



**Regional Committee for the
Eastern Mediterranean**

EM/RC56/Tech.Disc.1
August 2009

Fifty-sixth Session

Original: English

Agenda item 5

Technical discussion on Road traffic injuries: a growing public health concern

In 2002, more than 132 000 people in the Region died as a result of road traffic crashes, ranking it the fifth leading cause of death in some countries of the Region. Road traffic crashes are not only a public health issue but a social and economic issue costing most countries in the Region 1%–1.5% of gross national product (GNP), and disproportionately affecting the poor and vulnerable, who have little influence over policy decisions. This paper articulates the magnitude of mortality and morbidity due to road traffic crashes in the Region and highlights the issue from a public health perspective. The objective of this paper is to raise awareness of the role of the Ministry of Health in road traffic injury prevention and the urgent need for a multisectoral response.

A draft resolution is attached for consideration by the Regional Committee.

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Executive summary

Injuries are a major but neglected global public health problem, requiring concerted efforts for effective and sustainable prevention. Injuries from all causes are a leading cause of death with 5.1 million people dying in 2000. Road traffic injuries account for the majority of morbidity and mortality due to all forms of injuries. Globally every year 1.2 million people are killed and 20 million–50 million receive moderate to severe injuries as a result of road traffic crashes. In the Eastern Mediterranean Region, every year more than 132 000 people die from road traffic injuries—362 deaths per day. Most of those who die are young males at their most productive age, forcing many families in low socioeconomic groups into poverty. If the current trend continues, mortality and morbidity due to road traffic injuries will rise many fold, especially in low-income and middle-income countries, putting tremendous strain on their scarce resources. Of those affected 90% come from vulnerable groups (pedestrians, public transport users, motorcyclist and cyclists). Road traffic injuries cost 1%–1.5% of GNP to low and middle-income countries in direct and indirect costs.

The objective of this paper is to raise awareness of the role of the Ministry of Health in road traffic injury prevention and the urgent need for a multisectoral response. Despite the enormous human, social and economic cost, efforts on behalf of primary and secondary prevention have been limited. Traditionally, the role of the health sector in primary prevention has also been very limited, although the major burden is borne by the health sector. The challenges include limited data on the causality of road traffic injuries, weak political support, limited capacity at national level and lack of ownership for road safety. Realizing this, WHO and the United Nations identified the issue as a major public health concern and WHO was mandated to coordinate global road safety efforts. Many Member States in the Eastern Mediterranean Region have implemented measures for road traffic injury prevention, but progress is uneven and the response falls far short of the magnitude of the problem.

Developed countries have acquired long experience of effective preventive and control strategies to arrest and reduce the number of road traffic fatalities. Since road safety is a widely multisectoral and multidisciplinary issue, highly motorized countries have employed an approach that addresses a range of road safety system issues (environmental, vehicular and behavioural) rather than only investing in behaviour change. Ministries of health have also been forthcoming in playing a stewardship role in advocating for multisectoral and multidisciplinary approaches. Although solutions from the high-income countries may not be completely applicable to the situation in the Eastern Mediterranean Region, the basic preventive elements are the same and can be applied effectively. By addressing road safety as a public health issue and employing a systems approach, a marked reduction in mortality and morbidity can be achieved.

It is recommended that a national level multisectoral committee (or lead agency) is identified with a pronounced role for the Ministry of Health to lead a multisectoral response. Building national capacities, establishing a multisectoral data collection mechanism, allocating human and financial resources and establishing an effective pre-hospital (emergency medical service) and hospital-based trauma care system are key elements to prevent the occurrence of road traffic injuries and also prevent secondary deaths. Mustering political support to make this happen is the prime responsibility of ministries of health. Otherwise, the health sector will continue to shoulder the burden of human casualties and management of long-term disabilities.

