ORIGINAL ARTICLE

Trends of Road Traffic Accidents: Patterns of Injuries in Road Traffic Accidents Victims: A study from Lady Reading Hospital MTI, Peshawar KPK

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ABSTRACT

Background This study reflects the pattern of road traffic accidents and road traffic injuries sustained by RTA victims reporting to LRH MTI. Traffic volume, single and narrow roads is a big problem, traffic rules violation is another demon, lack of awareness, reluctance for the use of safety gears, underage vehicle drivers or rider with questionable driving/ riding skills and no license has worsen the injury pattern and more severe crashes here, putting pedestrians and biker at high risk.

Aim: To know the different trends of road traffic accidents, most common victims and different patterns of injuries

Methods This is hospital based analytical comparative study, which was conducted in the trauma section of Accident Emergency lady reading hospital MTI Peshawar KPK, during the tenure from May 2020 to November 2020. In this study 298 victims of road traffic accidents were assessed and analyzed from both genders and of all age groups.

Results 298 victims of RTAs evaluated in our study. Most common mechanism involved pedestrian verses vehicle 40.3% followed by vehicle versus vehicle 28.6%, curiously in 5.3% of RTAs mechanism was unknown. Most of victims were males when compared with females, Males 86.3% and females 13.6%.

children age group 0 -10 years makes 12.6%. Most common vehicle involved was a bike in 48%, followed by car 30% and then 3-wheelers (auto ricksha and Qing chi) 15.3% followed by crashes involving unknown vehicle 8% which is significantly high with all the victims severely wounded or unknown category. Most common victims were vulnerable road users (pedestrian and bike riders) 35% pedestrians and 31.6% bike riders. 11.3% of victims were passengers. Most common injury sustained was head injury38.5%(n=115), followed by lower limb injuries(n=105) 35.2% and polytrauma victims with chilling percentage of 9.3%.

Conclusion There is a rising toll of road traffic injuries in and around Peshawar and majority being reported to emergency department LRH, MTI and it is major public health concern. Not only Pedestrians and bike rider are at threat but children of age group under 10 as well with high pedestrian mortality. If proper preventive steps not taken this will continue to rise causing significant death and disabilities.

Keywords: Road traffic injuries, road traffic accidents, safety gears road traffic injury victims,

INTRODUCTION

Transport system has given us an improved living standard. it is tantamount in economic growth of any country; it aids in moving people along with their goods to get their task globally done in today's world. It symbolizes our social wellbeing and nation image[1].

Road traffic injuries are a global challenge. Deaths related to road traffic accidents are at steady rise, starting from 1.15 million in the year 2000 rising to 1.35 million by 2018. Out Of the 56.9 million deaths globally, road traffic holds 2.37% death and are now the eighth cause of global death[2]. RTAs have been an active research for academic world and industry for couple of years. It is mainly focused because of the enabling demand of safety conditions and automation in vehicles, reflected through many studies[3,4,5,6] focusing the causal relationship road conditions responsible, driver related factors being drunken, driver behavior, age, gender, etc., weather related factors like precipitation, rain, snow, fog, etc., and road accidents rates in the different locations. These researches are based on the application of variety techniques, such as Bayesian model[7] Poisson model[8] and regression analysis[9,10] that

searches and suggests the relationship between traffic congestion and road accidents for M25 London orbital motorway.

Little is known and published about the road traffic accident happening in and around the Peshawar. We don't have statistics of road traffic accidents provided by government or the transport system department. We have only focus and high-lighted victims-based presentation. proposed mechanism leading to road traffic injuries, who reported to LRH MTI.

The objective of the study was to know the different trends of road traffic accidents, most common victims and different patterns of injuries

MATERIAL AND METHODS

This is a hospital based cross sectional designed study carried out after getting approval from Ethical Review Board (ERB) of lady reading hospital MTI Peshawar KPK Pakistan. The study was carried out in the trauma section of Accident and Emergency department, spanning a duration of 7 months of one shift that is a shift of 6 hours. The LRH MTI, is a government 1691-bedded, free-for-

