

# AN UPDATE ON ROAD TRAFFIC INJURIES IN MALAYSIA

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**ABSTRACT:** The incidence of road traffic injuries has increased over the last two decades. Of greater concern is the prediction that the problem is likely to increase further, given present trends in transportation. Injuries and not "accidents" need to be the focus of the health sector. Passive strategies, which are independent of human behaviour, are more likely to succeed in the prevention of injuries compared to "active" strategies. The health sector needs to play a bigger role in prevention through advocacy, research and education of target groups. (JUMMEC 1997 2(1): 39-41)

**KEYWORD:** Road Traffic Injuries, Road Accidents

With improvement in the standard of living and control of communicable diseases, non communicable diseases such as cardiovascular diseases, cancer and injuries, have become leading causes of death and disability in Malaysia (2). Road traffic injuries constituted the leading cause of medically certified deaths between the ages of 5 and 39 years (2). The incidence of road traffic injuries per 100,000 population has increased from 19.0 in 1973 to 28.4 in 1995 (3). This is probably due to policies of the government which have favoured private transportation and fuelled growth of the automobile manufacturers. In Peninsular Malaysia, between 1978 and 1995, the total number of private cars and motorcycles increased by 246 % while the total number of private buses and taxis increased by 123 %. (3) The growth of private vehicles was twice that of public vehicles. Since the young and productive are mainly injured, the economic loss due to injuries is considerable (4).

## Definition, Terminology and Principles of Prevention

The term "accident" means an event which has potential for damage to tissue or property. The word describes the intent and connotes that nothing can be done to prevent it. All diseases including cancer, stroke, heart attacks and infectious diseases are "accidents": no one willed them to occur. Hence, the focus should be on "Injuries", the health outcome of an "accident". In 1996, the US Department of Transportation's National Highway Traffic Safety Administration gave a commitment to its safety partners and eliminated the word "accident" from its vocabulary in the field of unintentional injury prevention(5). Road traffic injuries constitute the most important type of injuries, others include occupational, home and recreational. In some instances,

there is an overlap in classification. For a driver or road repair worker, road traffic injuries are occupational injuries. For those who live near or for children who play on main roads, the distinction between road, home and recreational injuries is often subtle. Risk factors for injuries can be classified into those relating to the classical epidemiological triad: age, host and environment. Just as a vaccine prevents disease when a susceptible host is exposed to an infection, a safety device e.g. helmet prevents injury when a host is involved in a crash. The principles of prevention of injuries can be classified into the 4 E's: Education (of all relevant including public), Enforcement (of rules and regulation pertaining to safety), Engineering (measures to endure safe ergonomic design of consumer objects and the environment) and Economics (investment in measures mentioned above). Above all, action in the field of road safety should be intersectoral since policies and programs would cut across many sectors such as police, transport, road works, health, town planning, etc. Traditionally, injuries are said to be as a result of behavioural factors which encourage risk taking i.e. the human error model. In Malaysia, police statistics state that more than 50% of all road traffic "accidents" are due to human errors (3). This model is based on a traditional system which investigates the person at fault in "accidents" for purposes of law and insurance. If this approach is followed, then food poisoning is due to a person's fault i.e. eating at places outside of our homes. The health system, however, attempts to make food stalls and restaurants "safe" for eating. In other words, the environment is modified to prevent diseases. Using this principle, injuries can be more effectively prevented by

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passive strategies (which are independent of human behaviour and make the environment safe) than by active strategies (behaviour modification e.g. drive carefully). Strategies that have been successful in developed countries need to be adapted for implementation in developing countries, taking into account the local political and sociocultural milieu.

## Some Contributing Factors for Road Traffic Injuries

### Motorcyclists

Motorcyclists constituted 58% of road fatalities in 1995. (3). Between 1986 and 1995, the incidence of motorcycle fatalities per 100,000 population increased from 10.2 to 16.7. About two thirds (65.5%) of victims were below the age of 30 years. In 1995, head and "multiple" injuries were observed in 36 % and 43% of victims of motorcycle fatalities respectively. Since "multiple" injuries include head injuries, the most important contributing factor in motorcycle fatalities are head injuries. Motorcycle helmets have been shown to be effective in preventing head injuries to motorcyclists in the event of a crash (6). Helmet use in motorcyclists is mandatory by law in Malaysia. Helmets that are worn should be of certified quality and should be strapped correctly. If helmets are not worn properly, they are likely to dislodge in the event of a crash and protection to the head is lost. Use of full face helmets reduces chances of facial and mandibular injuries.

