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Injury Pattern of Road Traffic Accident Cases Attending At Trauma Centre BHU: (A Study from North India)

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Abstract
Background: Accidents not occur only due to ignorance, but are due to carelessness, thoughtlessness and overconfidence. As well as being a public health problem, road traffic injuries are a development issue, low and middle-income countries lose approximately 3% of GDP as a result of road traffic crashes. According to the WHO road traffic accidents, injuries are the sixth leading cause of death in India with a greater share of hospitalization, death, disabilities and socio-economic losses in the young and middle age population. According to an estimate of the Ministry of Road Transport & Highways, Government of India, 195000 adolescents killed every year in traffic accidents, 60% are boys. In 2011, for every 3.7 minute and every minute, one death and one injury took place in India from road accidents.

Objective: To know the prevalence & injury pattern among the road traffic accident cases.

Materials and Methods: Study Design: Retrospective study, Study Setting: Trauma Centre & Super specialty Hospital, BHU- Medical Record Department, And Study Period: Data collected over 6-month period (January 2016 to end of June 2016), Tools: Medical records of 500 cases admitted due to road traffic accidents were analyzed. A detailed preform was used to collect data on the socio-demographic profile of the victims, type of injury, treatment received, outcome and details of circumstances leading to accidents, Statistical Analysis: Interpretation of the collected data was done by using appropriate descriptive statistical methods Result: There were 76% male and 24% female accident victims. Farmers & Laborers were the highest (22%) among the victims. The highest number of accidents took place in the month of January (40%) and on Sundays (22%). The road traffic accidents victims were mostly (58%) in the age group (20-40) years. Among the motorized vehicles, two-wheeler drivers were more (86%) involved in accidents. Head injury was the highest (52%) among road traffic crashes victims. Among the two-wheeler occupants, head injury was highest (56%) followed by lower limb (17%).

Keywords: Road traffic accident, Road traffic injury, Prevalence, Head injury, Helmet etc

Introduction
Road Traffic Injuries are a large and growing public health burden. The low and middle-income countries have 90 % of world's deaths due to road traffic accidents, although they have only 50% of the world's vehicles.[1] Worldwide road traffic accidents cause about 1.25 million deaths about 20 to 50 million people suffer from non-fatal injuries with many sustaining a disability as result of their injuries. Road accidents are the main and leading cause of death of young men worldwide. During 2008, road traffic injuries related trauma ranked fourth among the leading cause of death in the world. [2]
According to an estimate of Ministry of Road Transport & Highways, Government of India, 195000 adolescents killed every year in traffic accidents, 60% are boys. In 2011, for every 3.7-minute and 1 minute one death and one injury took place in India from road accidents.[3]
Accidents not occur only due to ignorance, but are due to carelessness, thoughtlessness and overconfidence. As well as being a public health problem, road traffic injuries are a development issue, low and middle-income countries lose approximately 3% of GDP as a

result of road traffic crashes (Global status report on road safety 2015). [4] According to the WHO road traffic accidents, injuries are the sixth leading cause of death in India with a greater share of hospitalization, death, disabilities and socio-economic losses in the young and middle age population.

According to G. Gururaj (2008), India is passing through the triple epidemic of communicable and infectious diseases, non-communicable diseases and injuries, due to epidemiological and demographic transition. Information on injury pattern, nature and outcome are extremely limited in India, as trauma registries and hospital-based research have not developed systematically. [5]

According to National Crime Records Bureau (Ministry of Home Affairs), a total of 450898 cases of road accidents were reported, 141526 persons were killed, and 477731 injured in road traffic crashes in India in 2014. Maximum fatality in road accidents was reported in Uttar Pradesh (11.5%), followed by Tamil Nadu (10.7%), although Tamil Nadu has reported the maximum number of road accidents in the country in 2014. In India, 51 cases of road accidents took place every hour during 2014 and 16 people were killed. [6] [16]

According to a report published by MORTH (2016), Government of India, The road accidents increased by 2.5 percent, persons killed in road accidents increased by 4.6 percent, road accident injuries have also increased by 1.4 percent in 2015. [7] However, this is probably an underestimate, as not all injuries are reported to the police (Gururaj, G., 2006, Mohan, D. et al., 2009). [8] The Global Burden of Disease (GBD) study estimates that there were 264,000 (95%CI: 214,000-321,000) deaths in India in 2013 almost twice the deaths reported by traffic police.[9]