1. Introduction

Injuries are one of the leading causes of mortality and disability worldwide, with an estimated 5.1 million people dying as a result of all forms of injury in 2000 globally—a mortality rate of 83.7 per 100 000 population—accounting for 9% of global mortality [1]. Road traffic injuries account for the majority of mortality and morbidity due to all forms of injury worldwide. Road traffic crashes kill 1.2 million people every year and account for almost 23% of deaths due to all forms of injuries. In the Eastern Mediterranean Region, in 2002 alone more than 132 000 people died as a result of road traffic crashes, ranking it the fifth leading cause of death in some countries of the Region. Road traffic crashes are not only a public health issue but a social and economic issue costing most countries in the Region 1%–1.5% of gross national product (GNP), and disproportionately affecting the poor and vulnerable, who have little influence over policy decisions.

Traditionally, road safety has been considered to be the responsibility of the transport sector, with the main focus within this sector limited to building infrastructure and managing traffic growth. In general, the public health sector has been slow to become involved [2]. The role of the ministries of health (and health sector) has not been well defined in terms of primary prevention of road traffic injuries. Instead their role has been largely minimized to one of providing emergency care and rehabilitative services for the victims. Even this secondary response (emergency care) has not been developed in the low-income and middle-income countries to an extent that minimizes secondary deaths and long-term disabilities. Although the cause of this enormous human and economic burden lies outside the domain of the health sector, the major brunt in the form of casualties is borne by the health sector, putting tremendous strain on already compromised health system resources. Furthermore, the response to this important public health issue from governments and societies falls far short of approaching the magnitude of the problem. Global and regional road safety is seriously under-resourced in all respects.

In 1974 a World Health Assembly resolution attempted to describe the role of the health sector in primary prevention of road traffic injuries (WHA27.59 Prevention of road traffic accidents). However, it did not define the problem in terms of its impact on public health. Subsequent years did not see development of a pronounced role for the health sector or ministries of health. Their involvement in this area has been sporadic and unsustainable, largely due to a lack of understanding of the role public health can play in prevention. The situation took a historic turn in 2004 when the theme of World Health Day 2004 was designated as road safety with the slogan ‘Road Safety is No Accident’. That year the World Health Assembly adopted resolution WHA57.10 on road safety and WHO published the first *World report on road traffic injury prevention*, together with the World Bank. The World Report clearly highlights the important role of the health sector in general, and public health in particular, in the prevention of road traffic injuries.

The new mandate of WHO in regard to road traffic injury prevention was overwhelmingly endorsed by the UN General Assembly in its various resolutions (57/309 May 2003, 58/9 November 2003, 58/289 April 2004, 60/5 October 2005 and 62/244 April 2008) on road safety, declaring the issue a ‘global road safety crisis’. These global mandates and the World Report prescribe important evidence-based public health approaches for the prevention and control of road traffic injuries. Countries (mostly from the high-income group) that have embarked upon these approaches have shown a steady but marked decline in road traffic fatalities, and consequent reduction in the enormous social and economic cost of road traffic crashes.

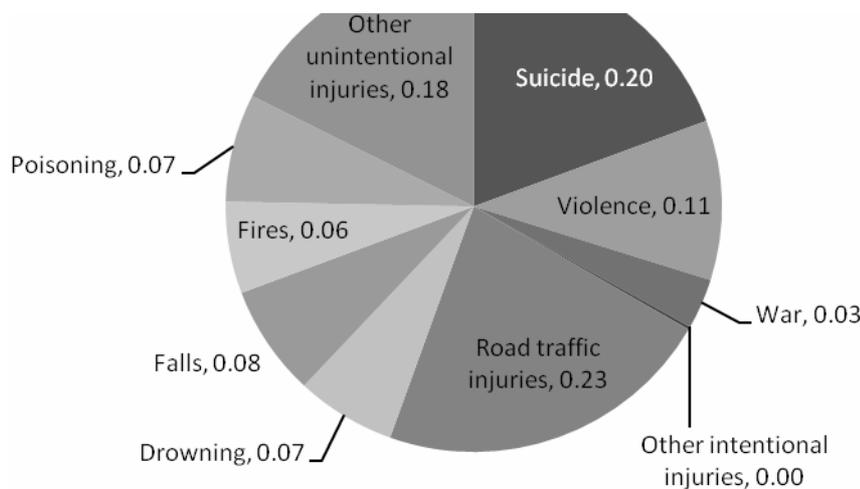
In 2007 the World Health Assembly endorsed a resolution on emergency trauma care (WHA60.22 Health systems: emergency care systems). The United Nations has mandated WHO and the UN

