

# STUDY OF FATAL ROAD TRAFFIC ACCIDENTS: BASED ON MEDICO-LEGAL AUTOPSIES

Shemaila Saleem<sup>1</sup>, Ayesha Haider<sup>2</sup>, Jehanzeb Khan<sup>3</sup>, Tamkeen Saleem<sup>4</sup>

<sup>1</sup>Department of Physiology, and <sup>2</sup>Department of Forensic Medicine, Federal Medical and Dental College, Islamabad, <sup>3</sup>Department of Forensic Medicine, Gomal Medical College, D.I.Khan, and <sup>4</sup>Department of Psychology, International Islamic University, Islamabad, Pakistan

## ABSTRACT

**Background:** Every year almost 1.3 million people lose their lives as a result of road traffic accidents, contributing to above 3500 deaths per day world-wide. The aim of this study was to assess the frequency and distribution of RTAs leading to fatality.

**Material & Methods:** This was descriptive cross-sectional study of autopsies performed at the mortuary of DHQ Teaching Hospital, D.I.Khan, from January 2013 to December, 2013. Data was collected on a proforma. The results were analyzed using Statistical Software Package SPSS version 20.

**Results:** Out of 160 autopsies, 39 cases were victims of RTAs. Of these RTA victims, 79.4% autopsies were of those between the ages of 1 and 40 years. The gender distribution revealed a higher prevalence for males (84.6%) than females (15.4%). Death was due to injury to the head in 66% cases. The majority of victims were front seat passengers (43.9%), drivers (35.7%), back seat passengers (15.3) and pedestrians (5.1%).

**Conclusion:** There was a higher preponderance for males, front seat passengers & younger age groups in road traffic accidents, with head injury being the mode of death.

**KEY WORDS:** Road traffic accidents; Medico-legal autopsies; Autopsy.

**This article may be cited as:** Saleem S, Haider A, Khan J, Saleem T. Study of medico-legal autopsies due to road traffic accidents. Gomal J Med Sci 2015; 13: 19-22.

---

## INTRODUCTION

Road traffic injuries and fatalities are a vital but slightly overlooked public health issue that necessitates rigorous measures for effective control and prevention. Throughout the systems and mechanisms of the world faced by the people in every day routines, the system of road traffic is the most hazardous, risky and complex one. Globally an estimated figure of around 1.2 million people die each year in road traffic accidents (RTAs) and almost 20 to 50 million carry on their life with some non-fatal injuries. The research data projections reveal that these figures can raise up to 65% in the next 20 years except some effective commitment is made to target prevention of such injuries and fatalities.<sup>1</sup> However, despite the alarming conditions these figures somehow attract less attention of mass media as compared to many other kinds of tragedies and public health problems.

Relatively insufficient literature is found regarding RTAs with reference to developing countries, which indicates that there is inadequate awareness about the role and contribution of the RTAs towards the burden of disease, consequences and problems in the life of victims and their families. In research and policies the RTA seems a neglected area. RTA excessively has an effect on the lower socio-economic strata that have little or no say in policy decisions.<sup>2</sup>

According to the WHO estimated report of 2009 the outcome of the road traffic injuries in Pakistan is rated to be 25.3 deaths per 100,000, that is perceived to be high by standards set by the international agencies and organizations.<sup>3</sup> In 2011 World Health Organization reported a decrease in RTAs in Pakistan with the rate of RTA being 15.5 a ranking of 94 among all the countries around the world. It is the 12<sup>th</sup> cause of deaths in Pakistan.<sup>4</sup> Since a decade or so wide-ranging efforts have been carried out for the collection of data regarding the road traffic injuries and fatalities at national and city levels in Pakistan. In Pakistan, the commonly data generation sources for epidemiological studies of RTAs have been records from the emergency units, surgery and intensive care departments of hospitals and also the local police records of RTAs.<sup>5</sup>

---

### Corresponding Author:

Dr. Shemaila Saleem  
Assistant Professor  
Department of Physiology  
Federal Medical and Dental College  
Islamabad, Pakistan  
E-mail: drshemailasaleem@gmail.com

Despite the decrease in RTA according to the reports from 2009 to 2011 the issue still requires a need to be addressed and controlled as the 15.5 rate is still high and has its costs and consequences at individual and national level.

Road traffic accidents bring about substantial physical as well as economic loss to the accident survivors and deceased, their families and at large to the nation. These financial expenditures or short-falls basically emerge out due to: a) the treatment or investigations, b) reduction arise from loss of productivity that may effect on salary income for the ones died or disabled by road traffic injuries, and c) for care-giving by the family members where one may require to take off from the work or school.<sup>1</sup>

The deaths in RTA are mostly preventable through the intensive efforts of government institutions and civil society activists. Through the implementation of road safety measures the leading risk factors of RTAs can be controlled enabling a safer traffic system on roads.<sup>6</sup>

The aim of this study was to assess the frequency and distribution of RTAs leading to fatality.

## MATERIAL AND METHODS

This descriptive cross-sectional study of autopsies was conducted at the Department of Forensic Medicine, Gomal medical College, Dera Ismail Khan, from January 2013 to December, 2013.

