Section: Community Medicine

Original Research Article

A CROSS SECTIONAL STUDY ON ROAD TRAFFIC ACCIDENTS IN A TERTIARY CARE HOSPITAL IN NORTH KARNATAKA

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ABSTRACT

Background: Road traffic accidents (RTA) are major causes for morbidity, mortality and disability among all age group and people of all socioeconomic status. Considering the increased number of people using motorized vehicle leading to rise in road traffic accidents, our cross-sectional study conducted in a tertiary care hospital in northern Karnataka, India **Materials and Methods:** A pre-designed semi-structured questionnaire for duration of six months aimed to study the socio demographic profile of road traffic injury victims, to find the antecedent factors influencing the road traffic accidents and also to study the pattern of injury in victims.

Results: Total of 516 patients were included in the study. In our study we have found that human error is the most common factor responsible for accident 43.4% followed by drunk and drive 30.6% and most of the accidents occurred in highway 21.1% and drivers are most commonly the victims of accident 69.2%. We have also found that skid is the most common manner of accident. It is very alarming to see that only 33.7% of the participants had valid driving licence. Also, among the people who rode two-wheeler only 7% wore helmet and among persons who drew four-wheeler only 10% wore seat belt.

Conclusion: Most participants were male (86%), mostly from rural areas (70.3%), and lived with their families (88%). The findings highlight the need for better road safety measures, stricter traffic regulations, increased public awareness, and improved infrastructure to reduce road traffic accidents.

Keywords: Road traffic accidents, Causes, Risk factors, Human error, Drivers.

INTRODUCTION

Road traffic accidents (RTA), which are preventable and predictable, still stand as one of major causes for morbidity, mortality and disability. Most of the road traffic deaths are confined to low- and middle-income countries1. In India, motor vehicle population is growing at a faster rate than the economic and population growth. India has only 1% of world's vehicles, but it accounts for 6% of world's road traffic accidents2. Rate of RTA is 35/1000 vehicles and RTA fatality rate is 25.3/10000 in India2. Road traffic injuries are constituted as 8th leading cause of death in India in 20183. It also shows that we haven't achieved Sustainable Development Goal (SDG) goal 3.6, which calls for a 50% reduction in traffic deaths by 20203. Common causes for road accidents in India are use of mobile phones while driving, no concentration while driving, alcohol consumption, lack of sleep etc. Death due to accidents are most commonly due to over speeding, drunk and drive, overloading vehicles with passenger, not maintaining speed limit, teenage driving, driving without proper training and license, distraction while driving and most of these causes are

preventable. Reasons such as not using footpath, walking on road, not using zebra crossing, crossing road while vehicles pass by, not using subways, using mobile phones while walking, wearing headphones and listening to music are cause for death among pedestrians4. UN general assembly declared 2011-2020 as "Decade of Action for road safety" to stabilize and reduce increasing trend in road traffic fatalities. In addition to common causes of death due to road traffic accidents such as increased speed driving, driving under influence of alcohol and other psychoactive substances, not using helmet, seatbelt and child restraints, distracted driving, WHO also enlisted few more factors such as unsafe road infrastructure, unsafe vehicles, inadequate post-crash care, inadequate law enforcement of traffic law as other important causes for road traffic accidents5. It is estimated that death due to RTA might rise to 5th leading cause of death by 20306,7. Road Traffic Injury is defined as "occurrence in a sequence of events which usually produces unintended injury, death, or property damage"8. It is 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. According to the World Health Organization (WHO), RTA is responsible for 20% of the global Disability Adjusted Life Years (DALY) due to injury9. If effective actions are not taken timely, it is predicted that 2.4 million deaths occur each year due to RTA1. Epidemiological triad of Road Traffic Accidents can be described as human factors, vehicular factors and environmental factors. WHO suggested measures to reduce road accidents in cooperation with the United Nations Road Safety Collaboration and other stakeholders are to incorporate road safety features such as urban planning and transportation planning; creating safer roads and mandating independent road safety audits for new construction projects; enhancing car safety features; encouraging public transportation; enforcing internationally harmonised laws requiring the use of seat belts, helmets and child restraints; establishing and enforcing blood alcohol concentration limits for drivers; and by raising knowledge of the dangers and consequences of breaching the law, public awareness, campaigns also contribute significantly to the implementation of legislative measures(1).