service, urban tertiary care teaching hospital located in Peshawar. The total population of Peshawar is 3.17% according to world population Review. This is a single center-based study of all the road traffic accident victims reported to trauma section of ED department LRH, MTI. LRH, MTI is level one trauma center of the province (KPK), where all individual and mass trauma victims are dealt. There is about 3000 to 4000 patient influx per day. The emergency department of LRH, MTI has its own Triaging system which is now received international recognition and is known as LRH Model Triaging system. Patients needing the emergency treatment will have all the emergency investigation facilities like CT scan, X-rays, Blood investigation, round the clock, under one roof. It has around 200 beds with service provision 24/7. The trauma section is well equipped section of ED department. After the arrival of the patient a quick examination performed following ATLS protocol to ensure intactness of primary survey in the form of A=airway patency, B= spontaneousness of breathing, c=intact circulation, D=any focal or gross neurological deficit followed by E=exposure, exposing the patient for any other injury along with trauma series imaging when needed. If Any of primary survey element jeopardized or at threat, life threatening injury were dealt first followed by brief history on AMPLE format, A=allergies, M=medication=past medical and surgical history, L= last meal, E= event /environment surrounding, if the victim was able to answer a short interview taken if patient unable to answer attendants or rescuer were interrogated about victims and RTA details. After stabilizing the patient, a brief interview about taken about victim, vehicle involved, proposed mechanism, safety gear deployment, after written and informed consent from patient when able to answer otherwise consent taken from attendants, all the retrieved information was entered on predesigned proforma as well as on HMIS for record keeping. Three mechanisms of RTAs were assessed that is, single vehicle, vehicle versus vehicle, vehicle versus pedestrians. Vehicle occupants were categorized into drivers, riders and passengers with or without safety gears, being restrained or unrestrained for drivers and passengers and with or without helmets for riders of bikes and rider on pillion seat and cyclists and non-vehicle occupants as pedestrians The severity of being wounded was categorized into walking wounded/minor wounded, moderately wounded or severely wounded.

Eligibility criteria and Data collection: All the patients of both genders and all age group were included in this study including those who died in trauma and who were dead on arrival after RTA witnessed by person accompanying deceased. For the purpose of analysis, data was collected on a predesigned proforma, that includes victim's bio data, demographic details, injuries sustained, mechanism, suspected injuries imaging done and their findings, fates and outcomes.

Statistical analysis: All the data was manually checked, coded and entered into database then analyzed using SPSS vr 24. The descriptive statistics for the demography of victims, timing pre and post arrival along with time elapsed since RTA, mechanism of RTA, victim category, injuries sustained, deployment of safety gears outcomes and fates were calculated.

RESULTS

Gender: Two hundred and ninety eight victims of RTAs were analyzed males out-numbered females, males 86.6% and females 13.4%. male to female ratio was 8:1 out of them 3.3% were unknown. Most common age group affected was between 11-20 years 84(28.1%).

AGE BREAKUP
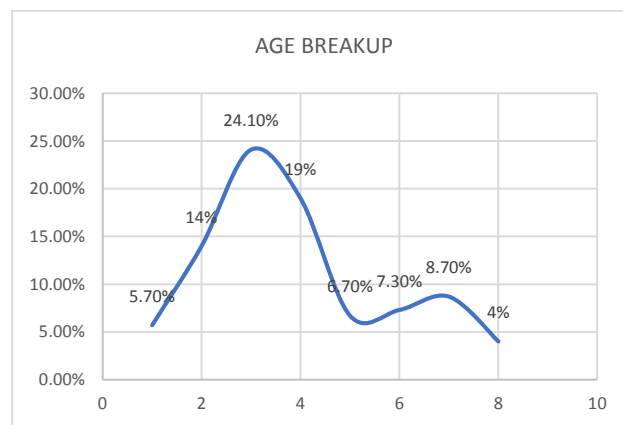
Time since RTA/ Stay in trauma hall

When calculated time since RTA for victims who reported to LRH, 12.7% of victims reported within 10-15 minutes of RTA, 17.7% reported within 21–30 minutes after RTA. Amongst them 7% reached ED after 30–40 minutes of RTA 3.6% of victims reached ED after 1hour to one 30minutes. 54.6% of victims stayed in trauma for 10–20 minutes, 18.45% stayed for 21–30 minutes. 12.7% stayed in trauma for 31 to 45 minutes, 1.6% stayed for 45minutes to 1hour 0.6% stayed 1-2 ours respectively (being more severely wounded more critical required more time in stabilization)

Mechanism: Most common mechanism involved was pedestrian verses vehicle 40.3%, followed by vehicle verses vehicle 28.6% with chilling percentage of unknown mechanism 5.3%, 3% RTAs involved single vehicle crashes (9% slips 0.6%, occupant ejected 0.3%, fall of vehicles 0.6% respectively).