The sampling procedure selected for the study was non-probability convenient sampling to include the 39 autopsy cases of RTAs. The medico-legal autopsies and corresponding police inquests were included. The informed consent taken from the relatives of the victims/deceased and data was collected on self-designed proforma. The cases with no records were excluded from the study like those received dead in the emergency room. The consent and permission from the institutional authorities were taken before the beginning of data collection. The data confidentiality was ensured. Ethical Clearance was attained from the Local Ethics Committee before conducting the study.

After the collection of data it was entered in SPSS version 20 for analysis of results.

## RESULTS

A total of 160 cases of mortality subjected to medico-legal autopsy examination. Out of 160 cases, 39 cases were incident cases of Road Traffic Accidents. This indicates a larger share of deaths due to RTAs with the percentage of 24.3 of the total deaths subjected to autopsy examination.

Table 1 shows the gender distribution of RTA victims indicate the prevalence is more common

in males as compared to the females; 84.6% and females only 15.4%.

Table 2 shows that age-wise distribution indicates a higher prevalence in the age-group of 21-40 years as 48.7%. This indicates that the 1-40 years is the age most vulnerable for the RTAs.

Table 3 depicts that cross tabulation was applied for the analysis of frequencies and percentages of age-wise distribution of the victims along with their gender specifications. The overall data revealed that younger males are more susceptible to RTAs as indicated by the medico-legal autopsies data as compared to female.

Most of the victims of RTAs had head injuries (66.6%), organ injuries (20.5%) which lead to the mortality of the deceased. There were few extreme cases (5%) found representing body, limbs and skull crushing. Most of the cases out of the total sample of 39 had multiple injuries (37) involving head as well as other regions. The analysis was run to find the types of multiple region injuries and results were 48.6% laceration of head, neck and face, 27% laceration of Limbs and other body areas and 24.3% fractures. While head injury was predominant in most of the cases. (Table 4)

Table 5 shows that Frequency and Percentage tabulation was carried out with respect to the Road-User Type. The results indicated front seat passengers (43.9%) with highest prevalence rate among the deceased cases of RTAs and drivers (35.7%) being rated as having second highest share among the road-user type, whereas back seat passengers having the percentage of 15.3 at pedestrians 5.1%.

**Table 1: Gender distribution of victims of road traffic accident (n=39).**

Gender	Frequency	Percentage
Male	33	84.6
Female	6	15.4
Total	39	100.0

**Table 2: Age distribution of road traffic accident victims (n=39).**

Age	Frequency	Relative frequency	Cumulative frequency
1-20 years	12	30.7	30.7
21-40 years	19	48.7	79.4
41-60 years	5	12.8	92.2
61-80 years	3	7.8	100

**Table 3: Age & Gender cross-tabulation (n=39).**

Age	Gender		Frequency	Percentage
	Male	Female		
1-20 years	10	2	12	30.7
21-40 years	16	3	19	48.7
41-60 years	4	1	5	12.8
61-80 years	3	0	3	7.7
Total	33	6	39	100

**Table 4: Distribution of road traffic injuries by organs leading to death (n=39).**

Injuries	Frequency	Percentage
Head injuries	26	66.6
Visceral organ injuries (e.g. lungs, heart, kidney)	8	20.5
Extremity	5	10.4
Total	39	100
<b>Head and Multiple Regions Injuries</b>	37	84.6
Laceration of head, neck, face	18	48.6
Laceration of Limbs and other body areas	10	27
Fractures	9	24.3
Total	37	100

**Table 5: Distribution of RTAs by road-user type (n=39).**

Age	Frequency	Percentage
Driver	14	35.7
Front Seat Passengers	16	43.9
Back seat passengers	6	15.3
Pedestrians	3	5.1
Total	39	100

## DISCUSSION

The present study endeavored to develop a better comprehension of the severity of injuries and fatalities due to RTAs in DHQ Teaching Hospital, Dera Ismail Khan. The descriptives were found for age gender, organs involved and road-user type.

The present study gender autopsy ratio for male and female RTA victims revealed a higher ratio for males with an estimated percentage of 84.6. At a young age, males have more propensity to occupy a larger share in RTAs as compared to females. It has been observed among young drivers that under-age of 25 years there is 3 times more likelihood of RTA death in males than females.<sup>1</sup> Studies focusing developed and developing countries also reveal the same male preponderance.<sup>7,8</sup>

Projections indicate that during 2000 and 2020, fatalities due to RTAs will decline by 30% in developed and high-income countries but increase to a large extent in developing and under-developed countries. Without visionary and effective actions, deaths due to RTAs are predicted to be the third leading contributor to the global burden of disease by 2020.<sup>9</sup>

The age distribution in RTA casualties was recorded to be 48.7% for 21-40 years and 30.7% for the 1-20 years, which was in accordance with international findings as reported by World Health report 2002. RTAs are one of the three primary causes of fatality for people between the ages of 5 and 44, whereas most common cause of death for people between the ages of 5 to 25.<sup>10</sup> The findings are also consistent with the national reports of 73% deaths in RTA victims aged 15 and 44 years.<sup>11</sup>

