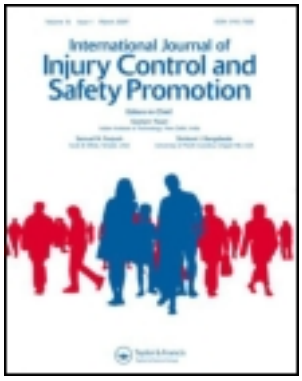

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Road traffic safety in African countries - status, trend, contributing factors, countermeasures and challenges

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Road traffic safety in African countries – status, trend, contributing factors, countermeasures and challenges

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Road traffic crashes and injuries constitute a major health, economic and developmental challenge for many African countries. With only 4% of the world's motor vehicles, African roads witness more than 10% of the world total collision fatalities. With further motorisation, the number of road traffic crashes, injuries and fatalities are expected to grow. This study updates on the status, trends, causes, countermeasures and issues in traffic safety in African countries by reviewing studies published in the past 12 years. The study found that traffic fatalities continued its upward trend in recent years. Similar to those in motorised countries, the study identified that human behaviour and incapacitation account for more than 85% of the contributing factors reported by police in Africa. Unlike in developed countries, the victims of traffic casualties are primarily vulnerable road users. Pedestrians alone account for more than 40% of the total fatalities on African roads. Limited countermeasures were reported in the literature. The outcomes of these programmes are mixed and the research methods have inconsistent validity. Investigation in the feasibility of transferring proven programmes from motorised countries is suggested as an efficient measure for traffic safety improvement.

Keywords: traffic safety; road traffic crashes; injuries and fatalities; African countries; contributing factors; countermeasures; evaluation

Introduction

Road traffic crashes and injuries constitute a major health, economic and developmental challenge to developing countries, especially those in Africa. Of the estimated 1.2 million people killed in road traffic crashes in 2002, 90% occurred in low- and middle-income countries (Peden et al., 2004). Africa has the highest fatality rate in relation to her population: 28.3 per 100,000 people after adjusting for under reporting (Peden et al., 2004). Factoring in the lower vehicle ownership, the traffic fatality rate in African countries ranges from 10-fold to more than 100-fold of those in the United States (FARS, 2008; GRSP, 2009; Jacobs & Aeron-Thomas, 2000; Peltzer and Renner, 2004). With further motorisation on the horizon, road traffic crashes and injuries will continue to rise, threatening the economic and human development of this great land (Lagarde, 2007; Nantulya & Reich, 2003).

In recent years, the growing traffic safety problem in low-income countries, especially in African countries, has been recognised by public health scholars and institutions worldwide. The World Health Organisation (WHO) arranged a consultation meeting in April 2001 and prepared a 5-year WHO strategy for road traffic injury prevention (WHO, 2002). The 2003 official statement from the United Nations' Secretary General emphasised the global public health challenge posed by road traffic injuries and encouraged its Member States to address the problem. The World Bank Global Road Safety Facility has sponsored studies, coordinated strategic development and funded programmes to combat the road carnage at both global and regional levels (Assum, 1998; World Bank, 2008). The Global Road Safety Partnership (GRSP) initiated by the World Bank has brought together businesses, governments and nonprofit organisations worldwide to address road safety issues in this continent (GRSP, 2009). The conference held in Cambridge, Massachusetts, has provided a forum for scholars and government officials to exchange viewpoints and to present state-of-the-art programmes and their evaluations. The discussion extended to methodologies to transfer effective traffic safety interventions from high-income countries to Africa (Nantulya & Reich, 2003). Compilations and summaries of

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existing studies were also reported in the literature, although rare and with varying degree of scientific rigor. An early comprehensive review of traffic safety in Africa was compiled by Odero, in the late 1990s (Odero, Garner, & Zwi, 1997). Since then, changes have occurred in many fronts, including new scholarly studies reported sporadically in the literature. An updated review of the conditions, the causes, the counter measures and their outcomes in traffic safety in Africa in this new millennium is therefore deemed useful and timely. This study is intended to serve the information needs of researchers, policy makers and the international organisations, such as the United Nation, WHO, Word Bank and many other international standing committees and institutions that are committed to this cause, in addition to concerned citizens in African countries.

