypnoea, bradypnoea and airway obstruction (translated into local terms). In relation to safe patient positioning after a traumatic event, 42 (18.3%) believed placing the victim sideways, 172 (75.1%) face-up position and 15 (16.9%) believed face down positioning was best. Related to wound management and haemostasis, 90 (44.5%) believed a tourniquet should be used for on-going severe bleeding, 104 (51.5%) believed a dressing and pressure should be applied and 8 (4.0%) responded that the wound should be left alone. Considerations for fracture management were that 184 (88.5%) believed splints could be used for obvious fractures while 16 (7.0%) believed splints should not be used; 29 (12.7%) were undecided. Unconsciousness was cited as the greatest indication to transport the patient to the hospital (134; 58.5%). Others believed that traumatic wounds (20; 8.7%) and fractures (12; 5.2%) were representative of the need for hospital care. For those being transported to the hospital, 160 (69.9%) of the participants believed supine positioning was best for the patient; 12.2% believed sitting upright was preferred while 14.8% were uncertain.
Table 1 Perceived components of first aid.

<table>
<thead>
<tr>
<th>Perceived components of first aid</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Uncertain (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventing further accidents</td>
<td>171 (77.4)</td>
<td>42 (19.0)</td>
<td>8 (3.6)</td>
</tr>
<tr>
<td>Moving patients from accident site when required</td>
<td>221 (96.5)</td>
<td>0</td>
<td>8 (3.5)</td>
</tr>
<tr>
<td>Making sure that patient is breathing properly</td>
<td>172 (76.4)</td>
<td>29 (12.9)</td>
<td>24 (10.7)</td>
</tr>
<tr>
<td>Stopping bleeding</td>
<td>205 (89.5)</td>
<td>12 (5.2)</td>
<td>12 (5.2)</td>
</tr>
<tr>
<td>Splinting fractures</td>
<td>158 (76.3)</td>
<td>33 (15.9)</td>
<td>16 (7.7)</td>
</tr>
<tr>
<td>Transporting patients to hospitals</td>
<td>208 (94.1)</td>
<td>5 (2.3)</td>
<td>8 (3.6)</td>
</tr>
<tr>
<td>Giving fluid to drink</td>
<td>42 (19.0)</td>
<td>171 (77.4)</td>
<td>8 (3.8)</td>
</tr>
<tr>
<td>Pouring water on the victims to revive them</td>
<td>168 (76.0)</td>
<td>41 (18.6)</td>
<td>12 (5.4)</td>
</tr>
<tr>
<td>Giving food to take</td>
<td>33 (15.2)</td>
<td>164 (75.6)</td>
<td>20 (9.2)</td>
</tr>
</tbody>
</table>

Table 2 Recognition of respiratory abnormalities.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Uncertain (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noisy breathing (Obstruction)</td>
<td>162 (77.5)</td>
<td>38 (18.2)</td>
<td>9 (4.3)</td>
</tr>
<tr>
<td>Fast breathing (Tachypnoea)</td>
<td>163 (76.5)</td>
<td>45 (21.1)</td>
<td>5 (2.3)</td>
</tr>
<tr>
<td>Slow breathing (Bradypnoea)</td>
<td>133 (62.4)</td>
<td>72 (33.8)</td>
<td>8 (3.8)</td>
</tr>
</tbody>
</table>

**RTA experience and first aid provided**

One hundred and seventy-one (80.7%) participants have attended to RTA victims before while 58 (19.3%) had not, although most (49) knew other drivers that had. For those previously attending to RTA victims, 83 (36.2%) said they took the patient to the nearest hospital, 37 (16.2%) said they gave onsite first aid before taking the patient to the nearest hospital, 22 (9.6%) helped extricate trapped crash victims, 9 (3.9%) attended to bleeding wounds, one “surrendered” his vehicle to be used for patient transportation to a hospital and one gave mouth to mouth resuscitation. The cited first aid provided by the participants included pouring water on the victims (18; 10.5%), stopping bleeding with compression or tourniquets (13; 7.6%), applying wooden splints (6; 3.5%) and calling the police (5; 2.9%). Additional actions included “separating dead from the wounded and taking the wounded to the hospitals”, and “blowing air on them, placing them on a seat and taking them to the hospital”. Four (1.7%) of the participants claimed to have abandoned the victims at the accident site while another 5 (2.2%) said they took the patients to the police. At the time of the questionnaire, 45 (19.7%) participants had been involved in RTA, but only 5 received first aid at that time: including receiving Coke® to drink, having water poured on them, and receiving tourniquet applications.

