

ORIGINAL ARTICLE

PREVALENCE AND RISK FACTORS OF NON FATAL ROAD TRAFFIC ACCIDENTS IN A COMMUNITY SETTING OF DISTRICT DEHRADUN

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ABSTRACT

Objectives: To study the prevalence and various environmental risk factors related to Road Traffic Accidental injuries in district Dehradun.

Material and Methods: A cross-sectional descriptive study was conducted in rural and urban areas of district Dehradun. Multistage stratified random sampling method was used to reach the desired sample size. Overall 4000 individuals were interviewed using a structured pretested questionnaire. The data was entered in computer and analyzed by using SPSS software version 20.

Results and conclusion: Maximum numbers of Road Traffic Accident (RTA) victims were in the age group of 20 – 29 years (33.6%). Males (79.5%) were involved significantly more as compared to females (20.5%). Most of the RTAs (61.9%) occurred during evening hours (4 – 10pm) and on crowded municipality roads (43.9%). Rural area had significantly more accidents (69.6%) as compared to urban area (30.8%). Maximum RTAs (78.7%) happened to occur on good roads.

Key words: Prevalence, Community, Environmental Risk Factors, Road Traffic Accident.

INTRODUCTION

Accidental injuries are a neglected epidemic in developing countries, causing more than five million deaths every year. Unfortunately, accidents occur due to carelessness, recklessness and over confidence and not often due to ignorance. These injuries account for high economic and social costs for communities around the globe. The costs involved are greater in low- and middle-income countries, where many public health systems have yet to prioritize injuries as a major health concern, despite the cost-effective methods available to prevent them.¹ Indirect estimates by the World Health Organization (WHO) suggest that unintentional injuries account for 3.9 million deaths worldwide, of which about 90% occur in low and middle income countries. The majorities of these deaths are attributable to Road Traffic injuries, falls, drowning, poisoning and burns. In 2004, WHO estimated about 0.8 million deaths in India were due to unintentional injuries.²

Road Traffic Accidents (RTAs) can be studied in terms of agent (Vehicle), host (human) and environmental factors, which play an important role before, during and after a trauma event. In India, not many systematic and scientific studies are available to highlight specific human, vehicle and environmental factors responsible for several types of injuries. Hence,

the present epidemiological study was planned to address this research gap by focusing mainly on the prevalence and role of various risk factors including environmental factors in Road Traffic Accidents in a community setting. These findings are a part of a larger study carried out to know about the magnitude and pattern of injury in our area.

METHODOLOGY

This community based cross sectional study was conducted in the rural and urban areas of district Dehradun. Ethical clearance from the ethical committee of the institute was taken prior to conduction of survey. A sample of 3992 was worked out taking a prevalence of 30.6%³ as a reference. It was rounded off to 4000 and for comparison point of view, equal number of subjects (2000) were covered in both groups (urban and rural). All individuals who have sustained an accidental injury in the last one year that needed medical attention or stay in bed at least for one day; or required to stop regular work or activity for at least one day after injury were included in the study. Individuals with mental illness, physical or developmental disabilities were excluded from the study.

A pre-designed, semi structured (modified version of WHO questionnaire) was used to carry out the survey.⁴ This included socio demographic details of the family, details pertaining to the Road Traffic Accident and other injuries and factors related to RTA. Data was collected by house to house survey in the chosen areas. Multistage stratified random sampling was used to select the household. After taking written consent from the head of the family, interview of the eligible subject was taken. For children, proxy interview of the mother/ guardian/ caretaker was undertaken. Collected Data was compiled and analyzed by using SPSS software version 20. Percentages and proportion were calculated for all the variables, while Chi square test was applied for association between two variables.

RESULTS

The study population comprised of all individuals who had sustained a traffic accidental injury in the last twelve months preceding the survey that needed medical attention or stay in bed for at least one day; or to stop regular work or activity for at least one day after the injury.

Out of all injuries occurring in the surveyed population in last twelve months, fall accounted for 49.1%, RTA for 29.3%, assault 6.5% and others 15.1% of the cases. Maximum number of RTA victims (Table - 1) were in the age group of 20 – 29 years (33.6%) followed by 30 – 39 years age group (23.8%).

Similar trends were seen in both the areas. It was observed that overall males (79.5%) were involved significantly more in RTAs as compared to females (20.5%) (Table– 2). Trends were similar in both urban and rural areas.

Most of the RTAs (61.9%) occurred during evening hours (4 – 10pm) followed by day time i.e 10am – 4pm (21.7%). Similar trends were seen in both the areas (Figure – 1). Most of the RTA cases occurred when day light was adequate (56.5%) and weather was Good (90.6%) (Table-3).

