



WORLD HEALTH ORGANIZATION
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Working Group on Vehicle Safety in
Developing Countries

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SUMMARY REPORT

1. Main conclusions D.C.

- 1.1 All developing countries are experiencing a major increase in casualties from road crashes as a consequence of increased vehicle ownership. Epidemiological data are inadequate in describing the extent of the problem, particularly for survivors, but even deaths are probably underreported significantly.
- 1.2 Existing data show that the characteristics of road accidents in developing countries are different from those in industrialized countries. Casualties in respect of motorcycles, pick-up trucks, small vans, buses and trucks are more frequent than car occupant casualties.
- 1.3 The proportion of national health and hospital resources utilized in connection with care of road accident victims is increasing. The specific health sector costs are important for control strategy implementation. In general cost terms, road accidents consume around 1% of the GNP of many countries, regardless of the level of development.
- 1.4 The frequency of change in vehicle ownership, urbanization and industrialization in many developing countries in Asia, result in problems occurring over periods of a decade or less, whereas the same problems in the older industrialized countries developed over periods of half a century.
- 1.5 In many developing countries the crash involvement per vehicle is 10 to 100 times higher than in industrialized countries.
- 1.6 Motorcyclists appear as a predominant class of road casualty. In many countries motorcycles are the most common motorized vehicle and current production rates are high.
- 1.7 Pedestrians and cyclists are also frequent road casualties and the exterior design of a vehicle is therefore important. More people are injured by the exterior of a vehicle than the interior.
- 1.8 Indigenous vehicles such as bicycle rickshaws, trishaws, tuk-tuks, mini-vans and other specialized vehicles do not appear to have a high rate of crash involvement but data on their contribution to the road casualty picture are inadequate.
- 1.9 Vehicle defects, particularly in trucks and buses, together with overloading, feature as important causal factors in some regions although the data base is too inadequate to quantify the problem.

2. Recommendations

- 2.1 Short term, specific, sample studies should be initiated to elucidate local problems. Such studies could, for example, be based on one urban and one rural hospital in each country, with sampling of the most common types of accidents to be studied in detail.
- 2.2 Helmet use by motorcyclists should be encouraged through education and legislation enforcement.
- 2.3 The design and construction of a cheap helmet suitable for a tropical climate should be examined. Price and acceptability should be given as much consideration as high level of crash protection.
- 2.4 Crash protective principles have been ignored in the current motorcycle design. WHO should engage in discussions with the main motorcycle manufacturers to encourage progress in this area, particularly in terms of applying known technology to protection of the legs.

2.5 Measures to avoid motorcycle crashes should be encouraged through laws enforcing the use of daytime headlights, improved conspicuity with reflectors and related materials, as well as through the introduction of anti-lock brakes.

2.6 Fiscal measures, import control, vehicle taxation and registration procedures should be examined at national level to control the very high proliferation of motorcycles, and heavy and very fast machines should be discouraged.

2.7 Pedestrians injured by city buses constitute a significant casualty class. A pilot study should be initiated for the design of an appropriate front panel which could be retrofitted to existing buses to diminish the crash consequences for pedestrians. Such a design could be evaluated in an Asian city bus fleet.

2.8 Current car exterior design is hostile to pedestrians and other unprotected road users. Discussions between countries should be initiated so that appropriate specifications be developed with the involvement of vehicle manufacturers in both industrialized and developing countries.

2.9 The problem of a "single vehicle" pedestrian accident requires study in relation to roadside and environmental design. Such casualties are normally excluded from "road accident" reporting systems.

2.10 To improve car occupant protection at national level, laws should be introduced specifying compulsory vehicle equipment such as laminated glass for all windscreens, anti-burst door latches, fixed head restraints, lap and diagonal seatbelts in front and rear seating positions and under-run guards on trucks where possible.

2.11 Laws on compulsory use of seatbelts should be enacted, and appropriate health education and enforcement programmes must accompany such laws.

2.12 Existing safety standards for cars in industrialized countries should be adopted as soon as possible in developing countries and applied to vans and trucks as well. Different standards at national level should be discouraged. To facilitate this, WHO should encourage liaison between the International Organization for Standardization (ISO), the Economic and Social Committee for Asia and the Pacific (ESCAP), the European Economic Community (EEC), the National Highway Traffic Safety Administration (NHTSA), and such national bodies as the Japanese Metropolitan Institute (MITI) with appropriate specialist consultants.

2.13 Truck and van design aimed at improved crash protection is particularly important in developing countries, both for occupants and other road users struck by these vehicles. Appropriate design should be encouraged at national level through educational programmes and at international level through legislation and collaboration among the relevant agencies.

2.14 Existing studies emphasize the importance of day and night conspicuity of small, slow moving vehicles common in many developing countries. Programmes should be initiated at national level and a design for appropriate reflective devices and material developed and its use introduced through legislation.

2.15 Education of the policy makers in the health, transport and enforcement sectors is vital. Short courses and seminars within the region should be initiated on:

- traffic medicine and health education in relation to road trauma;
- biomechanics and ergonomics in relation to vehicle design.

2.16 An appropriate training manual or textbook for public health workers is required on the above topics.

2.17 Studies should be initiated on the characteristics of indigenous vehicles and their role in traffic accidents.

2.18 Collaboration between institutions with specialized knowledge in industrialized countries and centres in developing countries should be encouraged. A network for the exchange of research information should be established.

3. Recommendations of particular relevance

Of the above recommendations, there are five of particular relevance and importance to the WHO global programme on Accident Prevention. They should be implemented as soon as possible and are as follows:

3.1 Education of policy makers in health, transport and enforcement sectors. Short courses in traffic medicine, biomechanics of trauma and preventive health measures should be developed in collaboration with appropriate nongovernmental organizations such as the International Research Council on Biomechanics of Impacts (IRCOBI) and the American Association of Automotive Medicine (AAAM).

3.2 Development of textbooks and training material. To facilitate 3.1, appropriate curriculae and training manuals need to be prepared, and resources in form of written material, film and video are required.

3.3 Initiate specific studies in South East Asia. Short-term sample studies of local conditions in a selected urban and rural hospital in cooperating countries are required. To initiate such a project, a seminar on biomechanics of trauma could provide background training as well as developing the appropriate experimental design for the project.

3.4 The development of a retrofit structure for city buses to provide pedestrian protection. Collaborative research between appropriate institutions in Asia and Europe should be encouraged to develop a design, and discussions initiated with a city administration with a view to establishing a field trial. As a preliminary, a small project should be initiated to establish the case in numerical terms for such a device and a preliminary specification outlined for the structure.

3.5 Intersectoral collaboration. WHO should initiate discussions with relevant international agencies such as the Economic and Social Commission for Asia and the Pacific (ESCAP), the European Economic Community (EEC), the United Nations Development Programme (UNDP) and the World Bank on appropriate vehicle safety technology and standards for developing countries. Also, WHO should establish links with the major car and motorcycle manufactures to enhance their awareness of the consequences of their products in developing countries with special reference to traffic injuries.