Aims & Objectives

- To study the socio demographic profile of road traffic injury victims
- To study the antecedent factors influencing the road traffic accidents.
- To study the pattern of injury in victims.

MATERIAL AND METHODS

This present study is a hospital based cross sectional study conducted in Raichur Institute of Medical Sciences, Raichur, Karnataka. Study was conducted for six months duration. All patients admitted for at least 24 hours in various wards of hospital with history of road traffic accident and gave consent to participate in the study were included. Patients/ attenders who are not consenting to be included in the study, patients who absconded after 24 hours of admission before collection of data were excluded from the study. Ethical clearance was obtained from Institutional Ethics Committee before commencing the study. Sample size was calculated based on last year hospital records (Proportion of RTA patients in casualty was 42.87%) using the formula N = Z2pq/d2 and was calculated as 514 (Where = Standard Normal variate at level of significance = 1.96; p (Prevalence) = 42.87%; q= 100 – p = 70; d (error) = 10 % of p)

The patients or the attenders of the patients were interviewed after obtaining informed consent using predesigned, semi structured questionnaire. Data was entered in Microsoft excel sheet, exported to SPSS Version 26.0, coded and analysed. The study variables are presented in the form of percentage and proportions and relationship was established using the Chi-square test.

RESULTS

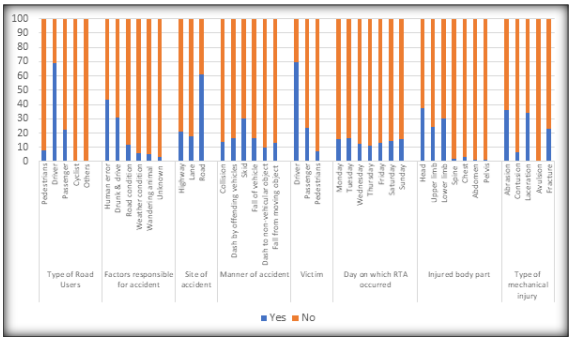

Figure 1: Bar chart classifying victims based on type of road users, factors responsible for accidents, manner of accident, victim, day in which accident occurred, injured body part and type of mechanical injury

Sociodemographic profile of study participants:

We have interviewed patients admitted in various wards as follows. More than half of the participants i.e., 305 (59.1%) of the patients are from casualty, followed by 87 (16.9%) in Male Ortho Ward, 68 (13.2%) in Male Surgical Ward. People in other wards constituted a very little proportion (female surgical ward-3.1%, female ortho ward-2.5%, dental ward-1.4%, ENT and SICU each 1%). In our study constituting total of 516 participants, 70.3% (363) of the people are from rural area and remaining 29.7% from urban area.

Age Distribution of the study participants is as follows: 16 patients were less than 10 years, 59 patients at the age group between 11- 20 years, 194 patients at the age group of 21-30 years, 136 patients at the age group of 31-40 years, 54 patients at the age group between 41-50 years, 37 patients in

the age group of 51-60 years, 18 patients in the age group of 61-70 years and 2 patients aged 71 and above. Most of the patients were male 444 (86%) and rest 72 (14%) were female. Majority of the study participants (88%) live with their family, followed by 3.5% (18) live alone, 8.5% (44) live with friends. Nearly two thirds of the study participants are married- 63.6% (328), whereas 33.5% (173) are unmarried, 1.6% (8) are widow, 1.2% (6) are widower and 0.2% (1) participant was separated. More than two-third of study participants belonged to nuclear family 363 (70.3%), 74 (14.3%) belonging to joint family and 79 (15.3%) belonging to three generation family. According to religion, 84.9% (438) belonged to Hindu, 1.0% (5) belonged to Christian and 14% (72) belonged to Muslim. Occupational status of study participants is as follows- student-128 (24.8%), employed- 164 (31.8%), unemployed- 219 (42.4%) and retired- 5 (1.0%). The number of study participants who are illiterate 143 (27.7%) and who have done higher secondary schooling 148 (28.7%) are equal; similarly, the number of study participants who have completed primary schooling 91 (17.6%) and who have done secondary schooling 90(17.4%) are equal, 44 participants (8.5%) have been graduated.

