

Characteristics of patients admitted with Road Traffic Accidents (RTA) to General Hospital, Matara

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Abstract

Introduction: Road traffic accidents (RTA) result in significant mortality and morbidity. Identification of causes for accidents, injury pattern, type of injuries help to launch preventive strategies.

Methods: We analyzed all consecutive road traffic accident victims admitted to surgery Unit A General Hospital Matara from 01 September 2019 to 29 February 2020. We analyzed age and sex of victims, pattern of injury, possible cause for accident, influence of alcohol and use of safety equipment.

Results: There were 394 patients. 323 (82%) were males. Average age in males was 39 years (range 5-85) and in females 41 years (range 8-83). Vehicles involved were motor bicycles 238 (62%), three wheelers 63 (16%), buses 12 (3%), Bicycles 40 (10%), cars 15 (4%). Causes for accidents were own wrong driving 160 (44%), opponent vehicle wrong driving 107 (30%), animals crossing road 41 (11%), mechanical failure 40 (11%), poor road quality 12 (3%), man crossing road 3 (1%). 92 (23%) patients had consumed alcohol at the time and 40 (17%) were without helmets. The area of the body affected was head in 185 (47%), limb/extremity in 243 (62%), chest in 74 (19%) and abdomen in 68 (17%).

Conclusion: Commonest vehicle involved was motor bicycle. Males were more affected. Limb injuries (62%) were the commonest trauma. 23% accidents are associated with alcohol drinking. Proper legislations implementation is necessary to control drunken drivers and riders without safety equipments. Wrong driving technique is the main cause for accidents (74%).

Key words: Road traffic accidents, Injury pattern, Hospital admissions, Alcohol use,

Introduction

Road traffic accidents (RTAs) result in significant mortality and morbidity. RTAs are also associated with reduced productivity, material damage, disability.¹ Identification of causes for accidents, injury pattern, type of injuries help to launch preventive strategy of road traffic accidents. About 1.3 million people die each year in traffic-related accidents worldwide. 190% of road traffic accidents fatalities occur in low income or middle income countries where two third of the world population live.^{2,3} Road traffic accidents is the leading cause of death in children and young adults

aged between 5-29 years. Between 2013 and 2016, there was no reductions in the number of road traffic accident deaths in any low-income country.¹

Human factor is the main contributing factor of road traffic accidents. Human factors include both driving behaviour (drinking and driving, speeding, traffic law violations) and impaired skills (lack of attention, exhaustion, physical disabilities).⁴ Other causes for Road Traffic Accidents include poor vehicle design, high speed of vehicle, poor roads, increased number of vehicles on given areas of road, mechanical failure of vehicle, over loading, poor lights, animal crossing the road, inadequate traffic law enforcement and delayed implementation of road safety.⁵

Sri Lanka is an example for exponential growth of motorization since 1977. This increase of motorization in the setting of poor road infrastructure had caused large increase of road traffic accidents. Although number of road traffic accidents has decreased since

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2003, road traffic fatalities have not shown a similar reduction.⁶ In Sri Lanka during 2009-2015 number of road traffic accidents related accidents increased by 15% while deaths increased by 17%.³ The number of road traffic crashes increased from 61.2 to 195.9, injuries from 35.1 to 98.6 and fatalities from 3.0 to 10.8 per year per 100,000 populations from 1938 to 2011.⁶ In Sri Lanka, there are approximately 2000 deaths and 20,000 injuries per year due to road traffic crashes. Police statistics (2011) indicate that the most common vehicles involved are motorcycles, cars, and three wheelers.⁷

In Sri Lanka limitation of availability of road safety research and road traffic accidents related statistics made it difficult for policy makers to propose interventions to prevent road traffic accidents. This research was conducted to gather road traffic accidents related statistics in Matara area.

Identification of risk factors for road traffic accidents enables to plan a preventive strategy. The risk factors for the road traffic accidents are different for each region. Although some statistics are available in Sri Lanka, these need to be reinvestigated again as recent rapid upgrading of the road systems.⁵ Influxes of new types of vehicles often change the pattern of risk factors. Our specific objectives are to identify the characteristics of patients with road traffic accidents.

Results

There were 394 patients. 82%(323) were males. Average age in males was 39 years(range 5-85) and in females 41 years(range 8-83). Vehicles involved were motor bicycles 238(62%), three wheelers 63(16%), buses 12(3%), bicycles 40(10%), cars 15(4%). There were 7 vans, 3 tractors, 2 lorries, 2 ambulances, 3 cabs, 2 containers amount to 5%. Causes for accidents were own wrong driving 160(44%), opponent vehicle wrong driving 107(30%), animals crossing road 41(11%), mechanical failure 40(11%), poor roads 12(3%), man crossing road 3(1%). There were 20(5%) cases with high speed driving which was included in own wrong driving section. 156(40%) of incidences taken place between 6pm to 6am time period.

There were 264(67%) drivers, 87(22%) passengers and 43(11%) pedestrians. 92(23%) patients had consumed alcohol and 40(17%) motor bicyclists were without helmets. We performed 50 CT scans of brains. There were 2 Subdural haematoma(SDH), 3 Subarachnoid haemorrhage(SAH), 3 Extradural haemotoma(EDH), 4 Intracranial haemorrhage(ICH) and 76 bone fractures. Body area affected were

head 185(47%), limb/extremity 243(62%), chest 74 (19%), abdomen 68(17%).

