

## “An Appraisal of Road Traffic Accidents In Meerut”

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**Abstract:** The present study was conducted to keep in view the various predisposing factors, mode of road users and the pattern of injuries sustained in Road Traffic Accident (RTA) in Meerut. Out of 210 RTA victims who attended the hospital during the study period 185 were included for the study at emergency of SVBP hospital during September 07 to April 08. RTA victims were maximum in age group 15-24 yrs.(24.3%) and percentage of male was very high (77.8%). The maximum RTA victims were passengers (39.3%), followed by pedestrians (31.9%). The maximum RTAs occurred between 9 a.m. -12 p.m. on most of the day and the day involved in maximum of RTAs was Monday (19.6%). The most commonly involved vehicle was motorized two-wheeler (38.9%) followed by a car/taxi (23.3%). Maximum injuries were sustained at lower extremity (55.7%) followed by head & neck (52.4%). In pedestrians lower extremity (57.6%), in drivers upper extremity (56.1%) and in passengers head and neck region (62.3%) was most effected part of body.

**Keywords:** Road Traffic Accidents, Injuries, Road Users, Pedestrians, RTA

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### I. Introduction

Road traffic injuries are a leading cause of death, killing nearly 1.2 million people annually. Approximately 90% of these deaths occurring in low and middle-income countries. Unless action is taken urgently, the number of road traffic injuries and deaths is likely to continue to rise in most regions of the world (1).

In the year 2000, 1.26 million people were killed in road crash and about 10-15 million were injured. Of 1.26 million deaths, 35% occurred in South East Asian Region(1).

India has one of the largest highway and road network second only to road network of U.S. Total road length exceeds 3 million (2) and it has about one percent of world's vehicle population, but six percent of the world's road traffic accidents occur in India(2). The present Study aims to study the various predisposing factors, mode of road users for road traffic accidents (RTA) and the pattern of injuries sustained in road traffic accidents in Meerut.

### II. Material & Methods :

For the purpose of the study Road Traffic Accidents (RTA) victims (210) attending the casualty of Sardar Vallabh Bhai Patel(S.V.B.P.) Hospital associated with LLRM Medical College Meerut during the study period (September 07 to April 08) were contacted in the casualty department of S.V.B.P. hospital. Among 210 RTA victims 25 victims were excluded from analysis of results due to incomplete information. Finally 185 victims were interviewed and information was collected on the semi-structured pre-tested schedule. The data collected was analyzed and statistically evaluated.

### III. Results:

Table 1 shows that the maximum RTA victims (24.3%) were in age group 15-24 yrs. and percentage of male was very high (77.8%) among all RTA victims (185).

[ INSERT TABLE 1 HERE]

Table 2 shows the distribution of study subjects (185) by day and time of injury. The maximum accidents occurred between 9 a.m. -12 p.m. on most of the days. However, the overall number of accident cases per day was maximum on Monday and minimum on Thursday.

[ INSERT TABLE 2 HERE]

Table 3 shows that among the RTA victims (185) maximum were passengers (39.3%) followed by pedestrians (31.9%) and drivers (30.8%). The most commonly involved vehicle was motorized two-wheeler (38.9%) followed by a car/taxi (23.3%). Passengers most commonly sustained injuries by car/taxi (31.9%) followed by two-wheeler (26.1%). Most of the drivers involved in accidents were driving a motorized two-

wheeler (68.4%) followed by bicycle (15.8%) while pedestrians were most commonly struck by bus (33.9%) followed by motorized two-wheeler (25.4%).

[ INSERT TABLE 3 HERE ]

Table 4 shows that maximum injuries were sustained at lower extremity (55.7%) followed by head & neck (52.4%). In pedestrians lower extremity (57.6%) was most commonly involved , In drivers upper extremity (56.1%) and in passengers, maximum injuries were sustained at head and neck region (62.3%) while other body regions( thorax ,abdomen &spinal cord) were equally affected in passengers and pedestrians and but comparatively less in drivers (P>0.05).

[ INSERT TABLE 4 HERE ]

#### IV. Discussion:

Injuries due to road traffic accident results from transfer of energy to a human host. In this case, kinetic energy is the "agent" of injury, human being is the "host" and vehicle is the "vector". A better understanding of these human, vehicular and environmental factors can help to prevent accidents. This study attempts to look at some of these factors the injuries resulting from these accidents.

Maximum accidents took place between 9 a.m. and 12 pm (24.8%). Majority of the accidents occurred during day, i.e. between 6 am to 6 pm (68.0%). Similar results have been obtained from the accident research cell of Delhi Traffic Police, according to whom 15.5% of the accidents take place between 9 am. and 12 pm(3). In the present study, maximum accidents occurred during weekdays (72.4%). Maximum no. of accidents in morning time may be due to more traffic on roads for offices and shops and on Monday it is because of people living far from their home returns back to the office after Sunday.