Factors responsible and practices in relation to RTA

Surprisingly only one-third of the study participants 174 (33.7%) had driving license where the remaining 342 (66.3%) doesn't have it. Among the persons having driving license, age of issuing it is between 18-27 years in 160 (92%) participants, 28-36 in 12 (6.9%) participants and 37-45 in 2 (1.1%) participants. Most of the participants duration since driving license issued is more than 10 years 71, between 5-10 years 39, 2-5 years is 40 and less than 2 years in 24 participants.

Time of occurrence of accident is 6 AM-12 PM in 79 (15.3%) participants, 12 PM-6 PM in 198(38.4%), 6 PM-12 AM in 187 (36.2%), 12 AM-6 AM in 52 (10.1%) participants. Type of vehicle used are two-wheeler in 439 (85.1%) participants, four-wheeler in 30 (5.8%) participants, heavy motor vehicle in 9 (1.7%) participants, non-motorized in 2 (0.4%) participants and 36 (7%) participants were pedestrians. Among 439 participants who used two-wheeler, only 31 wore helmet and among 30 participants who drove four-wheeler, only 3 wore seatbelt.

Classifying study participants based on the type of road users, 40 were pedestrians (7.8%), 357 (69.2%) were driving vehicle, 115 (22.3%) participants were passengers and 4 (0.8%) were cyclist.

While interviewing about the factors responsible for accident, 224 (43.4%) replied it was due to human error, 158 (30.6%) mentioned it was due to drunk and drive, 61 (11.8%) reported that the road condition was bad, 29 (5.6%) did mention about weather condition, 26 (5%) complained that it was due to wandering animal and 18 (3.5%) admitted that they didn't know the exact cause for the accident.

Among the study participants, 109 (21.1%) accidents took place in highway, 92 (17.8%) in lane and 315 (61%) in road. Manner of accident was skid in 156 (30.2%) patients, collision in 73 (14.1%) participants, dash by offending vehicle in 85 (16.5%) participants, fall of vehicle in 84 (16.3%) people, dash to non-vehicular object in 50 (9.7%) participants and fall from moving object in 68 participants.

Days on which accident occurred are almost similar on Sunday, Monday and Tuesday which accounted for 82 (15.9%), 82 (15.9%) and 85 (16.5%) accidents respectively. Number of accidents that occurred on Wednesday, Thursday, Friday and Saturday are 65 (12.6%), 59 (11.4%), 67 (13%) and 76 (14.7%) respectively. Injured body parts were head in 194 (37.6%) patients, upper limb in 125 (24.2%) patients, lower limb in 155 (30%) patients, spine in 11 (2.1%) patients, chest in 18 patients (3.5%), abdomen in 8 (1.6%) patients and pelvis in 5 (1%) patients.

While examining the type of injury sustained by patients, we observed that 188 (36.4%) sustained abrasion, 33 (6.4%) sustained contusion, 175 (33.9%) sustained laceration, 3 (0.6%) sustained avulsion Injuries and 117 (22.7%) sustained fractures.

Association between various variables and factors responsible for RTA (Table 3)

Among the socio-demographic factors in the study, we have observed strong association between factors such as age, gender, marital status, type of family, occupation, having driving license, type of vehicle used and type of road users and factors associated with accidents. Human error is the most common factor responsible for accidents in all age group (p value= 0.000001), in both the gender (p value= 0.0001), among all categories of marital status (p= 0.001) and in all types of family (p value= 0.004). While comparing occupation and factors responsible for accidents, human error is the most common cause for accident among students and unemployed, drunk and drive is the most common cause for accidents among employed (p= 0.003). Among people having driving license, drunk and drive is the most common cause for accidents and among people not having driving license, human error is the most common cause for accidents (p= 0.001). in all types of vehicle users (none, two-wheeler, four-wheeler, HMV, non-motorised vehicle), human error is the most common cause for accident(p=<0.0001). While comparing type of road users and factors responsible for accidents, human error is the most common cause for accidents among pedestrians, passenger and cyclist and drunk and drive is the most common cause for accidents among drivers (p= 0.00001).

Association between various variables and manner of RTA (Table 4)

Skid is the most common manner of accident among people of most age groups (<20, 21-40, 41-60) and dash by offending vehicle is the most common manner of accident among people aged more than 60 (p= 0.009678). Amongst males' skid is the most common manner of accident and dash by offending vehicle and fall of vehicle in females (p=0.001). While comparing living status with manner of accident, skid is the most common manner of accident among people living with family and with friends while fall from moving object is the most common manner of accident in people living alone (p= 0.012). While comparing occupation with manner of accident, skid is the most common manner of accident among students, employed and unemployed while dash by offending vehicle being the most common manner of accident among retired (p=0.001). While comparing type of vehicle used with manner of accident, dash by offending vehicle being the most common manner of accident among pedestrians; skid being most common manner of accident among two-wheelers; dash to non-vehicular object is the most common manner of accident among four-wheelers and fall from moving object in HMV (p=0.000). Among pedestrians, dash by offending vehicle is the most common manner of accident; among drivers and pedestrians, skid is the most common manner of accident and among cyclist, fall of vehicle is the most common manner of accident.

Association between various variables and victims of RTA (Table 5)

In all the age groups (<20, 21-40, 41-60, >60) drivers are commonly victims of accidents (p=0.00001). Among drivers, male are most commonly victims of RTA and amongst females, passengers are most commonly victims of RTA (p=0.000). While comparing living status with victims of accident, drivers are most commonly victims of accident in all categories (living alone, living with family and living with friends) (p=0.026). While comparing marital status with victims of accident, drivers are more commonly involved in accidents in unmarried, married, widower and separated categories while passengers are more prone to accidents among widower (p=0.000). In all family types (nuclear, joint and three generation), drivers are most commonly involved in accident (p=0.001). Drivers are mostly victims of accident in students, employed and unemployed while among retired persons, passengers and pedestrians are equally victims of accident (p=0.001). While comparing education with victims of accident, in all categories (illiterates, primary schooling, secondary schooling, higher secondary schooling and graduates) drivers are most commonly victims of accident (p=0.000). Drivers are most commonly victims of accident in people who have and doesn't having driving license (p=0.000). While comparing types of vehicles used with victims of accident, among people using two-wheeler and non-motorized vehicle, drivers are mostly victims of accident; among people using four-wheeler and heavy motorized vehicle, passengers are mostly victims of accident (p=0.000). We have also found association between factors like residency and day in which accident occurred, residency and type of mechanical injury, socioeconomic status and day in which accident occurred, socioeconomic status and injured body part, type of vehicle used and site of accident and type of vehicle used and type of mechanical injury indicated by p value of <0.05.

Table 1: Sociodemographic profile of study participants

Profile	Categories	Frequency (N)	Percentage (%)
Age (in years)	<10	16	3.1
	11 to 20	59	11.4
	21 to 30	194	37.6
	31 to 40	136	26.4
	41 to 50	54	10.5
	51 to 60	37	7.2
	61 to 70	18	3.5
	>70	2	0.4
Gender	Male	444	86.0
	Female	72	14.0
Living status	Alone	18	3.5
	With family	454	88.0
	With friends	44	8.5
Marital status	Unmarried	173	33.5
	Married	328	63.6
	Widow	8	1.6
	Widower	6	1.2
	Separated	1	0.2
Type of family	Nuclear	363	70.3
	Joint	74	14.3
	3 Generation	79	15.3
Religion	Hindu	438	84.9
	Christian	5	1.0
	Muslim	72	14.0

	Others	1	0.2
Occupation	Student	128	24.8
	Employed	164	31.8
	Unemployed	219	42.4
	Retired	5	1.0
Residency	Urban	153	29.7
	Rural	363	70.3
Education	Illiterate	143	27.7
	Primary school	91	17.6
	Secondary school	90	17.4
	Higher secondary	148	28.7
	Graduate	44	8.5
Socio Economic Status acc. to BG Prasad	Upper class	22	4.3
	Upper middle class	79	15.3
	Middle class	161	31.2
	Lower middle class	239	46.3
	Lower class	15	2.9
Ward in which the participants are admitted	Male Ortho Ward	87	16.9
	Female Ortho Ward	13	2.5
	Male Surgical Ward	68	13.2
	Female Surgical Ward	16	3.1
	Casualty	305	59.1
	Dental	10	1.9
	Ophthalmology	7	1.4
	ENT	5	1.0
	SICU	5	1.0

Table 2: Distribution of patients according to various factors and practise in relation to RTA