Discussion.

Males are affected more than females(82 vs 18 per cent in our study). Motor bicycle was the main vehicle involved, Three wheelers become the second affected. These values are comparable to similar studied done at Anuradhapura and Polonnaruwa areas.^{8,9}

Owner driving technique (44%) was the main cause for the accidents. This category was included high speed, wrong side driving, wrong technique of overtaking, taking acute angle at road bends, inability to react quickly to apply break. There were 5% of cases with high speed in the study group. Speed contributes up to one-third of RTIs in some studies.¹⁰ Remedial measures include road designing, enforcing speed limits, including strategic installation of cameras, traffic calming measures, and regular awareness programs. In Africa speed control bumps reduced the number of accidents by one-third, fatalities by half, and serious injuries by three-fourth.¹⁰

Wrong driving technique of opponent vehicle was the second commonest cause of accident(30%). Combined rate of wrong driving technique(74%) (both own and opponent) vehicle was clearly the main reason for the accidents. Wrong driving technique was the main cause for the accidents, 55% at Polonnaruwa and 47% at Anuradhapura areas in 2 different researches done in 2017 and 2013 respectively.^{8,9} It is necessary to arrange series of driving discipline teaching time to time for drivers aiming to reduce wrong driving techniques. This can be arranged when driving licenses are renewed by trained staff.

Regular driving training programs are necessary with the availability and use of new technology such as mobile phone use during driving. Slower reaction times, not keeping lane driving, deranged split decision, reduce driving performance can be observed with the use of mobile phones while driving. There is a risk of four times more likely for crashes even with use of hands-free mobile phone during driving.¹⁰

In our study 23% of the victims were under the influence of alcohol at the time of accident.. There were 18.6% of victims with alcohol consumption in a study conducted in Polonnaruwa idistrict in 2017.⁸ Alcohol consumption was 32% in RTA in Anuradhapura area in 2013 and it was 25% in Batticaloa in 2011.^{5,9}

Blood alcohol level as low as 0.04 g/dL increases the risk of road crashes significantly by impairing decision making in foreseeing the danger. Blood alcohol 0.05 g/dL results in 1.83 times higher risk. It also causes difficulty in diagnosis, management, recovery, and prognosis from Road Traffic Accidents.^{10,11,12}

In India, random breath testing at police checkpoints and both breath and blood testing of all drivers involved in accidents are done. However, due to logistical deficiencies in many situations, the checking is less than expected.¹⁰ Young or beginner drivers under the influence of alcohol are prone to RTA. Indian researchers in a recent study, concluded that alcohol-related RTA are foremost threat to civilization due to premature losses of lives with downstream socio-economic effects on families and society that must be prevented by holistic approach.¹³ We suggest that strict law enforcement is necessary to control driving with alcohol use. This should include random checking for alcohol use and high fine for the wrong person.

In our study 17% of riders were without safety helmets while riding motor bicycles. This value was 39% at Anuradhapura in 2013, 22% at Polonnaruwa in 2017 and 35% in Batticaloa in 2011 in different studies.^{5,8,13} United Nations Motorcycle Helmet Study (2016) estimated that motor bicycle riders have 26 times probability of death in road accidents than four wheelers. Correct wearing of best available helmet improves survival by 42% and reduces injuries by 69%.¹⁰ Traumatic brain injury severity can be reduced with proper helmet use. Strict law enforcements are necessary to make all riders to use helmets.

Poor visibility of the vehicle and pedestrians are a recognized cause for accidents. It is known that majority of fatal road injuries occur in dark. Visual reaction times are substantially longer under adverse, low visibility conditions than under optimal conditions, leading to increased stopping distances when driving.

Visibility of drivers can be increased by fixing reflectors on vehicles, wearing yellow or white helmets, bright colored clothing at night. Daytime running lights of vehicles can increase the visibility. Increasing the visibility of the pedestrians by reflective clothing also increases road safety at low-light situations.¹⁰ In this study 40% of accidents happened between 6am to 6 pm time period. 11% of accidents were due to animals crossing the road in this study. The value was 18% at Polonnaruwa

area in 2017. When animals reach roads, the owners of the dogs and cattle, should be fined with very strict laws. Mechanical failure of vehicles was responsible in 11% of cases. This value was 6% at Polonnaruwa in 2017 and 7% at Anuradhapura in 2013. Failure of break system was the main mechanical failure. We suggest that strict law enforcement is necessary to check the mechanical system of each vehicle time to time and only certified vehicles should be given the permission to drive.

62% of the patients had trauma to limbs and extremities with 46 fractures. Motor bicycle riders should be encouraged to use safety equipments to hands, head and lower leg areas as preventive strategies. This will reduce the post trauma morbidity. We performed 50 Computer Tomography brain scans (CT scans) of patients suspected of brain trauma.¹² Patients with EDH, SDH, SAH and ICH were transferred to Teaching Hospital Karapitiya for neurosurgical intervention.

Conclusion

Significant amount of Road Traffic Accidents are potentially preventable. Regular update and reminding of driving discipline is needed as wrong driving techniques which is responsible for 74% Road Traffic Accidents in this study in this regional area. Strict law enforcement against drivers under the influence of alcohol is essential. Significance of use of safety equipments during riding bicycles could be illustrated in the media.

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