Maximum number of those injured found in the present study were passenger (39.3%) followed by pedestrians (31.9%) The proportion of injured pedestrians in various studies ranged from 20% to 90%. Pedestrian was the most common category of road user injured in Bangalore (30.3%), Kolkata (80.2%), Jammu (46.2%), Chandigarh (42.1%), Delhi (47%) (4). In the present study passengers and pedestrians were more injured may be because they are not likely to use safety measures most of the time.

In this study, vehicles most commonly involved in accidents were motorized two-wheelers (38.9%) followed by car/taxi (23.3%). Pedestrians were most commonly struck by motorized car/taxi and bus (33.9%). Also, most of the drivers involved in accidents were driving a two-wheeler (68.4%). More involvement of two wheeler may be because maximum RTA victims are in young age groups (15-24 yrs).

In the present study, lower extremity was most commonly affected (55.7%) followed by Head & Neck (52.4%), upper extremity (40.5%), thorax (5.4%) & abdomen (5.4%) and spinal cord (4.3%). Head and neck region was injured 34.1% in Pondicherry(6) and 31% in Delhi(7). Lower extremity was injured in 13.7% in Pondicherry and 50% in Delhi. The reason behind more injuries to lower extremities and head & neck may be the more accidents by two wheelers followed by car/taxi.

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**Table 1: Distribution of RTA victims by Age and Sex**

Age (in yrs.)	Male (%)	Female (%)	Total (%)
<14	11(7.6)	9(22.6)	20(10.8)
15-24	39(27.1)	6(14.6)	45(24.3)
25-34	33(22.9)	7(17.1)	40(21.6)
35-44	24(16.7)	11(26.8)	35(18.9)
45-59	27(18.8)	6(14.6)	33(17.8)
≥60	10(6.9)	2(4.9)	12(6.5)
<b>total</b>	<b>144(77.8)</b>	<b>41(22.2)</b>	<b>185(100)</b>

**Table 2 : Distribution of RTA victims by day and time of injury**

Day/ Time	Sun	Mon	Tue	Wed	Thurs	Fri	Sat	Total
06.00-08.59	1	9	4	0	3	4	6	27(14.6)
09.00-11.59	8	7	5	8	0	10	8	46(24.8)
12.00-14.59	2	4	5	6	0	6	3	26(14.0)
15.00-17.59	3	9	1	5	3	2	4	27(14.6)
18.00-20.59	1	3	8	7	4	6	3	32(17.3)
21.00-23.59	4	3	5	3	1	0	3	19(10.3)
00.00-02.59	0	0	1	0	0	0	3	4(2.2)
03.00-05.59	1	1	1	0	0	0	1	4(2.2)
<b>Total (%)</b>	<b>20 (10.8)</b>	<b>36 (19.5)</b>	<b>30 (16.2)</b>	<b>29 (15.7)</b>	<b>11 (5.9)</b>	<b>28 (15.1)</b>	<b>31 (16.8)</b>	<b>185 (100)</b>

**Table-3: Distribution of vehicles involved in RTA according to the road users**

Others include tractor (3), tanga/rehra (2), and military vehicle (1).

Vehicle	Passenger No. (%)	Driver No. (%)	Pedestrians No. (%)	Total No. (%)
Motorized two wheeler	18(26.1)	39(68.4)	15(25.4)	72(38.9)
Car/taxi/Bus	22(31.9)	1(1.8)	20(33.9)	43(23.3)
Goods carrier	12(17.4)	1(1.8)	5(5.1))	18(9.7)
Rickshaw(Auto/cycle)	12(17.4)	7(12.3)	14(23.7)	33(17.8)
Bicycle	1(1.4)	9(15.8)	3(5.1)	13(7.0)
Others	4(5.8)	0(0.0)	2(3.4)	6(3.2)
<b>Total</b>	<b>69(39.3)</b>	<b>57(30.8)</b>	<b>59(31.9)</b>	<b>185(100)</b>

**Table-4: pattern of injuries in the RTA by road users**

Body region*	Passenger No.(%) (N=69)	Driver No.(%) (N=57)	Pedestrian No.(%) (N=59)	Total No.(%) (N=185)
Lower extremity	40(58.0)	29(50.9)	34(57.6)	103(55.7)
Head & neck	43(62.3)	31(54.4)	23(39.0)	97(52.4)
Upper extremity	20(29.0)	32(56.1)	23(39.0)	75(40.5)
Thorax	4(5.8)	2(3.5)	4(6.8)	10(5.4)
Abdomen	1(1.4)	2(3.5)	1(1.7)	10(5.4)
Spinal cord	4(5.8)	0(0.0)	4(6.8)	8(4.3)

$X^2 = 10.52, df=6, P>0.05$

\* Figures not mutually exclusive (Multiple response)