### Bicyclists

Bicyclists constituted 5% of road fatalities in 1995. Head and "multiple" injuries were observed in 57% and 33% of bicycle fatalities respectively. Head injuries are the single most important contributing factor for bicycle fatalities since multiple injuries included head injuries. Bicycle helmet use has been shown to be the most important strategy for the prevention of bicycle related head injuries (7).

### Pedestrians

Pedestrians constituted 12 % of road fatalities in 1995 and road crossing behaviour was associated with 62% of all pedestrian fatalities. Speed of the vehicle at impact is the single most important determinant of severity of pedestrian injuries (8). The higher the speed at impact the higher the proportion of fatalities and victims with severe injuries. Measures to limit speeding ("traffic calming") and proper use of pedestrian facilities such as overhead bridges and traffic lights help prevent pedestrian fatalities and injuries. (9)

### Vehicle Occupants

This group constituted 15% of road fatalities in 1995

(3). Air bags, occupant restraints such as seat belts and child restraints, and side impact protection systems have all been shown to be prevent injuries to occupants in the event of a crash (10).

### Other risk factors

Alcohol use and excessive speeding are examples of other risk factors which need to be studied further in Malaysia. Speeding is particularly risky since the energy which dissipates in the event of a crash and causes harm is directly proportional to the square of the velocity of the vehicle ( $E=mc^2$ ).

### Future Scenario

With rapid economic growth in Malaysia, the number of new vehicles on the road (especially motorcycles and cars), new roads and highways can be expected to increase. A mathematical model has been developed to forecast the number of road traffic deaths and crashes in Malaysia. This computer generated model is a log linear model and was developed at the Road Safety Research Centre, Universiti Pertanian Malaysia based on the trends for the last two decades. The equations for predicting the number of road crashes and deaths for a given year are as follows:

$$\text{Number of Road deaths} = 2289(e^{0.0007 \text{ Vehicle} \times \text{Population} \times \text{Road}}) (e^{0.2073 \text{ Data system}})$$

$$\text{Number of Road crashes} = 43478 (e^{0.00011 \text{ Vehicle} \times \text{Population} \times \text{Road}}) (e^{0.2447 \text{ Data system}})$$

*Data system* factor is 1 for Peninsular Malaysia and 2 for East Malaysia

*Vehicle* means the estimated total number of vehicles in the year expressed in millions

*Population* means the estimated total number of people expressed in millions

*Road* means the estimated length total of roads expressed in thousands of kilometres

The parameters for the year 2000 when compared to the year 1994, assuming present trends and measures, are given in the Table I.

The Cabinet Committee on Road Safety with the secretariat in the Ministry of Transport has set a target of reduction in the road toll by 30% by the year 2000. The Road Safety Council is a registered society consisting of all relevant government and non governmental organisations. The Ministry of Health has set up an Injury Control Unit in the division of Non Communicable Diseases and is in the process of improving and expanding its emergency services so that injuries are minimised and prevented in the post crash

phase. The Ministry has planned Injury Prevention programs for implementation in health centres. It is also planning to carry out a media campaign on "Injury Prevention" under its Healthy Lifestyle Program. Efforts at preventing road crashes and injuries must be further enhanced to prevent unnecessary loss of lives and disability. Increased funding for education of public and target groups, research, and training of professionals needs to be allocated. The health sector needs to play a bigger role in road safety through research and education of target groups. The universities and nongovernmental organisations need to share a vision with the government to work towards a Safe and Healthy society as we march towards 2020. We need to act now before more productive members of society are killed or crippled.

**Table I.** Predicted Road Transportation and Safety Indicators for the year 2000. Compared to 1994 \*

Parameter	Year 2000	Year 1994
Population (millions)	23	19
Vehicle number (millions)	10	6
Road length ( 1000 km)	72	60
Number of road crashes	352,342	148,801
Number of road deaths	9127	5159
Incidence of road deaths/ 100,000 population	39	26

\* Based on current trends and measures

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