Vehicle occupants/victims

Driver	10%
Rider	31.6%
Cyclist	0.3%
Passengers	11.3%
Pedestrians	35%

Areas injured

Region	Frequency
Head	76
Face	14
Neck	1
Chest	32
Abdomen	18
Upper limb	32
Lower limb +pelvis	92
Spine	1
Polytrauma	28

Safety gears: Out of 298 victims of RTA, rider was without helmet were 25%, only 5% deployed helmet while riding

bike, 60(20%) of passengers in different vehicles were unrestrained, only 2% were sat restrained in vehicles. Surprisingly 7.3% victims were with unknown safety gear deployed status.

Adverse event during stays in trauma: Aspiration happened in 2(0.7%), prolong resuscitation was needed in 6(2%), victims who responded transiently to fluid 2(07%), 1.3% of victims had failed CPR and resuscitation

Injury pattern with victim's category

Head injuries: Our study reflects 84(28.1%) of victims sustained head injury. Out of 23(20%) were riders with no helmet, 22(38%) were pedestrians, 8(9.5%) passengers on different vehicles, 5(5.9%) pillion seat passengers, 12(14.2%) were unrestrained drivers ,9.5% victims' category was unknown.

Lower limb and pelvis with victim's category: Lower limb and pelvic injury found was found in 05(35.2%) of victims. Amongst them 22(20.9%) were riders with no helmet, 9(8.5%), 12(11.5%), 10(9.5%) were passengers in different vehicles. 5(4.7%) were passengers on pillion ride, 1(0.3%) were cyclist and bystanders.

Polytrauma victims with category: Polytrauma victims makes 29(9.7%) of our study, 3(10.7%) were unrestrained passengers,4(14.2%) riders, 3.5% cyclist, 7(14.2%) riders with no helmet surprisingly same percentage of pedestrian 14.2%. In 5(17.8%) category could not be evaluated owing to victims' condition or they were brought as unknown or by rescue teams most common mechanism in polytrauma was vehicle vs vehicle 8(28.5%) followed by crashes involving unknown mechanism 6(20.6%) sadly. 4(13.7%) 13.7% had mechanism involving single crashes.

Upper limb injury and victim category: Upper limb was involved in 33(11.3%) of victims. Upper limb trauma victims were mostly pedestrian 11(33.3%) followed by riders with no helmet 10(30.3%). the most common mechanism involved in upper limb trauma was vehicle vs pedestrian followed 14(42.4%), followed by vehicle versus vehicle 12(36.3%), single vehicle crashes was responsible for 4(12.1%) of upper limb injuries.

Wounded severity 15(45.4%) were walking wounded, 10(30.3%) were severely wounded needed admission and treatment. 8(24.2%) were moderately wounded.

Thoracic injuries and victim category: 2.4% victims sustained thoracic trauma out of them most common mechanism remained unknown 3(42.8%). All of victims with thoracic injuries were severely wounded 2(28.5%) died in trauma hall were polytrauma victims.

Abdominal injuries with victim category: 18(6%) were victims with blunt abdominal trauma. With highest number of pedestrians affected 6(33.3%) followed by unrestrained passengers 4(22.2%) with pedestrian versus vehicle involved in 33.3% 0f victim all were severely wounded who needed blood and fluid resuscitation in trauma hall out of them 11.1% failed to respond to resuscitation and 2(11.1%) died during their stay in trauma hall.

Spinal cord injuries with victim category: 3(1%) of RTA victim sustained spinal cord injury with highest number victims being bike riders with no helmet 2(66.6%) and

33.3% was unrestrained driver common mechanism involve in spinal cord injury was vehicle versus vehicle 33.3% had single involved that is fall of vehicle in ditch.

Facial injuries: 14(4.6%) victims sustained facial injuries of variety. Most common mechanism pedestrian vs vehicle 5(35.7%), most common victims were rider without helmet deployed 7(50%). 8(57.1%) being severely wounded who needed admission and OT.
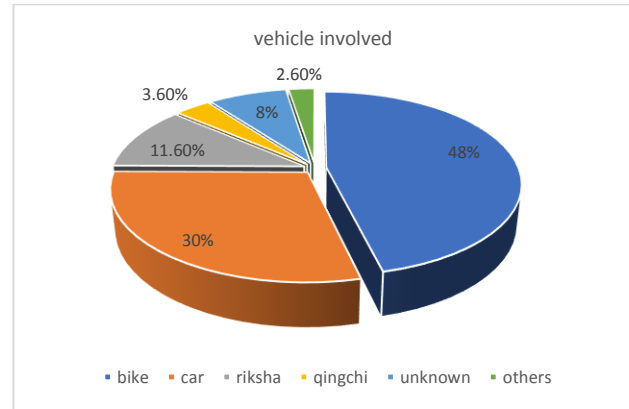
Hemorrhage control: 28.8% victims needed hemorrhage control in the form of wound closure 9.3%, packing 17.4%. bleeder ligation 3%, pelvic binder deployment 3%.