Economic Commissions to support Member States in designing road safety policies, pursuing the political dynamics of road safety and building national capacities, creating awareness among the general public and tapping donor resources. In 2007, WHO, together with the UN Economic Commissions, arranged the first UN Global Road Safety Week with the theme ‘Young Road Users’ which was a landmark event for mustering political support and targeting youth (as the most affected age group). As a result of this event, the United Nations decided to arrange a high-level ministerial meeting in Moscow in September 2009 with the participation of ministers of health, transport and the interior and developmental partners, in order to harness efforts in responding to this growing public health issue in low-income and middle-income countries. WHO has recently concluded a multi-country study to assess the status of implementation of the recommendations of the World Report and to identify the gaps in its implementation.

This paper articulates the magnitude of mortality and morbidity due to road traffic crashes in the Region and highlights the issue from a public health perspective. The economic and social implications of this scourge, the importance of a multisectoral response, and prevention and control measures are also highlighted. The objective of this paper is to raise awareness of the role of the Ministry of Health in road traffic injury prevention and the urgent need for a multisectoral response.

2. Situation analysis

In 2000 around the world an estimated 5.1 million people died from all types of injuries, representing 12% of the global burden of disease. Injuries are the third most important cause of overall mortality and the main cause of death among 1–40-year-olds [3]. Over 50% of deaths are among young adults in the age range of 15–44 years. Among both children aged 5–14 years, and young people aged 15–29 years, road traffic injuries are the second-leading cause of death worldwide [4]. Deaths due to road traffic injuries account for the largest proportion of deaths due to all types of injury (Figure 1). Deaths from road traffic injuries account for around 25% of all deaths from injury. Road traffic injuries have become a major public health problem, especially in low-income and middle-income countries, with an estimated 1.2 million people killed and



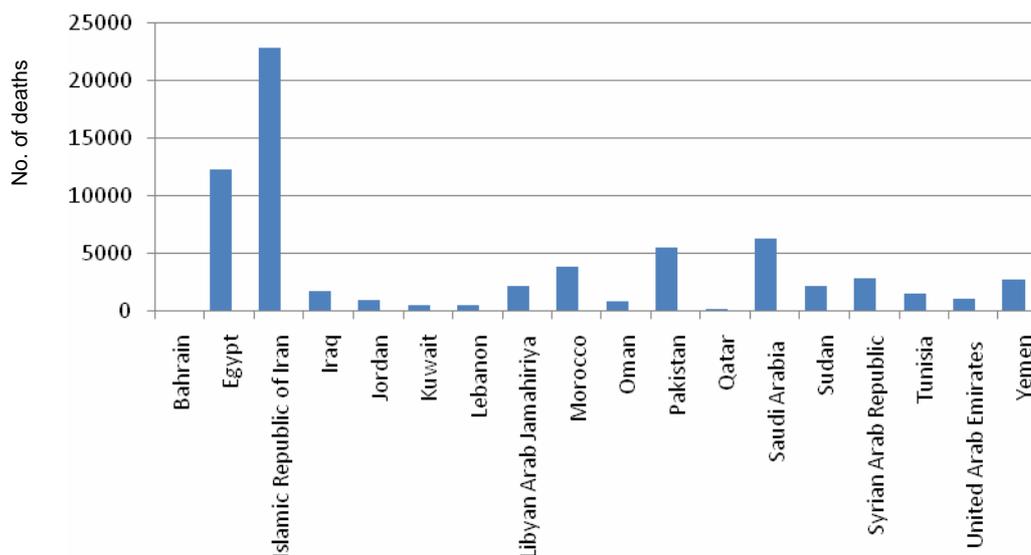
Source: [4]

Figure 1. Distribution of global injury mortality by cause

50 million injured in road crashes worldwide each year [5]. Around 85% of all global road deaths, 90% of the disability-adjusted life years (DALYs) lost due to crashes, and 96% of all children killed worldwide as a result of road traffic injuries occur in low-income and middle-income countries.

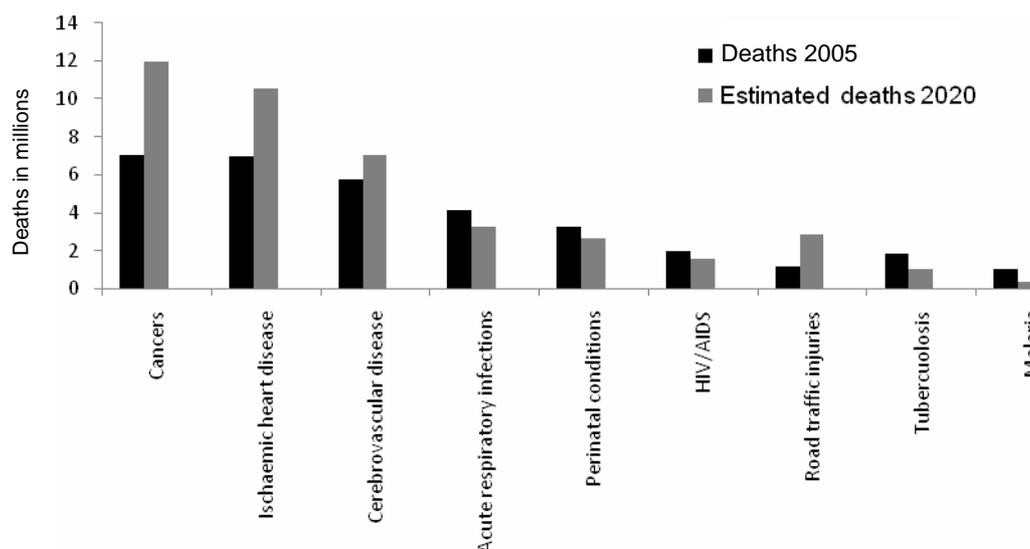
Deaths and disabilities due to injuries pose a serious public health problem in the Eastern Mediterranean Region. The mortality rate in the Region due to injuries is almost twice that of the rest of the world, with injuries accounting for 16% of all deaths in 2002 [6]. Moreover, according to global and regional estimates, 40 million individuals in the Region suffer from medium-term and long-term disability. In line with the global trend, road traffic crashes are the predominant cause. Over the past decade, the number of road traffic deaths has been rising steadily in the Region. In 2002 alone there were an estimated 132 000 road traffic deaths, equivalent to 362 per day (or the equivalent of a jumbo jet crashing every day) and 2535 deaths a week, as well as 4.7 million DALYs a year [5]. Of these deaths, 99% were in low-income and middle-income countries with a male:female ratio of 73%:27%. Recent data collected and collated by WHO from 20 countries of the Region, during a multi-country study conducted in 153 countries globally under the Bloomberg Road Safety Project, show that the mortality and morbidity index has risen sharply in countries in the Eastern Mediterranean Region, a trend that has shown an upward surge over the past 5 years (Figure 2).

Globally, death and disability due to road traffic injuries are projected to witness a further upward surge, particularly in low-income and middle-income countries. If current trends persist, by 2020 the annual number of deaths and disabilities due to road traffic injuries will have fallen by 30% in high-income countries. Globally, however, they will have increased by 60%, signifying an immense increase in the annual toll of death and disability due to road traffic injuries (Figure 3) in low-income and middle-income countries [5]. The projected 28% increase in global deaths due to injury between 2004 and 2030 is predominantly due to the projected increase in numbers of deaths due to road traffic crashes.



Source: [7]

Figure 2. Total deaths due to road traffic injuries, 2007



Source of data: [5]

Figure 3. Projected global deaths for selected causes, 2004–2020

It is not only mortality which is projected to increase. Morbidity (burden of death) will also increase many fold, largely in the developing countries, where morbidity due to road traffic crashes will jump from the ninth leading cause of morbidity currently to the third leading cause of morbidity by 2020 [8]. WHO estimates that, worldwide, between 20 million and 50 million people are injured or disabled each year in road traffic crashes. The reason for the wide range of this estimate is the considerable, known, under-reporting of casualties [9]. Those who are affected most in the Region are pedestrians, the users of public transport and users of two-wheelers (cyclists, motorcyclists and motorcycle passengers). Pedestrians account for almost half the deaths due to road crashes in the Region [10]. The death rate/100 000 population due to road traffic crashes is high in the Region (26.4 deaths per 100 000 population), the second highest in the world after the African Region [11]. Moreover, without increased efforts and new initiatives, the total number of road traffic deaths and injuries in low-income and middle-income countries in the Region is expected to increase by as much as 80%, with the majority of such deaths occurring among vulnerable road users—pedestrians, pedal cyclists and motorcyclists. In addition, in many developing countries in the Region, the costs of prolonged medical care, the loss of the family breadwinner and the loss of income due to disability can push families into poverty.

Road traffic injuries account for between 30% and 86% of trauma hospital admissions in countries of the Region. Improving emergency medical systems is one important component in reducing trauma-related mortality. The mortality rate can fall by up to 50% following implementation of effective pre-hospital trauma support systems and emergency medicine training programmes. Despite the high burden of injuries in the form of mortality and morbidity in the Region, little funding is allocated for injury prevention and rehabilitation. The total amount of external funding earmarked for injury prevention amounts to only 2.5% of the total amount designated for the care and prevention of infectious diseases.

Studies conducted globally give an estimated cost of 1%–2% of GNP depending on the income status of the country. In 2000 alone, road traffic crashes are estimated to have cost US\$ 65 billion globally to developing countries, of which US\$ 7.5 billion to the low-income and middle-income countries of the Eastern Mediterranean Region (approximately 1.5% of GNP for each country), more than the combined development aid received by these countries in the same year [12]. These costs are probably significant underestimates, noting the fact that studies on the economic cost of

Table 1. Actual cost (US\$) of road traffic crashes in selected countries of the Region, 2007

Bahrain	Islamic Republic of Iran	Jordan	Lebanon	Libyan Arab Jamahiriya	Qatar	Saudi Arabia	Sudan	Syrian Arab Republic	Tunisia
5.3 million	6.1 billion	396 million	0.56 million	2.21 million	11.3 million	352 million	110 million	168 million	329 million

Source: [7]

injuries are conducted in very few countries in the Region and that estimates may not represent the true picture. Road crashes not only place a heavy burden on national and regional economies but also on individual households. Recent data collected during a multi-country study [7] show that in some countries the economic cost of road traffic crashes is extremely high (Table 1).

3. Challenges and response

Although the death and disability caused by road traffic injuries are enormous, the efforts and resources put into prevention (both primary and secondary) fall far short of approaching the magnitude of the problem. Several factors may explain this situation. Traditionally, road safety has been the mandate of the ministries of transport and interior or traffic police. The role of ministries of health has been poorly defined. Countries in the Region are providing varying degrees of response to the rapid rise in mortality and morbidity due to road traffic crashes. This paper does not aim to give a detailed insight into the level and degree of country response but to summarize the current challenges and the response mechanisms countries have employed.

Among the challenges extrinsic to governments are the effect of globalization, which has led to: increasing levels of motorization; the multiplicity of partners involved in road safety; and donor-driven agendas which focus on specific aspects of road safety rather than the whole problem. The many intrinsic challenges include: insufficient understanding that deaths and injuries from road traffic crashes can be prevented and lack of political commitment to developing an adequate response; fragmented data collection systems, with injury data collection spread between different sectors, and resultant inability to guide policy dialogue and political leadership on the issue; limited resources for road safety interventions, particularly for primary prevention; scarce national multisectoral mechanisms for bringing the important sectors into the decision-making loop; inadequate national capacity in the conception, planning, implementation and evaluation of injury prevention programmes; and ineffective and insufficient pre-hospital (emergency medical services) and hospital-based trauma care services, which can prevent secondary deaths and minimize the extent of disabilities.

