

## Research article

# Analysis of patients admitted with history of road traffic accidents to surgical unit B Teaching Hospital Anuradhapura, Sri Lanka

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**Abstract****Background**

Road Traffic Accidents (RTA) is a leading cause of morbidity, mortality and disability in Sri Lanka. Identification of factors associated with RTA in local settings is essential in reducing the burden of this condition

**Methods**

We analyzed consecutive patients admitted with RTA to Surgical Unit-B, Teaching Hospital Anuradhapura from 01/10/ 2012 to 31/03/2013. Epidemiology, injury pattern, vehicle type, cause for accident and contributory factors were noted.

**Results**

Altogether, 214 consecutive patients with an age range of 01- 75 years were studied. Males accounted for 77.6% (n=166) of the study sample. Vehicle type involved with the injury included, motorcycle 138(65%), bicycles 23(11%), three wheelers 23(11%), tractors 11(5%), buses 5(2%), lorries 6(3%), cars 2(1%) and other 3(1%). There were 135(64%) drivers /riders, 59(28%) passengers and 17(8%) pedestrians. Causes for accidents included wrong driving/riding 54(25%), other vehicle collided 46(22%), animal crossing road 39(18%), mechanical failure 14(7%), poor road 18(9%), glare 4(2%), man crossing road 8(4%), garment trapping the wheel 5(2%), rain 6(3%). Contributory factors included alcohol use in 32%, no helmet 39% of riders, no driving license for 47% in recorded cases. There were 33 fractures, 2 intracranial hemorrhages.

**Conclusion**

Majority of RTA involved motor bicycles. Lack of driving license for 47% of rider/drivers itself explain wrong driving/riding to be the main cause for accidents. Alcohol is a major contributory factor for RTA in this population.

**Key words:** Road traffic accident; Injuries; Anuradhapura Teaching Hospital

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**Introduction**

Road Traffic Accidents (RTA) take nearly 1.3 million people annually worldwide and disable millions of people. About 90% of those take place in low or middle income countries. RTA has been recognized as a challenge by the United Nations and its members (1). In Sri Lanka RTA remain a major cause of mortality and morbidity. Some victims end as permanently disabled people. RTA injuries have reached to epidemic proportion in Sri Lanka ending 2000 deaths and 14000 injuries each year (2,3). Government has to spent large amount of money for managing those disabled people. Those disabled individuals will be a burden to the family. Death of the bread winner causes financial and social crisis to a family. Identification of risk factors enables to plan a preventive strategy for RTA (4).The risk factors for the RTA are different from region to region in the country (5). Although some statistics are available in Sri Lanka these need to investigate again because of the recent rapid upgrading of the road systems at Anuradhapura area (6). With cessation of the war more people tend to travel often. Influxes of new types of vehicles often change the pattern of risk factors(7). We have included the drivers, riders, passengers and pedestrians.

**Methods**

This was a prospective cohort study. We included all patients who were direct admitted with a history of RTA on casualty days to surgical unit B TH Anuradhapura for a duration of 6 months.The histories were taken from the patients or from bystanders depending on the age and conscious level of the patients. Those immediate findings in the x rays, ultrasound scans, and CT (Computerized Tomogram) scans were included. Study variables were age, sex, time of incidence, date and time of admission, type of vehicle, license status, history of alcohol/alcohol breath smell, helmet use, possible cause for the incidence, extent of injury and immediate outcome were inquired . We documented whether the patient is the driver, passenger or pedestrian. The proposal was approved by the Ethical Review Committee of Faculty of Medicine, University of Rajarata. Written informed consent will be taken from participants.

**Results**

We analyzed 214 consecutive patients admitted with RTA toSurgical Unit-B, Teaching Hospital, Anuradhapura from 01/10/ 2012 to 31/03/2013.Age was ranging from 01 to 75 years (mean 32). Male: female ratio was 166:48. 22 patients were below 16 years. Type of vehicles involved in the injury are included in table 1.

Table 1 **Type of vehicles involved in the injury**

Type of vehicles	N	%
Motorcycle	138	65
Push bicycles	23	11
Three wheelers	23	11

Tractors	11	05
Buses	05	02
Lorries	06	03
Cars	02	01
Other	03	01

Time of the accidents are presented in table 2.

Table 2 **Time of the accidents**

Time period	N	%
6pm -12 midnight	57	30
12 midnight -6am	17	09
6am-12noon	48	26
12noon-6pm	66	35

Distribution injury by type of victims are presented in the table 3.

Table 3 **Type of victims**

Victim	N	%
Drivers /riders	135	64
Passengers	59	28
Pedestrians	17	08

Causes for accidents are present in table 4

Table 4 **Causes for accidents.**

Cause	N	%
Wrong driving/riding	54	25
Other vehicle collided	46	22
Animal crossing road(mainly dogs and cattle)	39	18
Mechanical failure	14	07
Poor road	18	09
Glare	04	02
Man crossing road	08	04
Garment trapping wheel	05	02
Rain	06	03

Contributory factors in recorded cases are present in table 5.

