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Original Article

A study on road traffic accidents in Anand-Gujarat

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Abstract

Background: Road traffic injuries are a major; but neglected global public health problem, requiring concerted efforts for effective and sustainable prevention.

Objectives: The following study analyses the (i) age and sex distribution of injured in road traffic accidents (RTA), (ii) distribution of injured in road traffic accidents by mode of transport and victim role, (iii) the distribution of injured in road traffic accidents by counterpart to which they hit (iv) transportation time required to shift the patients, and (v) the fatality rate in road traffic accidents.

Materials and methodology: The present study is a retrospective record based study and data was collected using questionnaire method (for collecting relevant information)

A total of 423 RTA cases were studied from the case records of the medical records section of Shree Krishna Hospital, Pramukhswami Medical College in the said period: 1st October 2007 to 31st March 2008. All the road traffic accident cases coming in the particular specified time period were taken. Results are interpreted in terms of %, mean, S.D, median, χ^2 test

Results: The results revealed that (i) out of total 423 RTA cases, 327(77.3%) of the victims were males and the rest 96 (22.7%) were females. (ii) The highest number of victims 122 (28.8%) were from 21-30 years of age group. In males the maximum numbers of cases were seen in the age group 21-30 years (31.8%); whereas in case of females the highest numbers of cases were seen in the age group 31-40(21.9%). 55.79 % of the RTA victims were drivers and riders followed by the occupants and passengers (30.26%). (iii) 41.9% of two wheeler users were hit by 4 wheelers (iv) 48.1% victims managed to reach hospital in less than an hour, 2.8% cases reached the hospital after 6 hours of delay.

Keywords: RTA, Mode of transport, Victim role, Transportation time, Anand

Introduction:

An accident is "occurrence in a sequence of events which usually produces unintended injury, death or property damage". Accidents represent a major epidemic of non-communicable disease in the present century. They are part of the price we pay for technological progress. [1]

Worldwide, the number of people killed in road traffic accidents (RTA) each year is estimated at almost 1.2 million, while the number of injured could be as high as 50 million. Nearly 50 lakh people lost their lives due to injury as per WHO estimates during the year 2002. Road traffic injuries are a major; but neglected global public health problem, requiring concerted efforts for effective and sustainable prevention. Of all the system that people have to deal with on a daily basis road transport, is the most complex and the most dangerous.[2]

The road traffic injury problem began before the introduction of the car; however, it was with the car – and subsequently buses, trucks and other vehicles – which escalated the problem rapidly. By various accounts, the first injury crash was supposedly suffered by a cyclist in New York City on 30th May 1896, followed by a few months later by the first fatality, a pedestrian in London.[3]

In a dubious distinction for the country, the World Health Organization has revealed in its first ever Global Status Report on Road Safety that more people die in road accidents in India than anywhere else in the world, including the more populous China. Calling road fatalities an "epidemic" that will become the world's fifth biggest killer by 2030, the report said while rich nations had been able to lower their death rates, these were sharply on the rise in the third world. It said 90% of deaths on the world's roads occur in low and middle-income countries (21.5 and 19.5 per lakh of population, respectively) though they have just 48% of all registered vehicles. The statistics for India are chilling. At least 13 people die every hour in road accidents in the country, the latest report of the National Crime Records Bureau reveals. In 2007, 1.14 lakh people in India lost their lives in road

mishaps — that's significantly higher than the 2006 road death figures in China, 89,455.[4]

Objectives:

The present study has been carried out to -

1) study the age and sex distribution of injured persons in RTA
2) find out the distribution of injured persons in road traffic accidents by mode of transport and victim role
3) study the distribution of injured persons in road traffic accident by counterpart to which they hit.
4) find the transportation time required to transfer the patients from the site of accident to hospital
5) find the fatality rate.

Materials & Methods:

This study was conducted at Shree Krishna Hospital of PramukhSwami Medical College, Karamsad, Anand, Gujarat. The study includes cases reported and recorded from October 2007 to March 2008. Data was collected from the medical records section of the hospital, based on the prepared questionnaire (for collecting relevant information) after due permission from the responsible authorities. The study encompasses the road traffic accident cases reported during the 6-month period. Prior to study, Ethical committee approval was taken and confidentiality is maintained in obtaining information related to accident events.

Study Design- Retrospective record based study

Sampling Method: Case papers of Road traffic accidents from the medical records section were read and the necessary details were sought in terms of age, sex, mode of transport, victim role, counterpart, outcome of accidents and transportation time required to shift the victim. The cases with inappropriate details were not taken into consideration The analysis is done by EPI-info package and the results were interpreted in terms of %, mean, S.D, median, χ^2 test

Sample size – A total of 423 RTA cases were studied from the case records of the medical records section in the said period: 1st October 2007-31st March 2008.All the road traffic accident cases coming in the particular specified time period were taken. All the 423 cases were studied and analyzed for the different variables.

Observations:

Out of total 423 RTA cases, 327 (77.3%) of the victims were males and the rest 96 (22.7%) were females. The highest number of victims 122 (28.8%) were from 21-30 years of age group followed by 87 (20.6%) in the age group 31-40 years. In males the maximum numbers of cases were seen in the age group 21-30 years (31.8%); whereas in case of females the highest numbers of cases were seen in the age group 31-s40(21.9%). The age group of 21-40 is almost covering 50% of the cases. The mean age of the RTA victim came out to be 32.49 yrs. (Table 1)

TABLE 1 – Age-sex distribution

Age	Male (%)	Female (%)	TOTAL (%)
0-10	13(4.0)	14(14.6)	27(6.4)
11-20	43(13.1)	8(8.3)	51(12.1)
21-30	104(31.8)	18(18.8)	122(28.8)
31-40	66(20.2)	21(21.9)	87(20.6)
41-50	52(15.9)	16(16.7)	68(16.1)
51-60	34(10.4)	9(9.4)	43(10.2)
≥60	15(4.6)	10(10.4)	25(5.9)
TOTAL	**327(100.00)**	**96(100.00)**	**423(100.00)**

χ^2 23.369, p-0.0007, df- 6

Mean- 32.49; S.D-15.43; Median-30.00

The result is highly significant.

TABLE 2 : Distribution by victims' role:

Victim role	No.s (%)
Drivers/Riders	236(55.79%)
Passengers/Occupants	128(30.26%)
Pedestrians	59(13.94%)
Total	423(100.00)

Table 2 revealed that 236 (55.79 %) victims were drivers and riders, followed by the 128 (30.26%) occupants and passengers and 59 (13.94%) pedestrian.

TABLE 3 : Injured drivers/riders:

Drivers/Riders	ICD-10 Codes	No.s (%)
2 wheeler	V20-V29	177(75.0%)
3 Wheeler	V30-V39	04(1.69%)
4 wheeler	V40-V49	25(10.59%)
Bus	V70-V79	00(0.0%)
Truck	V50-V59	03(1.27%)
Tractor	V80-V89	01(0.42%)
Bicycle	V10-V19	25(10.59%)
Camel cart	V80-V89	01(0.42%)
Total		**236**(100%)

Distribution of injured drivers /riders is shown in Table 3. The results revealed that out of total 236 drivers/riders, 75.0% were 2 wheeler riders followed by 10.59% 4 wheeler riders /drivers and 10.59% bicyclists.

Amongst passengers /occupants 35.15% were 2 wheeler pillion riders followed by 32.81% 3 wheeler passengers, 18.75% bus passengers and 13.28% 4 wheeler occupants /passengers.

TABLE 4: Injured passengers/occupants:

Passengers/Occupants	ICD-10 Codes	No. (%)
Pillion rider 2 wheeler	V20-V29	45(35.15%)
3 Wheeler	V30-V39	42(32.81%)
4 wheeler	V40-V49	17(13.28%)
Bus	V70-V79	24(18.75%)
Total		**128**(100.0%)

Table 5 shows the distribution of study subjects by mode of transport stratified by sex. Results shows that users of 2 wheeler were injured maximum222 (52.5%) followed by pedestrians 59 (13.9%), 46 (10.9%) 3 wheeler users,42 (9.9%) 4 wheeler users, 25 (5.9%) bicycle riders, 24 (5.7%) bus passengers,3 (0.7%) truck drivers and 1 (0.2%) each camel cart rider and tractor rider.

In both males and females, the maximum injured were using 2 wheeler (56.6%) and (38.5%) followed by pedestrians (10.4%) and (26.0%) respectively.

TABLE 5: Mode of transport stratified by sex:

Mode of Transport	Sex		Total (%)
	Male (%)	Female (%)	
2 wheeler	185(56.6)	37(38.5)	222(52.5)
3 wheeler	33(10.1)	13(13.5)	46(10.9)
4 wheeler	29(8.9)	13(13.5)	42(9.9)
Bicycle	23(7.0)	2(2.1)	25(5.9)
Bus	18(5.5)	6(6.3)	24(5.7)
Camel cart	1(0.3)	0(0.0)	1(0.2)
Tractor	1(0.3)	0(0.0)	1(0.2)
Truck	3(0.9)	0(0.0)	3(0.7)
Walking	34(10.4)	25(26.0)	59(13.9)
Total	327(100.0)	96(100.0)	423(100.0)

Out of total 222 two wheeler users, 93 (41.9%) of them were hit by 4 wheeler followed by 2 wheeler 66 (29.7%) and out of 59 pedestrians, 33 (55.9%) were hit by 2 wheelers followed by 4 wheeler 14 (23.7%). (Table 6)

TABLE 6: Two wheeler users and pedestrians by the counterpart they hit:

