

Research



Road traffic accident and associated factors among traumatized patients at the emergency department of University of Gondar Comprehensive Teaching and Referral Hospital

Abaynew Honelgn, Tadesse Wuletaw

Corresponding author: Abaynew Honelgn, Department of Emergency and Critical Care, School of Nursing, University of Gondar, Gondar, Ethiopia. abaynew.h@gmail.com

Received: 23 Jun 2020 - **Accepted:** 03 Jul 2020 - **Published:** 07 Sep 2020

Keywords: Road traffic accident, Gondar, Ethiopia

Copyright: Abaynew Honelgn et al. PAMJ Clinical Medicine (ISSN: 2707-2797). This is an Open Access article distributed under the terms of the Creative Commons Attribution International 4.0 License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article: Abaynew Honelgn et al. Road traffic accident and associated factors among traumatized patients at the emergency department of University of Gondar Comprehensive Teaching and Referral Hospital. PAMJ Clinical Medicine. 2020;4(9). 10.11604/pamj-cm.2020.4.9.24507

Available online at: <https://www.clinical-medicine.panafrican-med-journal.com//content/article/4/9/full>

Road traffic accident and associated factors among traumatized patients at the emergency department of University of Gondar Comprehensive Teaching and Referral Hospital

Abaynew Honelgn^{1,&}, Tadesse Wuletaw²

¹Department of Emergency and Critical Care, School of Nursing, University of Gondar, Gondar, Ethiopia, ²Department of Nursing, Debre Tabor Health Science College, Debre Tabor, Ethiopia

[&]Corresponding author

Abaynew Honelgn, Department of Emergency and Critical Care, School of Nursing, University of Gondar, