

Original Research Article

Road traffic accident victims socio-demographic profiles: a community based study in Central India

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ABSTRACT

Background: A road traffic injury is any injury caused due to crashes originating, terminating or involving a vehicle partially or fully on a public highway. The road crashes are unlike communicable diseases where the role of agent, host and environment is more defined. The aim and objective was to study of the socio-demographic profile of victims of road traffic accidents.

Methods: A community based cross-sectional study was conducted from November 2010 to September 2012 in 3 blocks of Wardha district, in Central India. The sample size was estimated using purposive sampling technique. The data was analyzed using EPI-Info version 3.5.4.

Results: Out of 385 study subjects, maximum victims were in 30-60 years age group, 320 were males and 16.88% i.e. 65 were females. The total numbers of literate victims were 94.80%. Maximum accidents were seen in victims who were employed in service 151 (39.22%), followed by self employed 27%.

Conclusions: Maximum victims were in 30-60 years age group which is the productive age group and male dominance was also observed which means loss of work days leading to loss of wages and loss of family income hence directly affecting the family economy.

Keywords: Road traffic accidents, Socio-demographic profile, Victims

INTRODUCTION

A road traffic injury is any injury caused due to crashes originating, terminating or involving a vehicle partially or fully on a public highway.¹ also defined as a fatal or non-fatal injury incurred as a result of a collision on a public road involving at least one moving vehicle. Children, pedestrians, cyclists and the elderly are among the most vulnerable of road users.

It is a major yet neglected public health problem around the world, in spite of being a preventable one.

Increase in the requirement of vehicles has resulted in an epidemic like condition in road traffic accidents.² The role of agent, host and environment can't be defined that simply here as it is in cases of communicable diseases.³

Accidents are the 6th leading cause of deaths worldwide, accounting for about 60% of deaths in the young population. The western pacific region shows maximum mortality i.e. 77% of the mentioned deaths. It is the leading cause of death for young population between 15 to 40 years of age (around 60%) of which 77% deaths occur in males and most of the deaths are in Western Pacific Region.⁴

According to World Health Organization report, road traffic injuries kill around 1.3 million people annually, it is being estimated that this rank could rise to 5th. Approximately 90% of these deaths occur in low- and middle-income countries.^{4,5}

As mentioned, mortality is around 3 times more in males in cases of road traffic accident.^{4,6} The increase in the incidence of road traffic accidents in India has been observed to be 8% per year for last ten years and it is not showing any signs of reduction, reason behind it might be, vehicle sales growth per year in India has reached to 6% per year.⁷

India National highways comprises of 2% of total world road network and 40% of world's total traffic runs on Indian roads and it accounts for 65% of the casualties in world.⁸ The actual figures are necessary for data comparison.⁹ Our health systems are burdened by large number of road traffic injuries.¹⁰ The government and media along with public concern for safe vehicles the awareness is showing positive progress.¹¹

The sustainable development goals include a target of 50% reduction in road traffic deaths and injuries by 2020. In 2010, the United Nations General Assembly adopted resolution to stabilize and reduce the increasing trend in road traffic fatalities for saving an estimated 5 million lives over the period of decade of action for road safety (2011–2020).

The present community based cross-sectional study was undertaken in Wardha district of Maharashtra state, India. Though a number of studies have been conducted on road traffic accidents, rural community based studies are still scarce. Here we undertook a community-based cross-sectional study in rural Wardha to find out the socio-demographic profile of road traffic accident victims.

Aim and objectives

Study of the socio-demographic profile of victims of road traffic accidents.

METHODS

Study design

The study was a community based cross sectional study.

Study duration and sampling

The study was conducted from November 2010 to September 2012 in 3 blocks of Wardha district in central India, using purposive sampling technique. The sample size was rounded off to 385 using probability proportional to size sampling {PPS} and taking 50% prevalence from previous studies. 30 villages were visited to get about 12-13 accident victims to make up a total of

390 cases. 13 individuals had to be interviewed in each of the 30 sites selected. Piloting was done on a sample of 10% of the total required sample for validating and standardizing the interview schedule.

Ethical approval for the study was taken from the Institutional Ethics Committee. Verbal informed consent was obtained from the individual adults. For minors, verbal informed consent was obtained from the parents/guardians. The interview schedule consisted of: Socio demographic information which included the individuals name, age, sex, address, education occupation and income.

The inclusion criterion was individuals in the selected blocks that have met with a road traffic accident in the past 1 year from the time of the interview and willing to participate in the study. Variables were age, gender, occupation, income and education/ literacy. Socio economic status calculation was determined by modified B.G. Prasad's socio-economic classification. The patients excluded from the study were those who were not willing to participate in study.

Data was analyzed using EPI-Info version 3.5.4. Descriptive statistics like mode, frequency and percentage were used. Chi-square, p-value were calculated and degree of significance was established as $p < 0.05$ was considered as significant.

RESULTS

This cross-sectional study was conducted in the rural community of Wardha district with the aim to study the socio-demographic profile of victims of road traffic accidents.

It was observed that among 1677 surveyed individuals 385 had a history of road traffic accident i.e. the prevalence of road traffic accident was observed to be 22.9%. These 385 individuals were further studied.

Table 1 shows, out of 385 study subjects, maximum were in 30-60 years age group i.e. 191 (49.61%), least number 16 (4.16%) were of age 61 years or above, followed by 0-14 years 31 (8.05%) and 15-29 years 147 (38.18%). The mean age of victims of road traffic accident was 32.47 ± 13.31 years. Out of 385 cases 83.1% i.e. 320 were males and 16.8% i.e. 65 were females, showing a clear male dominance due to more male mobility. The total number of literate victims was 365 (94.80%). Only 5.1% of accident victims were in the illiterate and <5 age group who were not applicable for literacy. Among the rest, Primary educated and graduates were 59 (15.32%) and 56 (14.55%) respectively. Higher secondary educated victims were 123 (31.95%) but the highest number of victims were Secondary educated 127 (32.99%) which can possibly be because of their extra road use for education purpose.

Maximum accidents were seen in victims who were doing service in private or Government sectors 151 (39.22%), followed by self employed 104 (27.01%) and

labour workers 63 (16.36%). Farmers constituted of 42 (10.9%) while homemakers were 20 (5.19%).

Table 1: Socio-demographic profile of road traffic accident victims.

Socio-demographic characteristics	Number (%)
Age wise distribution of road traffic accident victims (in years)	
0-14	31 (8.0)
15-29	147 (38.1)
30-60	191 (49.6)
61 and Above	16 (4.1)
Total	385 (100)
Sex wise distribution of road traffic accident victims	
Male	320 (83.1)
Female	65 (16.8)
Total	385 (100)
Education status of road traffic accident victims	
Illiterate	20 (5.1)
Primary	59 (15.3)
Secondary	127 (32.9)
Higher secondary	123 (31.9)
Graduate and above	56 (14.5)
Total	385 (100)
Occupation status of road traffic accident victims	
Farmer	42 (10.9)
Labour	63 (16.3)
Self employed	104 (27.0)
Service	151 (39.2)
Homemaker	20 (5.1)
Others	5 (1.3)
Total	385 (100)

Table 2: Distribution of accident victims according to socio economic status.

Socio economic status	Number (%)
I (Upper class)	123 (32.2)
II (Upper middle class)	114 (29.8)
III (Upper middle class)	74 (19.4)
IV (Lower middle class)	43 (11.3)
V (Lower class)	28 (7.3)
Total	385 (100)

Table 3: Comparison of age and sex of victims of road traffic accidents.

Sex	Age Group					Significance
	0-14 yrs	15-29 yrs	30-59 yrs	60 yrs and above	Total	
Male	24 (77.4)	119 (81.0)	164 (85.9)	13 (81.3)	320 (83.1)	$\chi^2=1.576$ df=3 p=0.5173
Female	7 (22.6)	28 (19.0)	27 (14.1)	3 (18.8)	65 (16.88)	
Total	31 (100)	147 (100)	191 (100)	16 (100)	385 (100)	

*p-value <0.05 significant.

Table 4: Education-wise distribution of accident victims with relation to sex.

Education	Male number (%)	Female number (%)	Total number (%)	Significance
Illiterate	12 (3.8)	6 (9.2)	18 (4.6)	$\chi^2 = 28.20$ Df=2 p=0.000
Primary	44 (13.8)	15 (23.1)	59 (15.3)	
Secondary	115 (35.9)	12 (18.5)	127 (32.9)	
Higher secondary	103 (32.2)	20 (30.8)	123 (31.9)	
Graduate and above	45 (14.1)	11 (16.9)	56 (14.5)	
Total	320 (100)	65 (100)	385 (100)	

Table 5: Occupation wise distribution of accident victims with relation to sex.

Occupation	Male number (%)	Female number (%)	Total number (%)	Significance
Labourer	52 (16.4)	11 (16.9)	63 (16.4)	$\chi^2 = 53.15$ Df=2 p<0.0000*
Farmer	42 (13.2)	0 (0.0)	42 (10.9)	
Self employed	78 (24.6)	26 (40.0)	104 (27.2)	
Employee in service	140 (44.2)	7 (10.8)	147 (38.4)	
Homemaker	0 (0.0)	20 (30.8)	20 (5.2)	
Unemployed	4 (1.2)	1 (1.5)	5 (1.3)	
Total	317 (100)	65 (100)	382 (100.0)**	

*p-value <0.05 significant **3 victims were <5 years so not applicable (NA).

Table 2 shows maximum (32.2%) victims were in class I while minimum were in class V i.e. 7.3%.

Table 3 shows that out of the total 320 male victims, 24 were in 0-14 years age group, 119 were 15-29 years, 164 were in 30-59 years victims and 13 were 60 years and above. In the 65 females, 7 were in the 0-14 year's age group, 28 in 15-29 years age group, 27 in 30-59 years age group while only 3 were 60 years and above.