This study reviewed reports published in major scientific journals on traffic safety. Articles were searched and obtained from published journals electronically or in print. Major search engines, such as PubMed and EBSCO, were used to locate potential papers initially. Key journals, including but not limited to, Accident Analysis and Prevention, Safety Research, International Journal of Injury Control and Safety Promotion, Injury Prevention, Traffic Injury Prevention, and various local safety journals published in Africa, were searched for the last 12 years, starting from 1998, dovetailing with Oredo's last comprehensive review (Oredo et al., 1997). A search on the internet was also conducted to glean government reports and other studies not published in scientific journals. Websites of known organisations were targeted for their contributions to traffic safety. All articles deemed relevant and important to traffic crashes and counter measures in Africa were included in this review, recognizing the scarcity of formal studies and reports. Consequently, the literatures reviewed are not uniform in quality. Critiques were therefore provided in the review where deemed appropriate.

This report is organised into six sections. First, it depicts the prevalence and trends of road traffic crashes and injuries. Second, it analyses the pattern of traffic injury involvement and identifies the key issue of pedestrians as a major safety feature in Africa. Third, it identifies causal factors and discusses potential interventions. Fourth, it reviews and summarises extant evaluations of policies and counter measures that have been implemented. Fifth, it discusses the hindrances and potential solutions in traffic safety improvement in the present African context. It concludes by summarising the findings and commenting on issues facing African countries in improving traffic safety.

Traffic crashes, injuries and fatalities: magnitude and trend

Compared with motorised countries, traffic safety in African countries is devastating. Odero (2004) compiled traffic crash and injury statistics of selected African countries, shown in Table 1. For example, South Africa, the most industrialised country in Africa, reported 19 fatalities per 100,000 populations, which is higher than that of the United States (15 fatalities per 100,000 populations). Compared on a per vehicle basis, Tanzania and Ghana witnessed more than 100 fatalities per 10,000 vehicles, compared with the 1.7 fatalities per 10,000 vehicles in the United States.

While road traffic crashes and injuries have slowly decreased in the past decades in developed countries, the traffic safety situation in Africa is worsening. For instance, in Ghana, the number of reported crashes increased by 62.8% (from 6,850 to 10,715), the number of reported traffic injuries increased by 48.8% (from 7,663 to 11,405) and the number of traffic fatalities increased by 65.3% (from 824 to 1,362) between 1994

Table 1. Reported road deaths in selected African countries, by region.

		Fatality rate	
Country (year)	Deaths	Per 10,000 vehicles (level of motorisation)*	Per 100,000 population
Eastern Africa			
Kenya (1999)	2,823	73 (14)	10
Ethiopia (1998)	1,693	199 (1)	3
Tanzania (1998)	1,583	161 (5)	5
Uganda (1997)	1,575	122 (7)	8
Eritrea (1996)	129	36 (9)	3
Southern Africa			
S. Africa (1998)	9,068	16 (121)	19
Malawi (1996)	1,382	245 (5)	12
Zimbabwe (1996)	1,205	34 (31)	11
Botswana (1998)	453	55 (56)	31
Lesotho (1993)	326	87 (17)	15
Swaziland (1996)	290	46 (68)	31
Central Africa			
Rwanda (1994)	483	161 (5)	5
Niger (1998)	245	46 (5)	2
Congo	124	23 (20)	5
C. Africa Republic	58	270 (1)	2
West Africa			
Nigeria (1995)	6,185	45 (21)	9
Ghana (1998)	1,646	122 (7)	9
Cameroon (1994)	840	52 (12)	6
Senegal (1995)	791	66 (14)	9
Cote d'Ivoire (1995)	575	13 (28)	4
Guinea (1995)	423	121 (5)	6
Benin (1996)	412	90 (8)	7

Source: Table adapted from (Odero, 2004).

and 1998 (Afukaar, Antwi, & Ofosu-Amaah, 2003). In Kenya, traffic crashes increased by 300% (from 3,562 to 14,342) and the number of people killed by 430% (from 552 to 2972) between 1965 and 1998 (Odera et al., 2003). The increase has slowed down somewhat in the 1980–1990s in Nigeria, corresponding to an economic recession. However, the upward trend has accelerated again since the turn of the new millennium (Nantulya & Reich, 2003). The road traffic crash fatality rate in Africa as a whole is anticipated to increase by 80% between 2000 and 2020, if major changes are not made to reverse this trend (Peden et al., 2004).

Crash involvement

One striking feature of road traffic crashes and injuries in Africa is its high involvement of, and impact on, the most vulnerable road users, like the pedestrian and the passengers of public transport. The literature review shows that pedestrian crashes accounted for more than 40% of crashes in African countries. For example, pedestrians accounted for 55% of road traffic deaths in Mozambique between 1993 and 2000 (Romao et al., 2003). Pedestrians made up 46% of road traffic deaths in Ghana between 1994 and 1998 (Afukaar et al., 2003). Pedestrian and passenger crashes represented 80% of all road traffic deaths in Kenya in 1990 (Odero, Khayesi, & Heda, 2003). This creates an overwhelming human and financial burden to the most vulnerable road users and their families, who tend to be poor and have the least resources to deal with it. It is therefore an equity issue, as well as a safety and economic issue facing African nations.

For the majority of poor Africans, the use of public transport is the daily routine for work and other regular activities. Public transport has not been particularly safe, however, due to the lack of seat belts, overcrowding and poor road conditions. In an epidemiological study of transport-related injuries in Ghana, Mock and colleagues (1999) found that 58% of motor vehicle crashes involved buses and minibuses among urban residents. Commercial vehicles were involved in 79% of motor vehicle crashes, including taxis and cargo trucks. In rural Kenya, the majority of passengers are transported by small local companies, using matatus (Nafukho & Khayesi, 2002). Most public-transport-related collisions occur in these mini-buses, with their limited safety measures and unsafe operations.

Road traffic injuries and fatalities are mostly concentrated in males at their most productive age (Mock, Boland, Acheampong, & Adjei, 2003). Using data from the South Africa National Injury Mortality Surveillance System (NIMSS), Mabunda, Swart, and Seedat (2008) conducted an in-depth analysis of the pedestrian involvement in collisions in four cities in South Africa. The study found that, among the total of 7,433 pedestrian deaths between 2001 and 2004, more than half (56.7%) were in their prime age, i.e., between 20 and 44. Most of the pedestrian deaths were male, with a three to one ratio to female fatalities. The death of a breadwinner can exert a devastating impact on families, pushing many into poverty with long-lasting effects on their children and their community at large (Mabunda et al., 2008).

Contributing factors

A number of risk factors have been identified that contributed to traffic crashes and the resulting human casualties. These factors have been traditionally classified into three major categories; human, vehicle, and highway infrastructure, along a pre-crash, crash and post-crash timeline, commonly referred to as the Haddon Matrix, in recognition of Haddon, Jr. (1980). The present study uses this framework to organise and analyse the contributing factors, as well as their corresponding countermeasures, which are reported in the next section.

An examination of the contributing factors of traffic collisions as identified by the investigating police in African countries showed a similar pattern to those identified in the United States and other motorised countries (Table 2). Human factors, including road user behaviour and incapacitation, were the most common factors, accounting for more than 85% of all traffic crashes (Odero et al., 2003). Among them, the two key-known contributing factors were speeding, and drinking and driving.

Speeding is a key contributing factor in traffic collisions and injuries in Africa (Afukaar, 2003; Butchart, Kruger, & Lekoba, 2000). For instance, speeding was identified as a contributing factor in 75% of the fatal traffic crashes in South Africa (Satchwell,

Table 2. Causes of road accidents as determined by the police in selected African countries, main cause of accident (%).

