

Road Traffic Accidents - A Challenging Epidemic

Shirley McIlvenny

حوادث الطرق - التحدي الوبائي

شيرلي ماكليفني

WORLD HEALTH DAY IS CELEBRATED BY the World Health Organization each year on 7th April and the theme of this year was 'Road Safety'. Road Safety is no accident - and coincides with the release of a World Bank and WHO report (World report on Road Traffic Injury Prevention).¹ Road traffic injuries kill 1.2 million people each year and injure or disable as many as 50 million, which represents a 60% increase in the last five years.² Road crashes are the second leading cause of death globally among young people and affect the most economically active members of the population. It has been reported that 86% of deaths from road traffic injuries occur in low and middle income countries even though these account for only 40% of all motor vehicles.³ In these countries, reasons cited for the high burden include the growth in motor vehicles, higher number of people killed per crash, poor public health structure and poor enforcement of traffic regulations.

The Sultanate of Oman has seen very rapid development in the last thirty years and in 2000 WHO ranked number one in improving the level of health of its population. Oman has an extensive road building program with road calming measures in operation and road safety programs run by the Royal Oman Police (ROP). However, deaths from Road Traffic Accidents are (RTAs) a major concern. In 2001, there were an estimated 117 cars per thousand population in the country with 13,101 RTAs (5.45 per thousand population)⁴ 499 deaths and 9625 people were injured. Forty percent of fatalities were vehicle passengers and 44% of incidents was due to speeding as reported by the traffic authority.

Generally, car crashes represent the conjunction of multiple factors involving road infrastructure, vehicles and people. Safe human behaviour is a major risk

factor in accounting for Road Traffic Injuries (RTIs) especially in developing countries where it is estimated that 64% to 95% of casualties are due to improper human activity as either a driver, passenger or pedestrian. Safe behaviour includes pre-crash elements of road user activity (e.g. speeding, attitudes, behaviour and pedestrian habits), crash elements (e.g. use of restraints) and post-crash elements (e.g. first aid skills and access to medical treatment). Wearing a seat belt can be a good indicator of safe road behaviour especially when comparing rear and front seat passengers. Although wearing a seat belt in the front seat is compulsory in Oman and the ROP makes spot checks on vehicles, many drivers and passengers do not comply with the regulations. Furthermore, there are no regulations regarding wearing a seat belt in the rear and few people bother to 'belt up' in the back.

A study carried out by Family and Community Health residents in the Oman Medical Specialty Board training program examined seat belt wearing in cars entering Sultan Qaboos University complex on a single day.⁵ The results indicated that 90.1% of drivers and 80.9% of front seat passengers wore their seat belt. Only 1.4% of rear seat passengers wore a seat belt. Surprisingly, front seat passengers were not as compliant as drivers despite the fact that police staff all the gates into the campus and spot checks on the highways often result in fines (seat belt fines constitute 9% of traffic offences nationwide). Researchers also reported that they could see front seat occupants putting on their seat belts as they approached the gates. Studies in other Middle East countries have shown that seat belt use is infrequent.⁶ However, it can increase with a general understanding of road safety rules.⁷ Bener *et al* have shown that there is awareness of the benefits of wearing seat belts in Middle East countries and strong sup-

		People	Vehicle	Environment
Pre-crash	Crash prevention	Education/Training Impairment/attitudes/Behaviour	Road-worthiness System (lights, brakes etc)	Road design Signs, markings Maintenance
Crash	Injury Prevention	Use of restraints Impairment	Restraints Crash - worthines Maintenance	Protection (barrier) Pedestrian crossings
Post-Crash	Life sustaining	First Aid skill/access to medics	Ease of access/Fire risk	Rescue facilities/Congestion

Figure 1. Haddon's Matrix: Basic road safety elements

port for its enforcement.⁸ Poor enforcement of traffic regulations is one reason why low income countries have such a high burden of death and disability from RTAs.⁹ Although there appears to be good compliance with the law, evidence suggests that compliance in front seat occupants would not be as good in areas where they are unlikely to be observed.

Wearing a seat belt is not compulsory in the back and very few back seat passengers were strapped in. This indicates that complying with regulations is more important than wearing a seat belt for protection and there is probably little knowledge of the dangers to other passengers and the driver. However, legislation is only part of the answer. Since compulsory rear seat belt wearing was introduced in UK in 1989, recent research (1998) reveals that even now, only 48% of adult passengers wear seat belts in the back compared with 92% in the front.¹⁰ Back seat passengers who do not wear seat belts are three times more likely to suffer death or serious injury than those who do. Furthermore, the UK Department of Transport estimates that some 40 front seat passengers die each year in Britain because of un-belted back seat passengers crashing into them. There is evidence that safety education can improve knowledge and behaviour but that improvement declines with time so must be repeated at regular intervals.¹¹ A further study by the residents has investigated attitudes and knowledge to seat belt wearing in the Omani population and also attitudes to safety education but the results are not yet available.

Regarding children, only 3.7% of 'under fives' were in a child restraint and this was probably due to lack of knowledge of the parents. Jan *et al* also showed infrequent use of child restraints in Saudi Arabia (8% of families), where seat belt use in general was linked to higher income families.¹² Even though child restraints

may be employed, their use may be incorrect and this has been recognized in western countries.¹³ The fact that so many parents in the front were restrained, while the children in the back were not, also indicates a willingness to comply with local laws rather than an understanding of the risks.