Nilambar Jha et. al.; (2003), demonstrated in his study that among all road traffic accident victims, males were approximately 5 times more involved as compare two female victims. Head injuries were the commonest form internal injuries; the limb and the face were the commonest forms of external injuries present among RTA victims & commonest sites for fracture was the lower limbs.[10] A critical analysis conducted by P. Mondal et. al.; (2011), showed in his study that in 2009 only, 127000 people died in road traffic accident in India resulting in a financial cost of approximately 136000 crore Indian rupees. Therefore, road traffic accidents can be easily compared with the gigantic infamous tsunami in terms of loss. [11] In a study proposed by P. Mondal et.al. ; (2011), suggested that men are more at risk than a woman of being injured in crashes. The finding suggests that the age group of 5-44 years is at high risk of road traffic injuries. This age group has an economic impact because these are the people in their most economically productive years. This paper produced sufficient evidence in support of high incidence of daytime casualties.[12][13] By the year 2020, if current trends continue the annual number of deaths and disabilities from RTI will have risen by more than 60%to number 3 on WHO's list of leading contributors to the global burden of disease and injury. They were number 9 on the list in 1990.[14][15]

Need For the Study

Road traffic accidents are associated with numerous problems each of which needs to be addressed separately (William Haddon). India is facing a triple burden of communicable diseases, non-communicable diseases and injuries due to RTA. A Road traffic accident puts a huge burden on health sector as well as on economy, which can be preventable. India accounts for as high as 6% of the world's RTAs, although it has 1% of world's vehicles. The RTA rate2 of 35 per 1000 vehicles in India is one of the highest in the world and so is the RTA fatality rate3 of 25.3 per 10,000 vehicles. India contributed only 0.7 percent papers on road traffic injuries and had less than one article on road traffic injuries per 1000 road traffic-related deaths. This is a growing area of research, neglected from health agenda, largely preventable and predictable.

Research Questions

- What is the prevalence of injuries related to road traffic accident cases at Trauma Centre, BHU?
- What is the pattern of injuries related to road traffic accident cases at Trauma Centre, BHU?

Research Objectives

- To know the prevalence of injuries present among the road traffic accident cases at Trauma Centre, BHU.
- To know the pattern of injuries present among road traffic accident cases at Trauma Centre, BHU

Materials and Methods

The present study was carried out at Trauma Centre & Super Specialty Hospital, Institute of Medical Sciences, and Banaras Hindu University (BHU) which is the largest Trauma Centre in India. Medical records of all Non Medico-Legal Case (NMLC) patients, admitted due to road traffic accidents over a six month period i.e., between 1st January 2016 to 30th June 2016 were analyzed. A total of 500 victims of road traffic accidents, who reported to the emergency of the institute that required hospitalization for at least 24 hours & NMLC, were included in the study. A detailed proforma was used to collect data on the socio-demographic profile of the victims, type of accident, type of injury, treatment received, outcome and details of circumstances leading to accidents. In this study, RTA was defined as an accident which took place on the road between two or more objects, one of which must be any kind of moving vehicle. Any injury on the road without the involvement of a vehicle (e.g. A person slipping and falling on the road and sustaining an injury) or injury involving a stationary vehicle (e.g. persons getting injured while washing or loading a vehicle) or deaths due to RTA were excluded from the study.

Statistical Analysis

Initially data has been entered in statistical software SPSS-20 and analyzed with statistical software SPSS-20 & M.S. Excel. Interpretation of the collected data was done by using appropriate statistical methods. Ethical clearance will obtain from the institutional head of the Trauma Centre & Super specialty Hospital, BHU.

Result

There was a marked male preponderance (76 %) with maximum involvement of younger age group. Farmers & Laborers were the highest (22%) among the victims. The highest number of accidents took place in the month of January (40%) and on Sundays (22%). The road traffic accidents victims were mostly (52%) in the age group (20-40) years. Among the motorized vehicles, two-wheeler

drivers were more (86%) involved in accidents. Head injury was the highest (52%) of the road traffic crashes victims. Among the two-wheeler occupants, head injury was highest (56%) followed by lower limb (17%). Among the road traffic accidents victims, 70% came directly to the hospital without any referral. It is interesting to see that 68% victims (44% belongs to other district and 24% to other states) were not related to Varanasi district.