The maximum 164 (85.9%) male victims were in the 30-59 years age group while minimum 13 (81.3%) were aged 60 years and above. While in females maximum 28 (19.0%) were in 15-29 years age group and minimum 3 (18.8%) were 60 years and above, with a standard deviation of 13.01 in males and 14.87 in females.

Males below 10 years of age were 5 (1.6%), from 11-20 years of age were 49 (15.3%), 21-30 years of age were 126 (39.4%), 31-40 years of age were 63 (19.7%), 41-50 years of age were 38 (11.9%), 51-60 years of age were 26 (8.1%) and from 61 and above were 13 (4.1%) out of 320.

Females below 10 years of age were 3 (4.6%), 11-20 years of age were 17 (26.2%), 21-30 years of age were 16 (24.6%), 31-40 years of age were 10 (15.4%), 41-50 years of age were 13 (20%), 51-60 years of age were 4 (6.2%) and 61 and above were 2 (3.1%).

Table 4 suggests that out of 385 victims, 18 (4.7%) were illiterate, 123 (31.9%) were educated up to Higher secondary and 56 (14.5%) were graduate and above. Regarding sex-wise distribution 317 (82.9%) were males and 65 (17%) were females. Maximum number of accident victims in both sexes were educated up to

secondary 127 (33%) and least number of accidents were seen in the illiterate group 18 (4.7%). While in males maximum number of accidents took place in secondary educated 115 (35.9%) and in females, maximum number of accidents took place in higher secondary educated i.e. 20 (30.8%). Literacy rate is 94.81%. Among males, significant proportion of individuals was having secondary / higher secondary education.

It can be seen in Table 5, that occupation-wise, out of 382 victims (3 victims were less than 5 years of age hence not applicable) 63 were labour by occupation, 52 were males and 11 females. Out of 42 (11%) farmers all were males. Out of 104 (27.2%) self-employed, 78 (24.6%) were males, 26 (40.0%) were females.

147 (38.5%) victims were employee in service, out of whom 140 were males and 7 females. 20 victims were housewives, 4 were unemployed, in whom 3 (0.9%) were males and 1 (1.5%) were females. 1 (0.3%) male victims were retired.

DISCUSSION

In our study the highest number of victims were in the age group of 30-60 years accounting for 49.61% of the total (n=385) which is similar to a study done in Nepal by Mishra et al (2010), where they found that 38.33% were in the age group of 15-30 years and also in a study done in Qatar by Bener where 35.8% cases were in the age group of 25-34 years, likewise in a study done in Thailand (2002)- by Jirojwong which found similar results.^{13,14} This can be attributed to the fact that this age group is a more frequent road user due to educational and occupational purposes.

Male victims in this study were about 83.12% which is exactly similar to the findings of Chaudhary in which they had found 83.2% males, and 16.80% females.¹⁵ And the Male female ratio was also almost similar 5.9:1. Jeepara also found comparable results which was 72% males as well as Jha which quotes male victims as 76.1%.^{16,17}

Female victims in the present study accounted for 16.88% demonstrating the male pre- dominance of more mobility in the Indian Context. Similar findings were shown by Soori as 20% female victims as well as Suryanarayana who suggested 23.60%.^{18,19} Explanation can be, in the rural community of Wardha, maximum outdoor work is performed by males while women tend to remain homemaker or labour in farms.

Maximum number of accidents were seen in victims who were secondary educated, 33% followed by the higher secondary educated 31.9%, quite similar to the numbers quoted by Burgut that 26.6% of the studied Qatari drivers were involved in road traffic crashes, while in contrast Jha found that 23% of victims were either illiterate or had had only primary-level education and victims with a higher education were fewer in proportion.^{17,20} The reason behind the maximum accidents found amongst secondary and higher secondary could be because of being a frequent road user for educational purposes.

This study found that individuals in service were involved in accidents 39.2% a more as compared to any other profession farmers were 11% similar to what Jha found-agriculturists were 18.7%.¹⁷ Our study found that self employed were 27.01% while Jeepara observed that 64% were unemployed or had unskilled occupation also it was found that employees in service involved in road traffic accident were maximum, accounting for 39.2% while self employed were similar in percentage (27%) to the study by Jeepara.¹⁶

The Socio economic status of the victims of road traffic accidents in the rural community of Wardha showed a very interesting outcome, with about 1/3rd of the victims belonging to the upper class according to modified B. G. Prasad classification for rural areas, and just about 7.3% from the lower Socio economic class while Hanna observed that drivers from families in a lower socioeconomic position showed increased relative risks for road traffic crash in the range of 1.75 to 3.25.²¹

CONCLUSION

Among 1677 surveyed individuals 385 had history of road traffic accident i.e. the prevalence of road traffic accident was observed to be 22.9%. Maximum victims were in the upper class which was class I. Highest numbers of victims were secondary educated while maximum accidents were seen in victims who were doing service 151 (39.22%), followed by self-employed.

Maximum victims were in 30-60 years age group which is the productive age group and male dominance was also observed which means loss of work days and in turn loss of wages.

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