Primary survey: 29.8% arrived with jeopardized primary survey, 14% reported in state of unconsciousness. 10.7% in state of shock, 1.3% drowsy, 1% were gasping on arrival, 2.6% were confused.

Intervention: 62.7% needed intervention in trauma hall, 24.8% needed minor OT for dressing and minor wound management along with tetanus prophylaxis for all the victims in trauma hall when severely wounded and for walking wounded and moderately wounded in minor OT. 23% were with jeopardized airway where air way protected with suctions. Chin lift, jaw thrust, gudel, ETT oxygen inhalation. 23.1% needed fracture management in the form of fracture splints, slings, back slabs, skin tractions, and fracture reduction under image guided blocks. 2% needed chest intubation of who had clinically suspected and portable X-ray proven hemopneumothorax. In 5% of victims foley catheter pass for fluid monitoring and response to fluid resuscitation along and where urological trauma was suspected.

Resuscitation: 62.2% needed fluid therapy and blood transfusion. 37.5% needed fluids and intra venous analgesia. 11.4% needed blood transfusion to restore blood volume and stabilized vital before shifting to OT or concern department.

Time taken to image: 29.5% were image between 0- 10 minutes following arrival, 43.6% were imaged between 11-20minutes, 4% needed more than 30 minutes to get imaged because of critical condition.

Injury severity
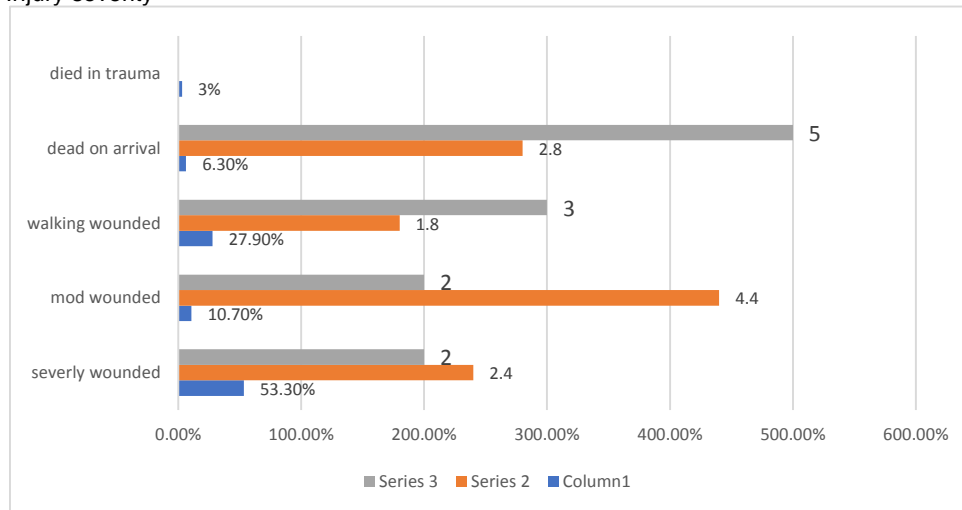
DISCUSSION

We undertook this study at LRH MTI to determine the patterns of RTA, patterns of injuries, and most common vehicle and victims involved in our study. Identifying victims, injury pattern and vehicle involved might help in bringing awareness in general public, alerting traffic department and other government and non-government organization in making road safety and road user safety policy to prevent these fatal n near fatal events. However, this is just a hospital-based analysis. Demographic, economic, and urbanization differences may explain some of the variations in road traffic accidents data between regions.

Nature of cases

Total number	Percentages
Referred cases	25.3%
LRH reported cases	74.6%

Genders: 298 victims of road traffic accidents were analyzed where males outnumbered females 259 out of 298 86% and 41 out 298 females 13.6%.