One reason for the historical neglect of “injury” in public health is the traditional view of accidents and injuries as random events that happen to others [4]. Such events are looked upon as an inevitable outcome of road transport. The role of the health sector and ministries of health in the Region in this area is not yet well defined. This has led to reinforcement of the deep-rooted concept of a road traffic crash as an accident, with a strong degree of inevitability, compared with the evidence that a crash is an event that can be avoided. Responding to some of the challenges, Member States have started conceiving and implementing a multisectoral response. In the recently conducted multi-country study [12], it was revealed that many countries do have national strategies on road safety, most countries have laws on speed limits and seat-belts, and most have public sector pre-hospital care services available. However, when it comes to the application of these laws or the implementation of the national strategies, and/or the application of standards to

Table 2. Implementation of national strategies on road safety in selected countries of the Region

Country	Speed limits	Application of speed limits (0–10) ^a	Helmet Law	Application of helmet law (0–10) ^a	Seat belt law	Application of seat belt law (0–10) ^a	Public sector pre-hospital care
Bahrain	Yes	4	Yes	5	Yes	4	Yes
Egypt	Yes	7	Yes	6	Yes	7	Yes
Iran, Islamic Republic of	Yes	6	Yes	6	Yes	8	Yes
Jordan	Yes	6	Yes	4	Yes	5	Yes
Kuwait	Yes	6	Yes	3	Yes	3	Yes
Lebanon	Yes	4	Yes	2	Yes	4	No
Libyan Arab Jamahiriya	Yes	3	Yes	7	Yes	4	Yes
Morocco	Yes	5	Yes	4	Yes	8	Yes
Oman	Yes	6	Yes	7	Yes	9	Yes
Pakistan	Yes	4	Yes	4	Yes	3	Yes
Qatar	Yes	6	Yes	5	Yes	7	Yes
Saudi Arabia	Yes	5	Yes	2	Yes	5	Yes
Sudan	Yes	7	Yes	7	Yes	7	No
Syrian Arab Republic	Yes	8	Yes	4	Yes	9	Yes
Tunisia	Yes	5	Yes	5	Yes	2	Yes
United Arab Emirates	Yes	7	Yes	8	Yes	7	Yes
Yemen	Yes	3	No		No	2	No

Source: [7]

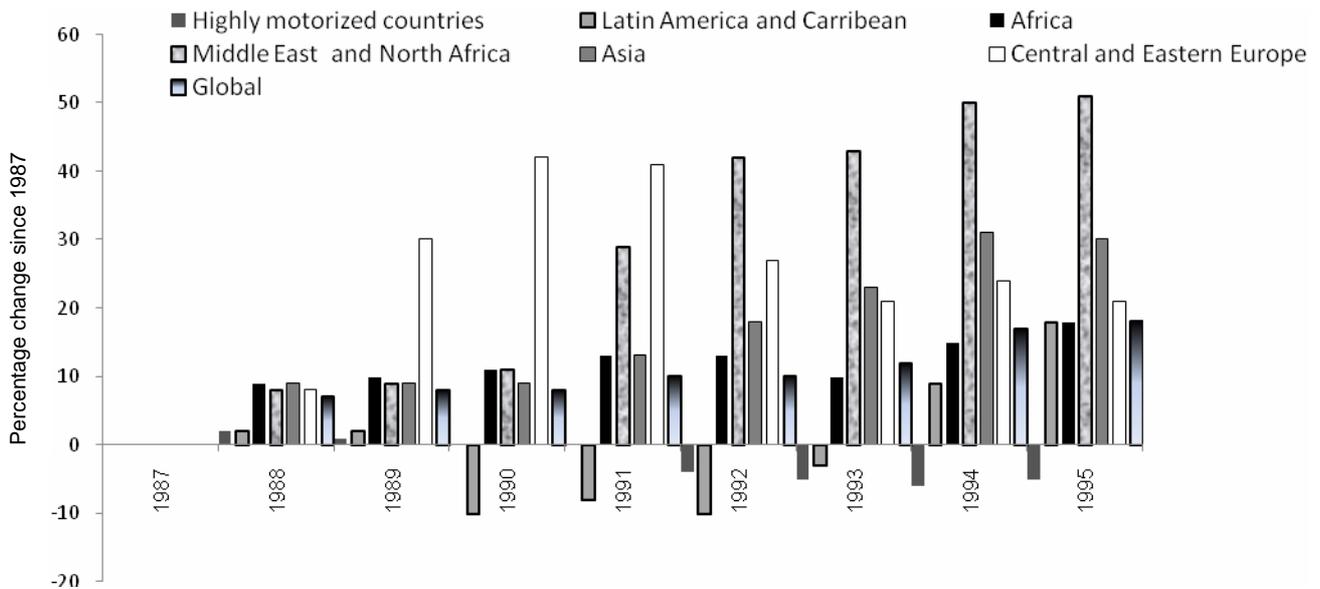
^a The determined point on the range 0–10, where 0 represents no application and 10 represents full application, was arrived at for each country by the national consensus committee for the *Global status report on road safety* [7]