	Road-user error	Vehicle defect	Adverse road conditions or environment	Other
Botswana	94	2	1	3
Cyprus	94	1	6	–
Ethiopia	81	5	–	14
Kenya	85.5	5.1	1.3	5.4
Zimbabwe	89	5	1	5

Source: Baguley and Jacobs (1999) and Odero et al. (2003).
In about 30% of accidents, multiple factors were identified.

2002). Speeding was also a contributing factor in more than 25% of all traffic crashes in Dar-es-Salam in Tanzania between 1999 and 2001 (Barengo, Mkamba, Mshana, & Miettola, 2006). Higher speed reduces the response time of the driver and increases the severity of the outcome.

Drinking and driving is another key factor, contributing to traffic crashes and injuries (Pluddemann et al., 2004). However, this number is likely to underestimate alcohol as a contributing factor in traffic crashes and injuries in African countries. Many drinking drivers are undetected because of the lack of detection devices with the law enforcement agencies. In Tanzania, for example, the under detection issue has been specifically attributed to the lack of technology, logistics and culture, as well as reluctance in enforcing drinking and driving laws (Museru et al., 2002). Lacking roadside devices, the police have to take the drivers to medical centres, where doctors may or may not be available for blood concentration tests in the name of law enforcement (Bekibele et al., 2007).

Human incapacitation has been reported in the literature as contributing factors in road traffic crashes. Two key issues stand out in this concern, driver visual acuteness and driver fatigue. A study of drivers in Nigeria showed that 18% of the 149 truck drivers failed in their vision test (Onabolu, Otulana, & Awodein, 2008). Some major underlying health problems identified included refractive error, cataracts, glaucoma, etc. Another study of eyesight and eyesight-related-collisions of 99 commercial drivers confirmed the issue (Adeoti, 2007). It also reported that a lower level of eyesight was related to a higher level of traffic collisions (Adeoti, 2007). Eye testing, especially for bus or truck drivers, is therefore of policy relevance for decision makers, given the significant role that commercial and public transportation plays in these nations and economies (Adeoti, 2007).

Driver fatigue, especially truck and bus driver fatigue, is considered a major issue, threatening transportation safety in the world, including Africa (Adams-Guppy & Guppy, 2003; Davis, Quimby, & Odero, 2003). This issue is exacerbated by the overcrowding of passengers and the lack of maintenance of the bus and truck fleet. In Kenya, for example, most crashes in rural areas involve public transportation vehicles, including buses and matatus, a smaller vehicle used for personal transportation often owned and operated by private companies in Africa. Long distance driving and the lack of effective management of fatigue contribute to crashes (Odero et al., 2003). A Nigerian study shows that rider fatigue contributed to 13% of motorcycle crashes in Nigeria (Oginni, Ajike, Obuekwe, & Fasola, 2009).

Another major category of contributing factors relates to vehicles. Vehicle road-worthiness is a concern in Africa, although it accounts for a smaller percentage of crashes. As a sole contributing factor, vehicle failure was cited between 5% and 6% of the total traffic crashes (Odero et al., 2003). However, combined with other factors, human and road, vehicle defects are involved in more than 10% of all road traffic crashes (van Schoor, van Niekerk, & Grobbelaar, 2001). Given the present economic condition and the lack of car manufacturers in this region, many African countries import older, second-hand vehicles. Lack of regulation and inspection at the boarder entry points also contribute to this problem. This is furthered by the lack of maintenance, in terms of neglect and substandard repairs, using low-quality substitute parts, especially for safety components, such as tyres and brakes. This issue may not be improved easily without economic recovery, coupled with policy initiatives to control imports and regulate the safety of vehicles on the road.

Highway infrastructure is another category of factors that contribute to traffic crashes in African countries. Although bad roads account for less than 5% of the causes that contribute to traffic crashes, the combined effects with other types of factors have devastating safety impact and should not be overlooked (Baguley & Jacobs, 1999). Specific factors in this category include potholes and sharp/steep bends (Odero et al., 2003). A number of reasons have been advanced to account for the current road conditions in the African context. Impacted by war, political instability and economic stagnation, roads in many African countries are often badly maintained. More often than not, safety was not considered in the design of highways nor was it considered a priority in highway maintenance.