Profile	Categories	Frequency (N)	Percentage (%)
Have driving license	Yes	174	33.7
	No	342	66.3
Age of issuing DL (in years)	18 to 27	160	31
	28 to 36	12	2.3
	37 to 45	2	0.4
	No Driving license	342	66.3
Duration since DL issued (in years)	<2	24	4.7
	2 to 5	40	7.8
	5 to 10	39	7.6
	>10	71	13.8
	No Driving license	342	66.3
Time of occurrence	6AM to 12PM	79	15.3
	12PM to 6PM	198	38.4
	6PM to 12AM	187	36.2
	12AM to 6AM	52	10.1
Type of vehicle used	None/Pedestrian	36	7
	Two-wheeler	439	85.1
	Four-wheeler	30	5.8
	HMV	9	1.7
	Non-motorized	2	0.4
Helmet for two-wheeler	Yes	31	6.0
	No	408	79.1
	No two-wheeler	77	14.9
Seat belt for four-wheeler	Yes	3	0.6
	No	27	6.8
	No four-wheeler	486	94.2

Table 3: Association between various variables and factors responsible for RTA

Variables	Categories	Factors responsible for RTA						Chi square	Df	p value
		Human error	Drunk & Drive	Road condition	Weather condition	Wandering animals	Unknown			
Age	<20	52	5	9	6	2	1	55.03	15	0.000001
	21-40	126	124	40	14	18	8			
	41-60	35	26	12	6	4	8			
	>60	11	3	0	3	2	1			
Gender	Male	182	154	48	25	22	13	27.121	5	0.0001
	Female	42	4	13	4	4	5			
Marital status	Unmarried	89	44	20	9	9	2	45.441	20	0.001
	Married	127	112	4	20	16	13			
	Widow	5	0	0	0	0	3			
	Widower	2	2	1	0	1	0			
	Separated	1	0	0	0	0	0			

Type of family	Nuclear	164	118	45	13	15	8	25.825	10	0.004
	Joint	28	24	6	5	6	5			
	3- gen.	32	16	10	11	5	5			
Occupation	Student	68	32	14	8	5	1	34.823	15	0.003
	Employed	58	59	17	8	13	9			
	Unemployed	96	67	30	11	8	7			
	Retired	2	0	0	2	0	1			
Having Driving license	Yes	57	72	20	6	10	9	21.410	5	0.001
	No	167	86	41	23	16	9			
Type of vehicle used	None	28	1	1	1	0	5	58.779	20	<0.0001
	2-wheeler	179	147	57	26	22	8			
	4-wheeler	10	9	2	2	3	4			
	HMV	5	1	1	0	1	1			
	Non motor	2	0	0	0	0	0			
Type of road users	Pedestrians	29	3	1	2	0	5	76.362	15	0.000011
	Driver	132	143	43	15	17	7			
	Passenger	60	12	17	11	9	6			
	Cyclist	3	0	0	1	0	0			

Table 4: Association between various variables and manner of RTA

Variables	Categories	Manner of RTA						Chi square	Df	p value
		Collision	Dash by offending vehicle	skid	Fall of vehicle	Dash to non-vehicular object	Fall from moving object			
Age	<20	15	9	26	10	4	11	30.6846	15	0.009678
	21-40	44	49	102	54	33	48			
	41-60	11	17	24	19	13	7			
	>60	3	10	4	1	0	2			
Gender	Male	64	68	144	67	49	52	21.749	5	0.001
	Female	9	17	12	17	1	16			
Living status	Alone	0	2	5	3	2	6	22.705	10	0.012
	With family	65	78	138	79	38	56			
	With friends	8	5	13	2	10	6			
Occupation	Student	21	12	50	17	12	16	38.613	15	0.001
	Employed	23	26	43	31	27	14			
	Unemployed	28	44	62	36	11	38			
	Retired	1	3	1	0	0	0			
Type of vehicle used	None	0	35	0	1	0	0	259.697	20	0.000
	2-wheeler	68	42	155	77	36	61			
	4-wheeler	5	7	1	3	13	1			
	HMV	0	0	0	3	1	5			
	Non motor	0	1	0	0	0	1			
Type of road users	Pedestrians	0	37	2	0	0	1	209.286	15	<0.0001
	Driver	63	35	125	59	37	38			
	Passenger	10	12	29	23	13	28			
	Cyclist	0	1	0	2	0	1			