the pre-hospital care available, most countries were rated below the internationally accepted standards (Table 2). This confirms that, although governments have taken steps to address the issue, efforts are still half-hearted. More needs to be done in application of laws and even more needs to be done in providing pre-hospital and hospital-based trauma care services that meet international standards.

4. Proposed actions

Road traffic injury prevention is a widely multisectoral issue. One governmental sector alone cannot prevent the occurrence of road traffic injuries and the resultant mortality and disability. However, mortality and morbidity due to road traffic crashes can be prevented. There is clear evidence that countries that address this as a public health issue and apply a systems approach, by engaging multiple sectors in primary prevention, can drastically reduce the number of deaths and injuries due to road traffic crashes (Figure 4).

A “systems approach” to road safety means understanding the road safety system as a whole and the interaction between its various elements, and identifying where there is potential for intervention. A safe road traffic system is one that accommodates and compensates for human vulnerability and fallibility. Road traffic crashes are predictable and can be prevented. A systems approach to road safety emphasizes environmental, vehicular and behavioural interventions, rather than solely focusing on direct approaches aimed at changing the behaviour of road users.



Source: Transport Safety Bureau, Australia; Department of Transport, United Kingdom; Fatality Analysis Reporting System, United States of America

Figure 4. Effect of a public health and system approach on road traffic injury mortality and morbidity

Although solutions for low-income and middle-income countries may differ from those that have a longer history of motorization, some basic principles are the same. These include, for example, good road design and traffic management, improved vehicle standards, driver training, speed control, the use of seat-belts and the establishment of an effective pre-hospital and hospital-based trauma care system. While many of the actions in primary prevention are usually perceived as being outside the domain of the health sector (or Ministry of Health), in fact the Ministry of Health has a very important role to play in the prevention of road traffic injuries. This preventive role is in addition to its role in secondary prevention through establishing an effective pre-hospital and hospital-based trauma care system.

Primary prevention of road traffic injuries requires a public health response as advocated by the *World report on road traffic injury prevention* and the WHO 5-year strategy for road traffic injury prevention, which outline the following actions:

- a) Discovering, through injury surveillance and surveys, as much as possible about all aspects of road crash injury, by systematically collecting data on the magnitude, scope, characteristics and consequences of road traffic crashes;
- b) Researching the causes of traffic crashes and injuries, and in doing so trying to determine: causes and correlates of road crash injury, factors that increase or decrease risk, and factors that might be modifiable through interventions;
- c) Exploring ways to prevent and reduce the severity of injuries in road crashes, by designing, implementing, monitoring and evaluating appropriate interventions;
- d) Helping to implement, across a range of settings, interventions that appear promising, especially in the area of human behaviour, disseminating information on the outcomes, and evaluating the cost-effectiveness of these programmes;
- e) Working to persuade policy-makers and decision-makers of the necessity of addressing injuries in general as a major issue, and of the importance of adopting improved approaches to road traffic safety;

- f) Translating effective science-based information into policies and practices that protect pedestrians, users of two-wheelers and the occupants of public forms of transport;
- g) Promoting capacity-building in all these areas, particularly in the gathering of information and in research.