After the impact of a traffic collision, emergency medical services and trauma-care facilities play a defining role in saving lives and in reducing the damage of a collision. A lack of resources of emergency and medical services in African countries, especially when the collision occurs in rural areas has been reported in the literature (Forjouh et al., 1999; Lett, Kobusingye, Asingwire, & Ssengooba, 2004; Mock, Arreola-Risa, & Quansah, 2003). In a recent study, Bellagio Essential Surgery Group (2008) analysed the current status in trauma-care delivery in Uganda. They found inconsistent pre-hospital care services in the capital city of Kampala. While some patients were treated by paramedics and transported by ambulance to the nearest hospitals, the vast majority of injury victims received minimal or no treatment at the site and were transported by taxi, private car, police or whatever transport that was to be

found. Outside of the capital city, crash victims received even less emergency services and trauma care. By policy design, rural traffic collision victims were supposed to be covered at regional hospitals. However, these hospitals were not equipped to provide adequate care for trauma patients, because of the lack of surgeons (Bellagio Essential Surgery Group, 2008). This situation is not unique to Uganda. A separate study showed that there were no emergency services along rural highways to transport victim to trauma facilities in Ghana either (Quansah, 2001).

Interventions and evaluations

Some African countries have reported interventions to improve road traffic safety. For example, the government in Ghana has launched an information campaign using TV programmes (Blantari, Asiamah, Appiah, & Mock, 2005) to educate professional drivers and promote road traffic safety. A survey was conducted to gauge the effect of the program by measuring the perceptions of professional drivers in terms of reach and penetration. The study revealed that the TV programme has reasonable coverage, clarity and acceptance based on a sample of 50 participating drivers. The study, however, failed to detect any driver behavioural change, which was the implied goal of the TV programme.

An engineering approach was found in Ghana to manage traffic speed, recognising the danger to law enforcement officers, the limited police resources and the low public support for speed law enforcement. The Ghana programme installed speed bumps and rumble strips along major stretches of the highway. An initial evaluation reported promising results. Through a simple before and after comparison study, the evaluation revealed a reduction in fatality by 55% (Afukaar, 2003). It should be noted that the report did not provide a detailed study design; therefore, the validity of the study cannot be established. The change of fatalities could be a result of regression to the mean if the sites were selected based on an unsafe record, measured by frequency counts of collisions and/or injuries. More studies of a rigorous nature are required to evaluate the effect of a traffic safety programme, especially when small areas such as an intersection or a highway segment, and rare events, such as traffic crash fatalities, are concerned.

Typical motor vehicles in Africa are imported from other continents. Until quite recently, most African countries had no inspection requirement for vehicle safety (Lagarde, 2007). More importantly, the existing inspection regime does not work in practice. Over the last decade, a number of African countries have instituted laws to limit or ban the import of old and unsafe vehicles. In Senegal, for example, a law was promulgated in 2001, which banned the import of cars older than 5 years and trucks older than 10 years. However, the implementation of the law has been postponed for 2 years (Lagarde, 2007). No evaluation of the programme has been reported.

To protect the most vulnerable users of the road network, Uganda has constructed an overpass across a busy highway, providing a safe path to a shopping centre (Kobusingye, Guwatudde, & Lett, 2001). The evaluation of the programme is however inconclusive. A survey of pedestrian traffic in the proximity of the overpass by observing more than 13,000 pedestrians revealed that only 35.4% of the target people used the facility. A 1-year before and 1-year after comparison found an increase of traffic crashes (from 13 to 51) and an increase in traffic injuries (from 14 to 17). Meanwhile, a reduction in traffic fatalities was observed (from 8 to 2) (Mutto, Kobusingye, & Lett, 2002). The simple before-and-after comparison study design deprived the author from attributing any changes in safety to the construction of the pedestrian facility alone.