Table 1: Age wise distribution of RTA victims

Variable	Urban (%) (n=74)	Rural (%) (n=170)	Total (%) (n=244)
< 10 yrs.	4 (5.5)	29 (17.0)	33 (13.5)
10 – 19 yrs.	9 (12.3)	21 (12.3)	30 (12.3)
20 – 29 yrs.	29 (39.7)	53 (31.0)	82 (33.6)
30 – 39 yrs.	22 (30.1)	36 (21.1)	58 (23.8)
40 – 49 yrs.	4 (5.5)	17 (9.9)	21 (8.6)
50 – 59 yrs.	4 (4.1)	10 (6.4)	14 (5.7)
≥ 60 yrs.	2 (2.7)	4 (2.3)	6 (2.5)
P value	< 0.0001	< 0.0001	< 0.0001

For chi square age groups are ≤ 19, 20-39, 40-59 and ≥ 60 years

Table 2: Sex wise distribution of RTA victims

Variable	Urban (%) (n=74)	Rural (%) (n=170)	Total (%) (n=244)
Male	68 (91.8)	126 (74.3)	194 (79.5)
Female	6 (8.2)	44 (25.7)	50 (20.5)
P value	< 0.001	< 0.001	< 0.001

Table 3: Environmental factors in RTAs

Variable	Urban (%) (n=74)	Rural (%) (n=170)	Total (%) (n=244)
Light conditions			
Good	45 (60.8)	93 (54.7)	138 (56.5)
Dim light	13 (17.6)	46 (27.1)	59 (24.2)
Dark	16 (21.6)	31 (18.2)	47 (19.3)
P value	< 0.001	< 0.001	< 0.001
Weather conditions			
Clean/Clear	60 (81.0)	161 (94.7)	221 (90.6)
Rainy	11 (14.9)	9 (5.3)	20 (8.2)
Foggy	3 (4.1)	0 (0.0)	3 (1.2)
P value	< 0.001	< 0.001	< 0.001

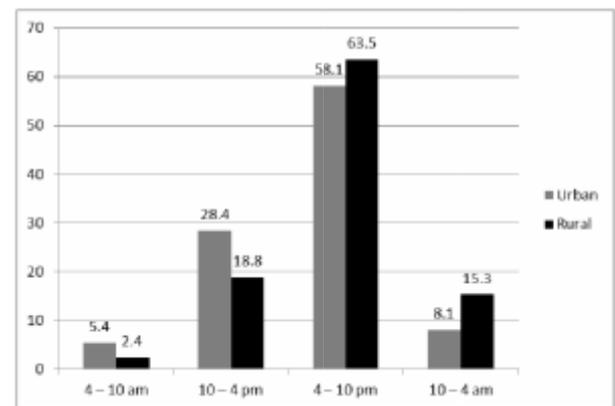


Figure 1: Time distribution of Road Traffic Accidents

Table 4: Road related factors in RTAs

Variable	Urban (%) (n=74)	Rural (%) (n=170)	Total (%) (n=244)
Type of road			
Highway	26 (35.1)	58 (34.1)	84 (34.4)
Rural/Brick road	6 (8.1)	47 (27.7)	42 (21.7)
Municipality road	42 (56.8)	65 (38.2)	107 (43.9)
P value	> 0.05	< 0.001	> 0.05
Road conditions			
Good	62 (83.8)	130 (76.5)	192 (78.7)
Bad	3 (4.0)	6 (3.5)	9 (3.7)
Average	9 (12.2)	34 (20.0)	43 (17.6)
P value	<0.001	<0.001	<0.001

It was also observed (Table – 4) that maximum RTAs occurred on municipality roads (43.9%), followed by highways (34.4%). In urban area, RTA on the municipality roads was significantly higher (56.8%) as compared to rural area (38.2%). Maximum RTAs (78.7%) happened to occur on good roads, while only 3.7% occurred on bad roads. Simi-

lar findings were observed in RTAs in both rural and urban areas.

DISCUSSION

In our study, maximum number of RTA victims were in the age group of 20 – 29 years (33.6%) followed by 30 – 39 years age group (23.8%). Similar results were also observed by Mahajan N and Jha N^{5,6}. In contrast, Dixit et al from Srinagar Garhwal, Uttarakhand reported that 50% of drivers involved in RTAs were less than 40 years of age and 15.8% of drivers were less than 20 years of age.⁷ There was male preponderance in our study as males (79.5%) were significantly more involved in RTAs as compared to females (20.5%). Similar results were also observed by Patil S and Jha N.^{6,8}

RTAs maximally (61.9%) occurred during evening hours (4 – 10pm) followed by 10am – 4pm (21.7%). Similar results were also observed by Dixit S and Verma P.^{7,9} In contrast, Kandpal et al in their study from Dehradun Uttarakhand, observed that majority of accidents (76.8%) occurred during day time i.e. from morning to evening with a peak (31.1%) in afternoon.¹⁰ Day light was reported to be adequate in most of the RTA cases (56.5%) and weather was good (90.6%). It might be due to the fact that this part of Uttarakhand, fog usually occurs in winter evenings and clears by late morning and people avoid travelling during night and early morning hours. The days in winters are usually sunny unlike plain areas. In rural area no RTA was reported under foggy conditions, while in urban area 4.1% of cases were seen. Similar results were also observed by Joshi et al.¹¹ Maximum RTAs (78.7%) were reported to occur on good roads, while only 3.7% occurred on bad roads. This shows that despite of good road conditions, RTAs are bound to happen because of human factors such as not following the traffic rules properly, rash driving, overloading and other such conditions. Similar results were also observed by Dixit S.⁷

CONCLUSIONS & RECOMMENDATIONS

From the above study it can be concluded that the prevalence of RTA injuries are fairly high in rural as well as urban areas of district Dehradun. Its increasing prevalence in rural community and in the younger age group is a pointer to the fact that the burden of RTAs is going to rise in near future.

Greater attention should be paid towards the prevention of RTA in India. Computerized Trauma Registry, health insurance coverage of population for efficient and timely management of injured persons, devising better road and traffic management networks as well as educating the public in general for road safety measures including use of personal safety gears as well as following traffic rules etc. are some of the few recommendations advised for prevention and better management of RTA injuries.

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