Table 1: Distribution of RTA cases by age & sex

Age (Yrs)	Male (%)	Female (%)	Total (%)
0-9	15(3.9)	10 (8.3)	30 (6.0)
10-19	5(1.3)	10 (8.3)	10 (2.0)
20-29	80 (21.1)	20 (16.7)	100 (20.0)
30-39	150 (39.5)	10 (8.3)	160 (32.0)
40-49	80 (21.1)	30 (25.0)	110 (22.0)
50-59	20 (5.3)	20 (16.7)	40 (8.0)
60-69	10 (2.6)	18 (15.0)	28 (5.6)
Else	20 (5.3)	2 (1.7)	22 (4.4)
Total	**380 (100)**	**120 (100)**	**500 (100)**

Table-1 demonstrates the age distribution of road traffic victims by their gender. It is evident from the table that males 380(76%) are more involved in road traffic accidents as compared to females 120(34%). Majority of the victims 370(74%) were in the age group of 20-49 years which is economically active population. The Road traffic accident cases were highest 150(39.5%) among males in the age group 30-39 years & among females victims, it is 30(25%) in the age group 40-49 years. There were 30 victims (6%) below age 9 years & 50 victims (10%) were of age 60 and above.

Table 2: Distribution of RTA cases by Occupation

Occupational Status	RTA cases (%)
Farmer/Labourer	110 (22)
Businessman	60 (12)
Housewife	90 (18)
Student	90 (18)
Employee in service	60 (12)
Unemployed	20 (4)
Not applicable	70 (14)
Total	**500 (100)**

Table-2 demonstrates the distribution of road traffic accident cases by their occupation. It is evident from the table that farmer/labourer were the highest 22% among the victims followed by the student (18%) and housewives (18%). 20 (4%) unemployed victims involved in road traffic accidents.

Table 3: Distribution of RTA cases by education

Educational Status	RTA cases (%)
Non-literate	150 (30.0)
Below Primary	70 (14.0)
Above Primary	10 (2.0)
Up to 10 class	100 (20.0)
Up to 12 Class	90 (18.0)
Above 12 class	80 (16.0)
Total	**500 (100)**

Table-3 demonstrates the distribution of road traffic accident cases by their education. It is evident from the table that non-literate victims were the highest 150(30%) of the road traffic accident victims. The victims who have education up to 10th class were the next largest group with 100(20%).

Table 4: Distribution of RTA cases by type of injury

Type of injury	RTA cases (%)
Head Injury	260 (52)
Upper Limb	70 (14)
Lower Limb	90 (18)
Multiple	80 (16)
Total	**500 (100)**

Table-4 shows the distribution of road traffic accident cases by type of injury. It is evident from the table that head injury was highest 260 (52%) among the road traffic crashes victims followed by lower limb 90 (18%) and multiple injuries 80(16%).

Table 5: Distribution of RTA cases by Type of vehicle

Vehicle type	RTA cases (%)
Two-wheeler	407 (81.4)
Pedestrian	8 (1.6)
Four Wheeler	70 (14.0)
Bus & Truck	12 (2.4)
Others	3 (0.6)
Total	**500 (100)**

Table-5 shows the distribution of road traffic accident cases by type of vehicle involved. Among 500 victims, two wheeler occupants were highest 407(81.4%) in road traffic accident cases. The victims who injured due to four wheeler were at the second position 70(14%) in this study.

Table 6: Distribution of RTA cases by sex and type of injury

Type of Injury	Male (%)	Female (%)	Total (%)
Head Injury	170(65.4)	90(34.6)	260(100)
Upper Limb	68(97.1)	2(2.9)	70(100)
Lower Limb	77(85.6)	13(14.4)	90(100)
Multiple	63(78.8)	17(21.3)	80(100)
Total	**380(76)**	**120(24)**	**500(100)**

Table 6 represents the distribution of RTA cases by their sex and type of injury they have. It is evident from the table that head injury cases were the highest in both males (170) and female (90) victims among all type of injuries. The percentage of upper limb injury was highest (97.1%) among males as compared to females (2.9%). The males were more involved in all injuries as a comparison to their female's counterpart.

Conclusion and Recommendations

Road Traffic accidents are regarded as one of the factors of morbidity which mainly affecting economically productive young age group. The study highlights the urgent need for compulsory implementation of helmets for the two-wheeler. Several risk factors such as age, sex, type of vehicle, an absence of the driving license, non-use of helmets, casual attitude are associated with increased occurrence of road traffic accidents. A detailed scrutiny is needed for distribution of driving license to identify the alcohol user with specialized instruments like breath analyzer.

This study gives information about basic features of accidents which can be corroborated with further studies with a more robust hypothesis and more detailed data collection with statistical analysis.

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