A few studies have evaluated medical training programmes aimed at improving the post-crash remedial care, offered to commercial drivers who provide emergency medical services and emergency surgeons who provide trauma care treatment (Bergman et al., 2008; Lett et al., 2004; Sasser et al., 2005; Tiska et al., 2004). A Ghana study of pre-hospital care training programme reported positive outcomes (Mock et al., 2002). After taking the course, trained commercial drivers reported considerable improvement in the type of first aid they could provide. For instance, those that provided external bleeding control increased from 4% before to 42% after the training programme. The improvement was confirmed by attending nurses. On a 0 (potentially harmful) to 10 (perfect) scale, the first aid provided by trained drivers were notably higher (median = 7) than those in the comparison group (median = 3). The percentage of drivers who provided crash scene management also improved from 7% before the training to 35% after the course.

Upon arrival at a hospital, trauma care affects and possibly determines the outcome of the injured. A recent study in Tanzania found that trauma training courses were an effective way to improve the performance of trauma surgeons (Bergman et al., 2008). Trauma team performance was judged as excellent when assessed with a novel trauma simulation assessment tool after the training. Participants were very supportive of the course as measured by a self reported satisfaction survey. No information on real patient outcomes was reported from this study however, and corroborative evidence from other studies is required.

In summary, limited interventions have been reported in the literature, with varying outcomes. Following the Haddon matrix framework (Haddon, 1980), the evaluations of the reported interventions are summarised in Table 3.

An examination of Table 3 reveals that evaluative studies on the effectiveness of traffic safety countermeasures in Africa have been concentrated on the top, the prevention line, and the bottom, the treatment line. Studies on programmes on highway designs and safety auditing to reduce roadside hazards are missing or not working due primarily to programme implementation. Some of the evaluations in the reviewed articles have questionable validity and reliability, often addressing intermediate measures as opposed to the final safety impacts, using methods of simple before and after comparison designs. Further studies, using valid and reliable data and rigorous methods are recommended.

Issues and potential solutions

A number of issues have hampered and are still challenging the improvement of traffic safety in African countries. Among the key obstacles that are subject to intervention are the lack of a leading and coordinating agency with regulatory power and public support, the paucity and inconsistency of road traffic crash data, the limited traffic safety and injury prevention research and arguably a fatalistic culture that treats crashes as accidents.

Leading organisation and public support

The first fundamental barrier for improving traffic safety relates to politics, organisations and the resulting level of resources. Although many African countries have established road safety agencies in the form of National Road Safety Councils or Road Safety Committees since the early 1980s, most of them do not have the legal and regulative power, and the necessary resources to develop and enforce traffic laws (Odero, 2004). Future development is facilitated by the establishment of a potent leading agency with support and participation of broad-based stakeholders, which will lay the foundation for technical and legal advancement for road safety and injury prevention (Odero et al., 2003).

Data and surveillance systems

The paucity of surveillance data from African countries is another fundamental problem. With some exceptions, the current data systems under-report and underestimate the issue of traffic safety as a health, social and economic problem (Khayesi & Peden, 2005), preventing it from acquiring appropriate and commensurate public attention and adequate funding. Moreover, without good data, the nature of the problem cannot be well defined, nor can effective solutions be rationally and scientifically identified or designed. The effectiveness of safety programs cannot be evaluated for improvement and accountability in the absence of good data.

The development of a road traffic crash and injury surveillance system can start from examining existing data systems. Administrative data are routinely collected by governments and other organisations in most African countries, albeit in diverse forms and with varying degrees of accuracy and comprehensiveness. For example, data are available from police reports, vital statistics, hospital registries and from epidemiological population surveys in South Africa, Nigeria and Ghana, just to list a few (Gorell, 1997). Data collection, management and analysis tools have also

Table 3. Example of published injury prevention countermeasures, 1998–2009.