Age groups:

1-10 years: In our society children are often blamed for accident, which is not justified, because safe participation of Children in dependent not only on their mental and physical development but also on their central nervous system and peripheral nervous system to behave rationally to respond to external stimuli in any and every situation, which is not fully mature in first year of primary school going age, they can't differentiate between relevant and non-relevant[11] with highest pedestrian mortality when compared to[12] anatomically children differ from adults' physiology. It is very important to understand this difference as they vary in symptoms, injury severity and prognosis[13]. If parent or guardian does not teach and exemplify kids become, being reckless, and take it as norm and do thing and behave involuntary[14]. Age group 11-20 years makes majority of our study population 84(28.1%). According to [15] young riders no license, deficient in technical aspect, poor understanding no proper testing before license is making

scenario worst with us as well. Age group 21-30 years features of this age group were same suggestive of attitude and knowledge of vehicle user and driving attitude attributed toward male gender reflected through other studies as well[16,17,18]. In our study elderly population (more than 60 years makes 4.6% victims with majority being pedestrian 5(35.7%) and most common mechanism involved in this age group was pedestrian versus vehicle 5(35.7%). which is comparable to[19] surprisingly 4(28.5%) were non-helmet deployed bike riders to conversely to [20]
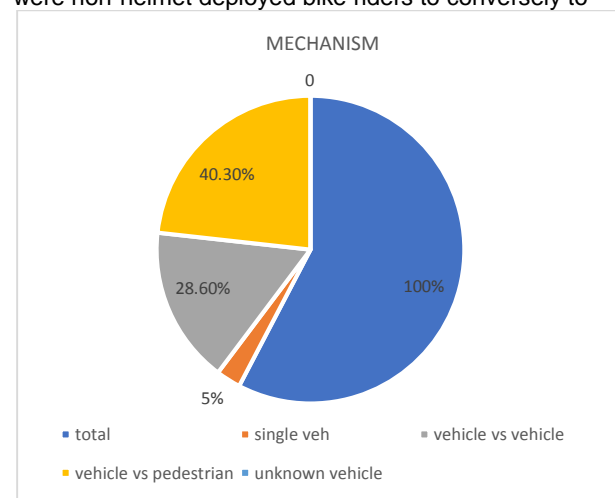
Victims' category

Bystander	1(0.3%)
Cyclist	1(0.3%)
Passengers (7/34 pillion ride)	34(11.4%)
Drivers	32(10%)
Riders	95(31.6%5)
Pedestrians	105(35.2%)
Unknown	16(5.3%)

Only 5% of bike rider deployed helmet and only 0.6% were restrained passenger in vehicle with 7.3% victims' deployment of safety gear status was unknown. Victims without safety gears sustained major injuries with

pedestrian and bike riders at great threat comparable to other studies as well[21]. Most common vehicle with us was the bike 144(48%) followed by car 90(30%) and than3-wheelers 47(15.7%), high number of bikes can be compared to.[22] Although motor vehicle occupants comprise the majority of traffic-related head traumas, fatality among pedestrians with severe brain injury is higher than motor vehicle occupants[23].

Alarmingly we have high stats of polytrauma victims 29(9.7%) with majority being unrestrained driver 7(25%) with 4(14.2%) victims being pedestrians, sadly 5(17.8%) were unknown victims with chilling number of unknown crashes 6(21.4%). 7(25%) of them died in trauma, 12(42.8%) shifted to OR. 9(42.8%) were admitted. 25% of them 7 died in trauma

When mortality assessed of victims 14(4.6%) victims were dead on arrival, 4(1.3%) died in trauma hall which is big number.

In summary, our analysis highlights no safety for vulnerable road user that is bike riders and pedestrians with alarming polytrauma and unknowns' victims. pedestrians and bike riders' safety has never been concerned and has never been improved, it need targeted approach to prevent further rise in problem. Road traffic safety intervention and road user safety policy is a useful answer and can solve this issue and saves lives and prevent disabilities.

CONCLUSION

In today's time every place is full of risks, RTAs has taken more lives than wars. So, it is a mutual responsibility to deal with these matters safely the injury pattern and victims involved in our study reflects fusion of factors involved in injury patterns reported to us, this includes drivers/riders being inexperienced, poor driving skills, lack of awareness about traffic laws, reluctance for safety gears use, and unsafe behaviors.

Recommendation Implementation of road safety policy for vulnerable and non-vulnerable users not only prevents RTAs but also ensures users safety to saves lives and disabilities also helps educating the masses who are totally naive as road users as well at understanding and abiding by traffic laws. It can help in controlling congestion and traffic jams. our study reflects majority bike where underage means ownership was doubtful superimposed being underage have less experience as well.

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Conflict of interest: Nil

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