Counter Part	Mode of Transport	
	Walking (%) ICD-10 codes-(V00-V09)	2 wheeler(%) ICD-10 codes-(V20-V29)
2 wheeler	33(55.9)	66(29.7)
3 wheeler	6(10.2)	21(9.5)
4 wheeler	14(23.7)	93(41.9)
Animal	0(0.0)	5(2.3)
Bicycle	0(0.0)	8(3.6)
Bus	1(1.7)	4(1.8)
Fixed object	0(0.0)	2(0.9)
Lorry	0(0.0)	2(0.9)
Pedestrian	0(0.0)	7(3.2)
Tractor	3(5.1)	4(1.8)
Truck	2(3.4)	10(4.5)
Total	59(100.00)	222(100.00)

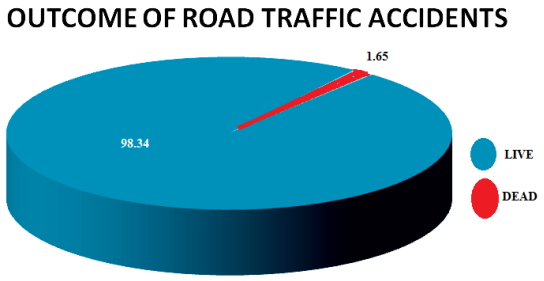
Data in Table 7 shows that out of 423, 203 (48.1%) victims managed to reach hospital in less than an hour which is almost 50 % cases. 116 (27.5%) and 50 (11.82%) reached hospital in 1-2 hr and 2-3 hr respectively. 12 (2.8%) cases reached the hospital after 6 hours of delay. Out of the total 423 victims 416 (98.34%) survived, whereas 7 (1.65%) died because of the road traffic accidents. (Figure 1)

TABLE 7: Transportation time from site to hospital

Transportation Time(Hrs)	Frequency (%)
<1/2	63(14.90)
½ -1	140(33.20)
1—2	116(27.50)
2—3	50(11.82)
3—4	30(7.10)
4—5	7(1.70)
5—6	5(1.20)
>6	12(2.80)
Total	423(100.00)

Mean -116.2908 mins; S.D- 338.9228; Median- 60.00 mins

Figure 1



Discussion:

The results of the present study revealed that 327 (77.3%) of the victims were males and the rest, 96 (22.7%), were females. The highest number of victims 122 (28.8%) were from 21-30 years of age group. In males, the maximum numbers of cases were seen in the age group 21-30 years (31.8%); whereas in case of females the highest numbers of cases were seen in the age group 31-40 (21.9%).The mean age of the RTA victim came out to be 32.49 .The male is to female ratio is 3.40:1. Moshiro C et. al (2005)[5] in their study found that males had significantly increased risk of transport injuries as compared to females. They reported age to be an important risk factor for certain types of injury. They also found transport related injuries to be much common among adults, 15 years and above. Jha et.al (2004) [6] in their study found 83% victims to be male and 17% female victims. The average age of the victims was 31.5 years. The highest number of victims (31.3%) was between 20-29 years of age. Similar results are also seen in the present study. Ganveer and Tiwari (2005)[7] in their study in Nagpur found that number of male victims (85.8%) was more as compared to female victims (14.2%).The results are similar to our study. They found male to female ratio of 6:1.

The present study revealed that out of total 236 drivers/riders, maximum were 2 wheeler riders (75.0%). Patil et.al (2008)[8] also found that out of total 129 drivers, 79 (61.2%) were motorized two-wheeler drivers. It was also observed that out of total 128 passengers/occupants, maximum injured were 2 wheeler pillion riders 45(35.15%) Similar findings were also reported by Patil et.al (2008)[8.]

Users of 2 wheeler were injured maximum, 222 (52.5%), followed by pedestrians, 59(13.9%). The results are in conformity with the findings of Gururaj et al (2005)[9] and Sahadev et al (1994)[10].

Out of total 222 two wheeler victims, 93(41.9%) were hit by 4 wheelers followed by 2 wheelers 66(29.7%) and out of 59 pedestrians 33(55.9%) were hit by 2 wheelers followed by 4 wheelers 14(23.7%).Jha.et.al (2004)[6] in their study also reported that pedestrians (24.4%) were mostly injured by motorized two wheelers. Four wheelers caused injury to 21.2%. Similar results were also reported by Patil et al (2008)[8.] They also reported that pedestrians were injured mostly by 2 wheelers (31.9%) followed by 4 wheelers (29.8%). 63(14.90%) RTA victims reached hospital in less than half an hour and 140(33.20%) reached in the following half an hour. Observations by Singh and Dhattarwal (2004)[11], regarding the time taken to shift patients to road traffic accidents to hospital revealed that 24% reached within half an hour and 57% reached in next one hour .Fatality rate in the present study came out to be 1.65%, whereas fatality rate was 0.8% in the study by Patil et al (2008)[8] .

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