Table 5 **Contributory factors for accidents**

Factor	N	%
Alcohol use	63 /198	32
Not wearing helmet	48/123	39
Not having driving license	70/13	47

All patients had abrasion, contusion or laceration. There were 33 fractures, 2 intracranial hemorrhages.

**Discussion**

RTA related injuries, death has been increasing during last 2 decades and results in morbidity, and mortality due to increased motorization and high way networks globally (8). Road traffic accidents accounts for majority of trauma

related musculoskeletal injuries. However musculoskeletal injury remain with poorly documented with minimum resource allocation for research, treatment and prevention(9). In our study all the patients had abrasion, laceration, contusion or combination of those. There were 33 fractures.

Alcohol is one of the most important risk factors for serious and fatal injuries, contributing to approximately one third of all deaths from accidents. One study showed that the speed of the vehicle at the time of collision is high when blood concentration of alcohol is high. One Norwegian study showed that 11.5% of the drivers of accident were under the influence of alcohol. In our study group 32% of the victims were with a history of alcohol use. We did not investigate any of them with breath analysis or blood levels. If blood levels were tested this figure may be higher. This figure indicates that very strict legislations are needed to prevent the alcohol use during driving (10,11).

18% of the accidents are related to animal crossing the road in our study. We found cattle and dogs commonly involve with accidents in the study. To reduce collisions between vehicles and animals, several preventive measures including signs, fences, underpasses, diversionary feeding areas, and roadside reflectors have been proposed by scientists in other countries(12). A program is needed to convince the owners of the dogs and cattle in Sri Lanka to prevent those animals approaching roads. Literature shows 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. However, in our study majority of accidents had taken place in the daytime. This may be because the number of vehicles is high in the road in the day time(13). In this study 39% of the riders were without helmets. Motorcycle helmets reduce the risk of death and head injury in motorcycle riders who crash. Helmets were estimated to reduce the risk of death by 42% and to reduce the risk of head injury by 69%(14). 2% of injuries were due to cloth trapping the spoke of rear wheel in our study. Since the first report of bicycle spoke injuries, presented a half century ago, prevention has not improved. Protective footwear should be made compulsory.

Changes should also be made in the design of the rear wheel of motorcycle (15). Wrong driving techniques contributed to 25% of the accidents in this study. 47% of the riders and drivers were without a driving license in our study and this itself explains the reason for wrong driving or riding techniques. It is hard to find out motorcycle trainers and many get their training from

unauthorized people. Establishment of motorcycle riding training schools will be very useful to prevent majority of accidents. In our study 65% were motorcycle accidents. In one study in Nigeria 52% were due to motorcycle accidents. In that Nigerian study 25.3% of patients had fractures (16). In our study 15% had fractures and all had laceration, abrasion or contusion.

Another Nigerian study found that majority of motorcycle riders are within 20 and 30 years of age. In our study the mean age is 32 years. This age group people are characterized by high driving risky behaviors, always in a hurry and aggressive. The Nigerian study reveals that over speed, wrong overtaking and bad roads accounted for higher percentage of accidents among motorcycle riders. That study found that they carry two or more passengers at a time, do not use safety equipments like helmet, and do not ride with their driver's license, many of them take alcoholic drinks before driving(17).

The Nigerian survey, indicated that 40% of the vehicles surveyed on the suburban road and 29% of the vehicles surveyed on the highway had mechanical defects and be at risk of causing an accident due to a mechanical failure. The main conclusion from this work is that tires and brakes are the two most dominant components that contribute to the mechanical defects causing accidents, with overloading an additional factor to consider(18).

In a Kenyan survey, the casualties were passengers (47.2%) or pedestrians (32.9%). In our study these figures were 28% and 8% (19).

In one Indian study, it was shown that narrow and defective roads were responsible for (26.5%) of non-collision accidents where as collision types occurred mostly in wide roads (61.9%). In our study about 8% of accidents were due to defects in roads. Current rapid improvement in Sri Lankan roads expect to reduce the number of non-collision accidents (20). In an Indian survey of fatal accidents caused by motor vehicles, 78.57% were due to old ones. A positive trend (linear) was observed with old vehicles in respect to both fatal and non-fatal RTAs. Certifying the roadworthiness of the vehicle should be legitimized. Any vehicle found lacking in roadworthiness should not be permitted for plying (20). Rain has been a contributory cause in 3% of accidents in our survey. An Indian study observed 81.66% RTA occurred in rainy and cloudy conditions (20).

#### Funding

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#### Competing Interests

None

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