A Study on the Socio-Demographic Profiles of Road Traffic Accident Cases Attending a Peripheral Tertiary Care Medical College Hospital of West Bengal

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ABSTRACT

BACKGROUND

A road traffic accident (RTA) is any injury due to crashes originating from, terminating with or involving a vehicle partially or fully on a public road. Increased mechanisation and improved socio-economic condition of the people in developing countries like India leads to increased use of motor vehicles, disproportionate to the increase in the number of roads. We wanted to assess the socio-demographic profile of road traffic accident victims and study the antecedent factors influencing the road traffic accidents.

METHODS

This is an institution based descriptive, cross-sectional study, conducted among 114 patients.

RESULTS

Maximum numbers of the victims, 33.32 % (N = 38) were in the age group of 21-30 years followed by 26.31 % (N =30) in the age group of up to 20 years, mean age of the victims was 29.53 ± 13.85. Majority of the victims, 70.05 % (N = 80) were on motorcycles, and 26.32 % (N =30) of the victims were alcoholic at the time of accident. Majority of the victims, 92.86 % (78 out of 84), among the motor-cycle riders, four-wheeler drivers, and front seat passengers had not used any safety measures at the time of accident.

CONCLUSIONS

Road traffic accidents emerged as the major epidemic of non-communicable disease, holding a major share of mortality and morbidity data all over the world, majorly among the young productive portion of the population. It was evident from the study that the majority of victims were young adults, from lower socio-economic background, and rural residents. So, lack of proper information and consciousness regarding road safety rules and measures are definitely the important aetiology behind this epidemic. Almost two third of the cases were among the bikers in the present study, which is pointing out the need of focusing on the road safety rules related to bikers by the road traffic authority.

KEYWORDS

Alcoholic Intoxication, Motor Vehicle, Road Traffic Accidents, Tertiary Care Centre

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DOI: 10.18410/jebmh/2021/183

How to Cite This Article:
Dutta S, Sarkar D, Mallick N. A study on the socio-demographic profiles of road traffic accident cases attending a peripheral tertiary care medical college hospital of West Bengal. J Evid Based Med Healthc 2021;8(15):945-949. DOI: 10.18410/jebmh/2021/183

Submission 06-11-2020,
Peer Review 15-11-2020,
Acceptance 23-02-2021,
Published 12-04-2021.

BACKGROUND

A road traffic accident is any injury due to crashes originating from, terminating with or involving a vehicle partially or fully on a public road. It is projected that road traffic injuries will move to the third position by the year 2020 among leading causes of the global disease burden.[1] According to data published by World Health Organization (7th December 2018) approximately 1.35 million people die each year due to road traffic accident, and most vulnerable road users are pedestrians, cyclists and motor-cyclists.[2]

Increased mechanisation and improved socio-economic condition of the people in developing countries like India leads to increased use of motor vehicles, disproportionate with the increase in the number of roads. Added by the factors like poor consciousness among the people about road safety measures, lack in enforcement of road safety rules and delay in reaching health care facilities, morbidity and mortality due to road traffic accident show an alarming rise in magnitude in recent times. With 1% of total motor vehicle of the world, India is having 6% of total number of RTA cases worldwide,[3] which eventually costs a major portion of health expenditure by union and state governments.

The present study was contemplated with the search for socio-demographic profile of the victims of RTA and studies the antecedent factors influencing the road traffic accidents with an ultimate goal of searching a social pathology of this emerging epidemic.

METHODS

It was an institution based descriptive study, cross-sectional in design conducted among patients admitted with a history of RTA in the hospital to assess socio-demographic profiles of road traffic accident victims and to study the antecedent factors influencing the road traffic accidents. The present study was conducted after obtaining ethical clearance from institutional ethics committee in a tertiary care and teaching hospital in Eastern India, catering mainly rural and semi urban population.

Sampling Technique & Sample Size

Convenience sampling technique was used. On review of hospital data for last two month, an average 5 road traffic accident patients were admitted at general surgery and ENT ward per day. Data was collected one day in a week among the study participants. Duration of the study was 6 months from 2019 July to 2019 December, so the sample size was 4×26 = 104 (6 months = 26 weeks). Finally, the study was conducted among 114 patients.

Inclusion Criteria

All victims of road traffic accident admitted at general surgery and ENT ward of a tertiary care hospital.

Exclusion Criteria

Patients who did not give their consent for the study.

Study Tool

The pre-designed interview schedule was developed in regional language (Bengali) from the different studies[4,5,6,7,8] and modified according to the objectives and context of the study. The interview schedule was pre-tested among 31 victims of traffic accident cases admitted at a different peripheral government medical college and hospital. Necessary corrections and modifications were made accordingly.

Data was collected by interview method from the victim and relatives. Consent was obtained from the study subjects after explaining the study objectives and procedures and information regarding their right to refuse to participate at any point of the study.

Study variables were age, sex, education, occupation, resident, socio-economic status,[9] position of victim at the time of accident, spot of accident, grievous injury,[10] alcoholic, safety measures and driving license.

Statistical Analysis

Data was compiled on Microsoft Excel worksheet. Data was analysed using Statistical Package for Social Science (SPSS) statistical software program version 20 (IBM, Chicago, USA). The categorical variables were analysed by proportions while the continuous ones by means and standard deviations.

RESULTS

Maximum numbers of the victims, 33.32 % (N = 38) were in the age group of 21-30 years followed by 26.31 %(N = 30) in the age group of up to 20 years and above 60 years were 1.74 %(N = 2), mean age of the victims was 29.53 ± 13.85. Majority of the victims were males 77.22 % (N = 88) and around one fourth of the victims, 22.78 % (N = 26) were female. 68.43 % (N = 78) of the victims were form rural area, which may be due to the location of the hospital catering mostly rural population. Most of the victims, 49.11 % (N = 56) were educated up to primary level followed by 24.62 % (N = 28) at secondary level.

29.81 % (N = 34) of the victims were businessman followed by 27.31 % (N = 30) semi-skilled labour and 25.62 % (N = 28) unskilled labour. Maximum number of victims, 54.41 % (N = 62) were in the class II of socio-economic class in the modified B. G. Prasad scale followed by 22.11 % (N = 26) class I and 20.12 % (N = 24) class III and no one in the socio-economic class V. (Table 1)

Majority of the victims, 70.05 % (N = 80) were in motor cycle [both driving seat 33.31 % (N = 38) and back seat 36.74 % (N = 42)] at the time of accident followed by pedestrians 12.31 % (N = 14) and cyclists 10.51 % (N = 12).

Whereas only 7.24 % (N = 8) were in four wheelers at the time of accident. Most of the accidents take place in state highway, 47.41 % (N = 54) followed by national highway, 19.32 % (N = 22) and local village roads, 17.52 % (N = 20). More than half of the victims 57.87 % (N = 66) suffer from grievous injuries. (Table 2)

26.32 % (N = 30) of the victims were alcoholic at the time of accident and 30 % (N = 12) among the 40 victims did not have driving license (two-wheeler and four-wheeler drivers). Majority of the victims, 92.86 % (78 out of 84), among the motor-cycle riders, four-wheeler drivers and front seat passengers had not used any safety measures at the time of accidents. (Table 3)

Characteristics		Number (%)
Age median (IQR) 28.00 (19.75-40.00) in years	≤ 20	30 (26.31)
	21-30	38 (33.32)
	31-40	22 (19.32)
	41-50	16 (14.00)
	51-60	6 (5.31)
	> 60	2 (1.74)
Sex	Male	88 (77.22)
	Female	26 (22.78)
Resident	Urban	36 (31.57)
	Rural	78 (68.43)
Education	Illiterate	6 (5.32)
	Primary	56(49.11)
	Secondary	28 (24.62)
	Higher secondary	6 (5.32)
	Graduate and above	18 (15.73)
Occupation	Unskilled labour	28 (25.62)
	Semi-skilled labour	30 (27.31)
	Business	34 (29.81)
	Service	6 (5.31)
	Homemaker	10 (8.73)
	Others *	6 (5.52)
Socio-economic status	Class I (≥ 7008)	26 (22.11)
	Class II (3504-7007)	62 (54.41)
	Class III (2102-3503)	24 (20.12)
	Class IV (1051-2101)	4 (3.46)

Table 1. Background Characteristics of the Study Participants (N =114)

Others * were students, at home, retired.

Characteristics		Number (%)
Position of victim at the time of accident	Motorcycle driving	38 (33.31)
	Motorcycle back seat	42 (36.74)
	Four-wheeler driving	2 (1.81)
	Four-wheeler passenger front seat	2 (1.81)
	Four-wheeler back seat	4 (3.62)
	Cyclist	12 (10.51)
	Pedestrian	14 (12.31)
Spot of accident	National highway	22 (19.32)
	State highway	54 (47.41)
	Local city road	18 (15.75)
	Local village road	20 (17.52)
Grievous injury	Yes	66 (57.87)
	No	48 (42.13)

Table 2. Characteristics of the Road Traffic Accident Victims at the Time of Accident (N =114)

Characteristics		Number (%)
Alcoholic	Yes	30 (26.32)
	No	84 (73.68)
Driving license	Yes	34 (29.76)
	No	12 (10.53)
	Not applicable	68 (59.61)
Safety measures use	Yes	8 (7.00)
	No	78 (68.44)
	Not applicable	28 (24.56)

Table 3. Factors that Contribute to Road Traffic Accidents (N = 114)

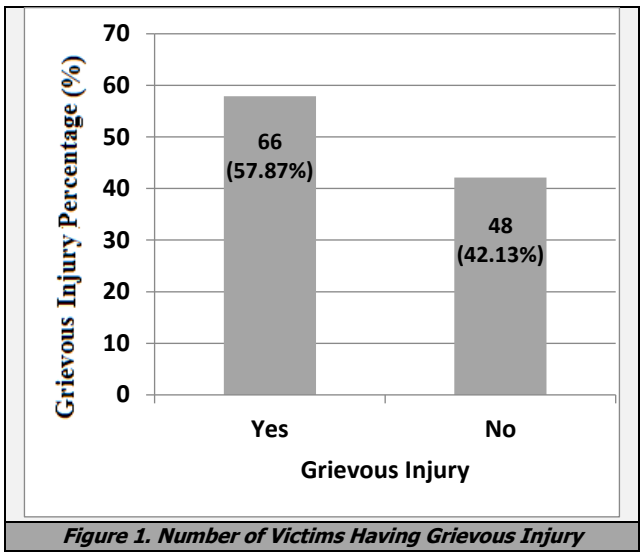

Figure 1. Number of Victims Having Grievous Injury

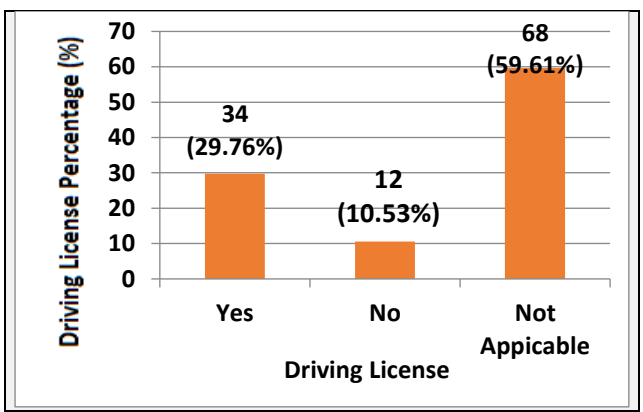

Figure 2. Number of Victims Having Driving License

DISCUSSION

Accident is considered as a major epidemic of non-communicable disease in 21st century.[11] As per the World Health Organization (WHO) bulletin, 90% of the total road traffic deaths occur in underdeveloped and developing countries.[12] It has emerged out as one of the major cause of mortality as well as morbidity in young adults (most productive population from economic point of view) worldwide.[13] Treatment of road traffic trauma cases comprises a major share of health care expenditure of the country, ultimately adding a economic burden of the country. The burden is further added by the cases of lifelong disabilities as a result of accident. But in many aspects these incidences can be prevented. Most of the similar studies from different area of India reported the same findings regarding the high incidences among younger population.[8,14,15] In the present study, three fourth of the victims of road traffic accidents are of less than 40 years of age, the main productive part of the human resource. Most of the patients are males (77.22 %), similar to the findings of other researchers all over the country [6,7,14] with a trend of slight rising in the proportion of females. The reason behind this probably is the more engagement of males in outdoor activity in India. As with the time, females are involving in outdoor activity more

than past decades, there is an increase in female proportion than previous studies. 68.43% of the victims are residents of rural areas in the present study, which may be the reflection of the population catered by the hospital. More than a half of the sufferers in our study are labours by occupation (both unskilled and semiskilled) and only 5.31 % are engaged in service. In contrary 39.2% were in service and 27.2 % were labour (including in agricultural field) among the victims reported by Gharde et al.[6] Aggarwal et al. reported the proportion of manual labour among the victims were 27 %.[14] Again the difference in the structure of catered population group is the most probable explanation for these discrepancies between the present study and the others. More than three quarter of the subjects are from socioeconomic class I and II (upper end of the spectrum as per modified B. G. Prasad scale) in the present study. This observation is contradictory to the study by Verma et al. [7] conducted in Uttar Pradesh and Mittal and Kumar,[16] conducted in Udaipur, Rajasthan. This contradiction may be due to difference in per capita income of people between the states. More than a half of the patients are either illiterate or educated up to primary education in the present study. Similar observations were reported by Ghardeetal.[6] and Verma et al.[7] which establish the lack of education as a factor responsible for ignorance about the road safety measures and traffic rules, eventually leading to accidents. Apart from the patient related factors discussed here, there are few other factors which may point towards the social aetiology behind the incidences of road-traffic accidents. Around 60% of cases are related to motor-cycle riding in the present study, with equal incidences among the motor cyclist and the pillion rider. Pedestrians and cyclists contributed 12.31 % and 10.51 % of the total cases respectively, whereas in 7.24% cases the victims were in four-wheeler motor car. No public transport accident cases were reported to the hospital within the study period. On contrary, Verma et al. reported almost equal proportion of case among two-wheeler riders and pedestrians (38.4 % and 37.6 % respectively).[7] In another study Singh et al. found the proportion of 41.91% in two wheelers among the victims, and 13.41% in pedestrians and 9.05% in cyclist, nearer to the observation in the present study.[8] But it is contentious that the highest incidences was observed in the two wheeler riders.

Almost half (47.41%) of the incidences took place on the state highways, followed by national highways (19.32 %), local village roads (17.52 %) and local roads within the city (15.75 %). Hanumantha et al. in an autopsy study found the spot of crossroad as the most frequent site of accident, followed by state highway.[17] In the present study, the information regarding the exact location of the accident (cross road or other part of the road) could not be obtained, but the state highway was found to be the most common place of occurrence, actually corroborating the research of Hanimantha et al. The injury in more than a half of the victims (57.87 %) were grievous in nature in the present study, in contrary to the observation by Sing et al. who reported mild severity as the most frequent.[8]

In the present study, 26.32 % of the victims were under the influence of alcohol at the time of accident whereas 18.01% was reported by Sing et al.[8] and 15% by Aggarwal et al.[14] Relatively small sample size in all the studies including the present one may be the reason behind this variation in observation.

The most interesting and mention worthy fact observed in the study was the reluctant attitude towards the use of safety devices while riding motor vehicles (helmet for motor-bike riders and seatbelt for four-wheeler drivers/ front seat passengers). 78 out of 86 (92.86 %) such victims were not using the required safety devices at the time of accident. Sing et al. reported that 71.01% of the motor-bike riders did not use helmets, whereas 86.58% of four wheeler driver and front seat co-passengers did not use the seat belt at the time of accident.[8] They reported another interesting fact that, 16.24% drivers among the victims did not have driving licenses.

CONCLUSIONS

Road traffic accidents emerged as the major epidemic of non-communicable disease in the present century, holding a major share of mortality and morbidity data all over the world, majority among the young productive portion of the population. Apart from these, it also captures a considerable proportion of government health budget due to treatment of the victims. Both the factors ultimately affect the economy of any country. But the responsible factors are preventable in most of the aspects. It was evident from the study that the majority of victims were young adults, from lower socio-economic background, and rural residents. So, lack of proper information and consciousness regarding road safety rules and measures are definitely the important aetiology behind this epidemic. Almost two thirds of the cases were among the bikers in the present study, which is pointing out the need of focusing on the road safety rules related to bikers by the road traffic authority. Another serious issue in this regard was the reluctant attitude of the people regarding the use of safety measures on road. This must be controlled by strict implementations of the acts and rules of road safety by the concerned authority.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.
Financial or other competing interests: None.
Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

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