A higher preponderance of fatalities of RTA victims have been found to be with multiple injuries. Fractures and dislocation, laceration and abrasions, head and neck injuries and visceral organs related injuries were more commonly observed in RTA victims. The study findings are in general agreement with other studies revealing involvement of multiple body parts in RTAs leading to death.<sup>12,13</sup>

In present study head injury alone is the cause of death in 66.6% of cases whereas head injury along with injuries for other body parts and other multiple

injuries are reported to be 84.6%. Severe head injury is a salient cause of death.<sup>14</sup>

More than half of the deceased in RTAs are the vulnerable road users specifically pedestrians and cyclists.<sup>1</sup> Pedestrians have risking behaviors they would cross even a dangerous heavy traffic road rather than the taking safer routes by opting for pedestrian bridges just in order to keep away from the long routes.<sup>15,16</sup> But the results of present study indicate a different picture. The results of road-type users indicated a higher prevalence of the deceased cases for front seat passengers (43.9%), then drivers (35.7%), then back seat passengers (15.3) and a very low percentage for pedestrians (5.1%). The research outcomes are in conformity with some studies that reported a lower pedestrian mortality rate in Bostwana i.e. 29% and Zimbabwe i.e. 31%. Another study revealed that in most of the countries, the road traffic fatalities among the passengers has the second largest share (30%). Drivers report for a meager share of 10% in most countries but in South Africa, Bostwana and Zimbabwe the driver fatalities in RTAs have the largest share.<sup>17</sup>

## CONCLUSION

The finding revealed a male, front seat passengers, young age group with head injury as common mode of death in autopsies among RTA victims. There is a need to explore if higher prevalence is due to actually the higher incidence rate of expiry in RTAs among males or due to lower autopsy rates of females. Further the reasons for accidents like fault of pedestrian, use of safety measures like seat belts or helmets, high speed, road condition or hurry should also be investigated in future studies.

## REFERENCES

1. World Health Organization, Global Status Report on Road Safety 2013, World Health Organisation, Geneva. World Health Organization, 2013.
2. Meel BL. Fatal road traffic accidents in the Mthatha area of South Africa, 1993-2004. *S Afr Med J* 2008; 98:716-9.
3. World Health Organization. Global status report on road safety 2009: time for action. Available from URL: [http://whqlibdoc.who.int/publications/2009/9789241563840\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241563840_eng.pdf)
4. World Health Organization. WHO: Road traffic injuries. Fact sheet N°358. (Online). September 2011 (Cited 2012 Feb 28). Available from URL <http://www.worldlifeexpectancy.com/pakistan-road-traffic-accidents> .
5. Hassan Q, Bashir RM, Shah M. Physical trauma: A leading cause of medico-legal cases at DHQ Hospital Abbottabad. *J Ayub Med Coll Abbottabad*. 2010; 22:156-8.
6. Trivedi A, Rawal D, Vidyapeeth S, Vadodara P. Prevalence of road traffic accidents and driving practices among young drivers. *Healthline* 2011; 2:72-5.
7. Wong ZH, Chong CK, Tai BC, Lau G. A review of fatal road traffic accidents in Singapore from 2000 to 2004. *Ann Acad Med Singapore* 2009; 38:594-9.
8. Singh YN, Bairagi KK, Das KC. An epidemiological study of road traffic accident victims in medicolegal autopsies. *JIAFM* 2005; 27:166-9
9. Murray CJL, Lopez AD, eds. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. Boston, MA, Harvard School of Public Health, 1996.
10. World Health Report 2002, WHO, Geneva.
11. Shahzad S, Razzak JA, Rashid J. Initial results of Pakistan\'s first road traffic injury surveillance project. *Int J Inj Contr Saf Promot* 2011; 18:213-7.
12. Kaul A, Sinha US, Pathak YK, Singh A, Kapoo AK, Sharma S, et al. Fatal road traffic accidents, study of distribution, nature and type of injury. *JIAFM* 2005; 27:71-6.
13. Singh H, Dhatarwal SK. Pattern and distribution of injuries in fatal road traffic accidents in Rohtak (Haryana). 2004; 26:2023.
14. Van der Sluis CK, Geertzen JHB, Werkman HA, Duis HJT. Epidemiological data from severely injured patients: a retrospective study over the period 1985-1989. *Nederlands Tijdschrift voor Geneeskunde* 1994; 138:2285.
15. Forjuoh SN. Traffic-related injury prevention interventions for low-income countries. *Int J Inj Contr Saf Promot* 2003; 10:109-18.
16. Hajar M, Vazquez-Vela E, Arreola-Risa C. Pedestrian traffic injuries in Mexico: a country update. *J Inj Contr Saf Promot*. 2003; 10:37-43.
17. Porter BE. (2011). Road Use Behavior in Sub-Saharan Africa. *Handbook of Traffic Psychology*. Academic Press, 503-8.

### CONFLICT OF INTEREST

Authors declare no conflict of interest.  
GRANT SUPPORT AND FINANCIAL DISCLOSURE  
None declared.