The systems approach is a tool to apply a public health response. It seeks to identify and rectify the major sources of error or design weakness that contribute to fatal and severe injury crashes, as well as to mitigate the severity and consequences of injury. A wide range of strategies and techniques for casualty reduction have been tested internationally, through scientific research and empirical observation. These strategies require a multi-disciplinary and multisectoral approach in which the Ministry of Health has a key role. The strategies include interventions to: reduce exposure to risk; prevent road traffic crashes from occurring; reduce the severity of injury in the event of a crash; and reduce the consequences of injury through improved post-collision care.

5. Conclusion

Injuries in general, and road traffic injuries in particular, and the resultant deaths and disabilities, have become a major public health problem in the Region. In addition to the high mortality rates, individuals who have suffered road traffic injuries face high rates of disability. This places severe economic burden on countries as a large portion of a country's workforce are lost to death and disability, is a major drain on health and health care system resources, and has a negative impact on gross national product. Road traffic injury prevention has traditionally been considered to be outside the domain of the health sector with the result that the role and impact of the public health sector in prevention is rarely explored. A meaningful multisectoral response to prevention is encouraged in very few countries. Emergency services consume a large portion of the total health sector expenditure, leaving limited resources and opportunity for prevention. Despite the alarming increases in the burden of road traffic injuries in the Region, effective injury prevention policies have not been developed and implemented. A basic constraint on policy-makers is the lack of or limited availability of reliable data to guide them in taking informed decisions. Where reasonably reliable data on the injury burden do exist, they are often not organized in an understandable or meaningful manner and so are not easily accessible to decision-makers.

Road traffic crashes occur on all continents, in every country of the world. A major factor in the problem is that road safety does not "belong" to any specific agency; there is no "ownership" for road safety. Instead, responsibility for dealing with the various aspects of the problem is divided among many different sectors and groups. In this environment, it is not surprising that political will has frequently been lacking to develop and implement effective road safety policies and programmes.

Only in recent years have road safety and injury prevention attracted the attention of civil society, researchers and health providers in the Region. In many countries awareness of the problem is only just emerging. Other countries are starting to take action at different levels. However, many challenges have yet to be addressed. Addressing road traffic injuries as a public health issue and employing a systems approach to road safety is the key to reducing the rising burden. Establishing evidence-based knowledge and creating awareness about the real magnitude of the problem should serve as the first step, to enable countries to develop effective and sustainable strategies and interventions for the prevention of road traffic injuries. These should be tailored to fit regional conditions and cultural and socioeconomic variations. Such strategies must also be complemented by systematic follow-up of the implementation and evaluation of the interventions adopted.

Ministries of health need to take a strong and leading role in pursuing road safety efforts at the national level. While the recommended actions with regard to law enforcement and road infrastructure as well as vehicle safety may be outside the domain of the ministries of health, the fact that most of the burden falls on the health sector should be sufficient impetus for the ministries of health to take a stewardship and advocacy role. Improving road safety will entail strong political commitment and priority at all levels of government in collaboration with other public and private stakeholders. A multisectoral approach is essential, with one lead agency identified for coordinating the efforts of the different sectors involved.

6. Recommendations

1. Identify a national multisectoral mechanism (lead agency or a national committee) that can address road safety as a public health issue and apply a systems approach to guide national road safety efforts.
2. Establish an injury prevention and control department at the national level within the Ministry of Health, with dedicated budget and human resources.
3. Establish a multisectoral data collection mechanism that can inform policies and lead to evidence-based interventions.
4. Prepare a national road safety strategy and plan of action involving sectors and institutions outside the health sector, such as transport, traffic police, education, local government and finance.
5. Allocate financial and human resources for articulating and eliciting a multisectoral and multidisciplinary response.
6. Implement specific actions to minimize injuries and their consequences and evaluate the impact of these actions through the development of effective pre-hospital (emergency medical service) and hospital-based trauma care systems conforming to international standards.
7. Develop national capacity in primary prevention of road traffic injuries and develop partnerships in road safety through national, regional and international networking.

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