**Attitude regarding first aid**

When asked for the necessity to provide first aid for RTA patients, 184 (80.3%) felt it was necessary. Of those who felt it was necessary, the majority felt it would help prevent unnecessary deaths and improve patient outcomes. Reasons given by those who felt giving first aid was not necessary were that only experts are qualified to treat accident victims or that lay people might not know what to do. Three believed that untrained people could apply wrong treatment and cause harm. Of the 226 that responded to whether lay people, should be trained to give first aid, 206 (90%) agreed, 8 (3.4%) disagreed and 12 (5.2%) were doubtful. Within this cohort, 183 (79.9%) were willing to participate in training and 152 (66.4%) were willing to pay for such training and begin using this skillset.

**Discussion**

This study assessed the cohort’s baseline knowledge and application of first aid related to RTA. The basic first aid knowledge within this cohort was poor as less than half could correctly identify appropriate first aid concepts. This was further exemplified with the lack of knowledge related to basic application of appropriate airway, haemostasis, and fracture management. In addition, there were varied perspectives regarding when each intervention should be applied and by whom. While the majority believed an appropriately trained driver could provide basic care in this setting, it is not uniformly agreed upon as 8.6% of the cohort believed that any intervention should only be performed by trained professionals – or at least were not convinced that a lay-person standard would be of benefit. This concern for quality of care was previously reported by Oluwadiya et al., where 5% of crash victims arriving to four hospitals in Southwestern Nigeria had been given on-site management that proved harmful. However, it is important to note that this study was not based on an identified trained layperson population but rather any bystander intervention.

Previous studies around a similar cohort noted that driver training programs aimed at improving their driving skills failed to reduce road traffic accidents significantly. While this is likely a multi-factorial issue due to increased population mobility, poor vehicle regulatory safety standards, variable road infrastructure, and limited trauma response systems just to name a few, further efforts geared towards improving treatment outcome of road crash victims are of uttermost importance. In many LMIC, limited trauma response systems or emergency medical services make the concept of the basic first aid lay provider a reasonable consideration for initial care intervention. Recognition of this fact led to trials of basic first
aid and rescue courses resulting in future emphasis on consistent use of universal precautions, airway protection, and patient recovery position placement. In countries lacking formal emergency response systems, the importance of lay person interventions is further supported knowing that many avoidable trauma deaths occurred in the pre-hospital setting and that application of basic life support for the injured can be efficiently done by lay persons. However, broad implementation and underlying impact of such a program has not yet been reported but would add greatly to future discussion.

Overall, the attitude of participants towards administering first aid for RTA victims was supportive of the initiative and felt it would have a positive impact. Those that felt otherwise maintained the belief that only the “experts” are qualified to treat the RTA victims – but acknowledged that these “experts” are not routinely available. Furthermore, the majority of the participants agreed that lay people should be trained to give first aid, and more than half of those who agreed were ready for such training. Using a model demonstrated by Tiska et al., the logical next step would be to identify a specific traffic segment and the associated hospital(s) in that region and focus on educating the drivers within that area and collecting all RTA data from the scene as well as the receiving hospitals.

Limitations

It is important to recognize that this study was focused on a cross-section of commercial inter-city drivers in an isolated area of Nigeria and may be limited by the attitudes and perspectives of the cohort. However, several studies have looked at similar concepts and found similar results. In addition, this study focuses on only one area of the multifactorial causes of increasing morbidity and mortality in RTA. While this is directly acknowledged, assessing and potentially establishing a layperson first aid training and intervention may represent an area for positive impact. Lastly, while the process for proctoring the questionaire was uniform in approach, we recognize that the variance in language and translation between all members of the studied cohort could lend itself to interpretative bias.

Conclusion

Road traffic accidents remain a growing public health threat worldwide. This study assessed the cohort’s baseline knowledge, practice and perspective of first aid related to RTA. Given the positive response related to first aid education and application, next logical steps would be to explore establishing a pilot project within this cohort and region. Further collaboration with governmental and non-governmental agencies may prove value-added.

Appendix A. Short answer questions

Test your understanding of the contents of this original paper (answers can be found at the end of the regular features section)

1. Which of the following is not components of first aid management of road traffic accident victims

a. Stopping bleeding through pressure
b. Preventing further injury
c. Splinting fractures
d. Giving oral fluid
e. Transport to the hospital

2. In reducing the impact of RTA, which of the following is vital?

a. Improving road infrastructure
b. Implementation of passenger safety regulation
c. Prevention and care application at the point of injury
d. Improving roadway safety features
e. Penalizing road traffic offenders

3. Which of the following should be prioritised at the RTA scene?

a. Haemostasis
b. Airway management
c. Fracture splinting
d. Wound management
e. Transportation to the hospital

References