Table 5: Association between various variables and victims of RTA

Variables	Categories	Victims of RTA			Chi square	Df	p value
		Driver	Passenger	Pedestrian			
Age	<20	37	35	3	62.2271	6	0.00001
	21-40	258	55	17			
	41-60	56	25	10			
	>60	8	5	7			
Gender	Male	354	62	28	168.623	2	0.000
	Female	5	58	9			
Living status	Alone	15	1	2	11.006	4	0.026
	With family	306	113	35			
	With friends	38	6	0			
Marital status	Unmarried	122	46	5	29.523	8	0.000
	Married	232	68	28			
	Widow	0	5	3			
	Widower	4	1	1			
	Separated	1	0	0			
Type of family	Nuclear	270	76	17	17.953	4	0.001
	Joint	45	20	9			
	3- gen.	44	24	11			
Occupation	Student	89	35	4	22.999	6	0.001
	Employed	128	25	11			
	Unemployed	141	58	20			
	Retired	1	2	2			
Education	Illiterate	81	49	13	30.392	8	0.000

	Primary	56	26	9			
	Secondary	65	19	6			
	Higher secondary	121	22	5			
	Graduate	36	4	4			
Having DL	Yes	149	14	11	36.109	2	0.000
	No	210	106	26			
Type of vehicle used	None	0	1	35	509.843	8	0.000
	2-wheeler	342	95	2			
	4-wheeler	14	16	0			
	HMV	1	8	0			
	Non motor	2	0	0			

DISCUSSION

Maximum RTA victims in our study were in the age group of 21-30 years 194 (37.6%) followed by 31-40 years of age 136 (26.4%) which is similar in a study conducted by alok kumar pathak et al,[10] which also depicted maximum accidents occurred in the age group of 21-30 years 31.4% followed by 31-40 years of age 23.99%. In our study, 86% of participants were male and 14% are females which is similar in a study conducted by mohit goyal et al,[11] in which 84.78% of participants were male and 15.22% are females. But residence in our study is in contrast with the above study. In our study, 29.7% from urban and 70.3% from rural whereas in the above study 76.09% from urban and 23.91% from rural. Study conducted by misra, et al,[12] revealed similar findings in living status, education of the participants and occupation of the participants. In our study, living status of the participants were living alone 3.5%, living with family 88% and living with friends 8.5% and in the mentioned study, it was 31% living alone, 62.4% living with family and 6.6% living with friends. In the mentioned study, education of people was 14.3% illiterate, 14.7% studied up to primary schooling, 26.9% up to secondary schooling, 15.2% up to higher secondary schooling, 25% were graduates and 3.9% postgraduates. Whereas in our study, 27% illiterate, 17% studied up to primary schooling, 17.6% up to secondary schooling, 28.7% up to higher secondary schooling and 8.5% were graduates. While comparing occupation of the participants of the above-mentioned study and our study; in our study 24.8% were students, 31.8% unemployed, 42.4% employed and 1% retired whereas in the above-mentioned study, 26% were students, 8.2% unemployed, 63.7% employed and 2.1% retired.

Results of factors responsible for accident in our study is similar to results of study10. In the mentioned study, factors responsible for accident are 49.55 human error, 12.37% alcohol taken by driver, 14.88% condition of roads, 6.52% adverse weather conditions, 11.76% wandering animal and 4.89% unknown; whereas in our study it was 43.4% human error, 30.6% drunk and drive, 11.8% poor road condition, 5.6% weather conditions, 5% wandering animal and 3.5% unknown. In the same study, mechanical injury sustained by victims were 42% laceration, 22.7% fractures, 28.61% abrasion, 5.16% contusion and 1.29% avulsion wherein our study 33.9% laceration, 22.7% fractures, 36.4% abrasion, 6.4% contusion and 0.6% avulsion. Time of occurrence of accident of our study participants were compared with the same study. In our study, time of occurrence of accidents was 15.3% in-between 6AM-12PM, 38.4% in-between 12PM-6PM, 36.2% in-between 2PM-12AM and 10.1% in-between 12AM-6AM. In the above-mentioned study, it was 24.2% in-between 6AM-12PM, 31.6% in-between 12PM-6PM, 39.2% in-between 2PM-12AM and 4.8% in-between 12AM-6AM.