	Road user	Vehicle	Road and environment
Pre-crash	Ghana information campaign using TV programs (Blantari et al., 2005)	Senegal promulgated law in 2001, banned importation of cars older than 5 years and trucks older than 10 years (Lagarde, 2007).	• Ghana program installed speed bumps and rumble strips. Reduction in fatality by 55% (Afukaar, 2003). • Uganda program constructed an overpass across a busy highway. Mixed results in crashes and injuries (Mutto et al., 2002).
At crash	–	Senegal promulgated law in 2001, banned importation of cars older than 5 years and trucks older than 10 years (Lagarde, 2007).	–
Post-crash	–	–	• Lett et al. (2004) Trauma team training course: Evaluation of Ugandan implementation. • Bergman et al. (2008) • Sasser et al., Prehospital trauma care systems. Geneva, World Health Organisation, 2005.

been developed and used in several African countries, including Ghana, South Africa, Tanzania and Zimbabwe, often with the support of motorised countries (Butchart et al., 2001). These administrative data collection and management systems need to be periodically reviewed, revised and standardised so that the information can meet the data needs for the advancement of traffic safety through political and programme decision making, research and evaluation.

Research and evaluation

Research and evaluation is another weak link in traffic safety and injury prevention systems in most African countries (Lagarde, 2007; Oredo, 2004). The present literature review has only identified a few basic or applied studies of traffic safety and even fewer in traffic safety programme evaluations. The quality of the studies varied considerably and some of them cannot be assessed because of insufficient reporting.

Research is expensive and evaluation can be political and value laden. Both are often charged as draining resources from the precious programmes they purported to study. The function and value of research and evaluation need to be properly established and justified in a context of economic constraints. One potentially efficient way to acquire knowledge to combat road crashes is to look into existing methods and techniques in motorised countries. Safety advocates could take advantage of the momentum from many world organisations, including the United Nations to foster cooperation with developed countries in conducting research and in developing and implementing effective programmes through knowledge transfers. It is recognised that knowledge transfer between nations has a failing record over the past decades. However, the present study suggests that much of the information is transferrable, given the similarity in contributing factors leading to crashes. Attention nevertheless should be given to active and substantive participation of local authorities and safety professionals. Cultural, economic and social conditions have to be taken into serious consideration in selecting, adapting, planning and implementing safety-proven initiatives in developed countries. It is important to recognise that Africa is a large continent with more than 60 countries and 1 billion people. The present study only scratched the surface of safety issues of the diverse and rich continent. Knowledge transfer has to be a nation-specific process to give it a better chance of success.

Law and cultural changes

There appears to be a lack of laws and regulations, as well as the will to enforce them in some African countries. A number of reasons have been offered to account for the phenomenon; some are economic and political, and others are historical and cultural. Traffic collisions and injuries have been regarded as accidents, or as acts of God in some circles in the societies (Dixey, 1999). Insufficient knowledge of the potential consequence of unsafe driving may have led the public to resent traffic safety programmes and the inconvenience of traffic fines. For instance, the helmet law (for motorcyclists) enacted in 1976 was later repealed in Nigeria, resulting in a dramatic increase in head injuries (Odero, 2004). Public information campaigns should be considered in changing this mindset, although strong leadership from an established strong leading agency and a timely and accurate data system as outlined earlier would arguably have been a necessary condition for a successful campaign.

Concluding remarks

Road traffic crashes and injuries are affecting the social and economic fabric and the future development of African countries. Vulnerable road users, mostly the poor, are disproportionately and negatively impacted by this man-made and to a large extent preventable carnage. With the increase in motorisation, even more traffic casualties are expected in the years to come. Something major has to be done to stop it.

A number of interventions have been implemented, including the construction of pedestrian facilities, the enactment and enforcement of speed and drinking–driving laws, information campaigns and training programmes for drivers, paramedics and the public at large. The outcomes of these programmes are mixed, and the evaluation methods have an inconsistent validity. Continued efforts to improve traffic safety and to evaluate the programmes with better research design should be encouraged.

Traffic safety programmes require resources, which are scarce in most African countries (Bishai, Asiimwe, Abbas, Hyder, & Bazeyo, 2003). The mobilisation of all the stakeholders, through education and public campaigns, are critical to generate the political will, putting traffic safety on the national political agenda. Convincing the world village, the many international organisations and the United Nation member countries, for instance, to contribute to African road safety, taking advantage of the current momentum would be a good idea.

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