Perhaps more worrying is the fact that so many 'under fives' sat in the front seat (34.6%). There is a perception among the population that it is cruel to keep a child alone in the back of the car and there is probably little awareness of the dangers to children of sitting in the front seat. A frequent occurrence is a child sitting in the front on the mother's knee, close to the windscreen. An education program needs to be instituted to increase knowledge and awareness and to ensure that parents understand the importance of using child restraint equipment properly.

According to Haddon's Matrix [Figure 1],¹⁴ most pre-crash prevention can be attributed to the vehicle driver in attitudes and actions, and in maintaining road worthiness of the vehicle. Since most injuries can be attributed to improper human behaviour, driver responsibility seems to be a good place to start. Ensuring all occupants are wearing a seat belt would be a simple activity, which would have an impact on mortality and morbidity from RTIs and put the responsibility onto the driver of the vehicle. Health education agencies, for example local community clinics, could be involved in increasing the awareness of the population and promoting new regulations.

Other areas for development involving the health services include the provision of emergency services, especially at the roadside. It is an auspicious development that an ambulance service for RTAs has been introduced by the ROP this year. Many local Primary Health Care clinics are also involved in managing RTIs

especially in remote areas. These facilities would benefit from first aid and emergency management training.

Health care workers are very aware of the burden to the health service and the community of RTAs particularly in emergency care, rehabilitation and care following permanent injuries and the consequences of the loss of the bread winner or main carer in a family. Road traffic injuries are responsible for the majority of disability and occupation handicap from major traumatic injury.¹⁵

On top of that, road crashes absorb a huge amount of financial resources particularly in developing countries. This can be as much as 1% of the Gross National Product and represents more than the total development aid they receive. By 2020, road traffic injuries are forecast to become the second leading cause of Disability-Adjusted Life Years lost in developing countries and decreasing the burden of injuries is one of the main challenges for public health in the next century.¹⁶

The WHO recommends that raising the awareness of all interested parties is the first step in injury prevention. Partnerships with other interested agencies, for example police and town planners, would allow health agencies to be involved in developing safety strategies to reduce RTIs and deaths from RTAs. The new ambulance service is a good example of co-operation in action. Health workers could also show these groups the cost to the health service of accident black spots, for example by producing figures comparing the cost of road improvements versus the financial burden on health services and the community.

WHO challenged nations to manage this epidemic of disability and financial burden in this year. Health care agencies can be involved at the forefront of the race to confront the challenge and control the latest man-made epidemic to spread across the globe.

REFERENCES

1. World Health Day 2004: Road Safety. www.who.int/world-health-day/2004/en/.
2. Peden M SR, Sleet D, Mohan D, Hyder AA, Jarawan E. World Report on Road Traffic Injury Prevention. World Health Organization 2004.
3. Road Safety at a Glance. World Bank Health Nutrition Population, March 2002.
4. Traffic Accidents in Oman 2001. Facts and Figures. Royal Oman Police 2002.
5. McIlvenny S AME, Al-Busaidi T, Al-Nabhani A. Rear seat-belt use as an indicator of safe road behaviour in a rapidly developing country. *J R Soc Health* 2004; 124: 280-283.
6. Shanks NJ AM, Al-Kalai D. Road traffic accidents in Saudi Arabia. *PublicHealth* 1994; 108:7-34.
7. Al-Madhani H. Influence of Drivers' Comprehension of Posted Signs on their Safety Related Characteristics. *Accid Anal Prev* 2000; 32: 575-581.
8. Bener A AN, Sankaran Kutty M, Ware J, Cheema MY, Al-Shamsi MA. Casualty Risk Reduction from Safety Seat Belts in a Desert Country. *J R Soc Health* 1994; 114: 297-299.
9. Vinand M Nantulya MRR. The Neglected Epidemic: Road Traffic Injuries in Developing Countries. *Brit Med J* 2002; 324: 1139-1141.
10. Think! Seatbelts. Fact about rear seat belts. UK Department for Transport. www.thinkroadsafety.gov.uk/campaigns/seatbelts/seatbelts.htm.
11. Duperrex O, Roberts I, Bunn F. Safety Education of Pedestrians for Injury Prevention. *Cochrane Databas Syst Rev* 2002; 2: CD001531.
12. Jan MM, Hasanain FH, Al-Dabbagh AA. Infant and Child Safety Practice of Parents. *Saudi Med J* 2000; 21: 1142-1146.
13. Campbell H, Macdonald S, Richardson P. High levels of Incorrect Use of Car Seat Belts and Child Restraints in Fife—an Important and Under-Recognised Road Safety Issue. *Inj Prev* 1997; 3: 17-22.
14. Haddon W. Advances in the Epidemiology of Injuries as a Basis for Public Policy. *Public Health Rep* 1980; 95: 411-421.
15. Airey CM, Chell SM, Rigby AS, Tennant A, Connelly JB. The Epidemiology of Disability and Occupation Handicap Resulting from Major Traumatic Injury. *Disabil Rehabil* 2001; 23: 509-515.
16. Krug EG, Sharma GK, Lozano R. The Global Burden of Injuries. *Am J Public Health* 2000; 90: 523-526.