We have compared types of ration card among our study participants with a study conducted by awasthi et al.[13] In our study only 10.3% had APL card, 89% had BPL card and remaining 0.8% doesn't have any ration card which is in contrast to the mentioned study where 74.12% had APL card, 23.96% had BPL card and remaining 1.91% doesn't have any ration card. We have also compared family type of study participants of our study to the above study. In both the study, maximum number of participants are from nuclear family. Family type of our study participants is 70.03% from nuclear family, 14.3% from joint family and 15.3% from three generation family where in the above study it was 67.09% from nuclear family, 31.94% from joint family and 0.95% from other family types. In the mentioned study maximum accidents occurred in Sunday (16.93%) and number of accidents occurred on Monday, Thursday, Friday and Saturday are equal (14.05%) which is in contrast to our study where maximum accidents occurred on Tuesday (16.5%) and accidents on Monday and Sunday are equal (15.9%). We have also compared religion, socio-economic status, participants having driving license or not, participants using four-wheeler did they wore seatbelt or not to a study by abhishek et al.[14] In both the study maximum participants are Hindus' (84.9% in our study, 68.64 in above study) and in our study, Muslims were second largest 14% followed by Christians 1.0% and 0.2% from other religion whereas in the mentioned study, Christians were second largest 20.45% followed by Muslims 9.55% and 1.36% from other religion. While comparing socio-economic status of the study participants, in our study 4.3% belonged to upper class, 15.3% belonged to upper middle class, 31.2% belonged to middle class, 46.3% belonged to lower middle class and 2.9% belonged to lower class and in the mentioned study it was 8.4% belonged to

upper class, 32.3% belonged to upper middle class, 33.4% belonged to middle class, 16.6% belonged to lower middle class and 2.9% belonged to lower class. In our study only 33.7% had driving license which is in contrast to the mentioned study where 86.96% had valid driving license. Only 10% of participants wore seatbelt in our study whereas in the above-mentioned study, 34.64% wore seatbelt.

In our study we found positive association between age, gender and type of vehicle used vs manner of accident. Similar results were found in a study conducted by Vipul et al.[15] In a study conducted by Neeraj et al,[16] they have compared residency of the victims and found positive association with gender, education status, occupation, type of road users, type of vehicle used, timing of accident and day on which accident occurred; negative association with age and weather condition. Wherein our study we found positive association between residency and day in which accident occurred, residency and type of mechanical injury and other variables negatively associated. In the study 13 comparing types of vehicles used with other variables, it was positively associated with age, sex, occupation and negatively associated with types of ration card victims have, educational status and type of family; wherein our study positive association was found between type of vehicle used and factors responsible for accident, manner of accident, victims of accident, site of accident and type of mechanical injury. In a study,[17] comparing prevalence of accident with other factors, it was positively associated with type of vehicle used and victims with alcohol consumption; wherein our study it was positively associated with.

CONCLUSION

The majority of participants were male (86%), predominantly from rural areas (70.3%), and most were living with their families (88%). A significant proportion of participants did not possess a driving license (66.3%), with human error being identified as the leading cause of accidents across all demographics. Drunk driving was notably prevalent among employed individuals with driving licenses.

The data revealed that two-wheelers were involved in the majority of accidents, with a concerning lack of safety measures such as helmets and seatbelts. The study found that accidents occurred more frequently in the afternoon and early evening, with a substantial number of incidents involving skidding and collisions. Victims were primarily drivers, especially in younger and employed age groups, while passengers were notably affected among older individuals and those using four-wheelers.

Overall, the findings underscore the need for enhanced road safety measures, including stricter enforcement of traffic regulations, increased public awareness about safe driving practices, and improved infrastructure. Addressing human error and promoting safer driving behaviours, particularly among those without driving licenses, can significantly mitigate the risk of RTAs. Further research and targeted interventions are essential to reduce the incidence and severity of road traffic accidents in this population.

Limitation

Our study is a single hospital based cross sectional study which may not be exact representation of the local population as the hospital being tertiary care centre catering medical services to neighbouring districts of the state and even neighbouring states. Final outcome of injured victims was not followed.

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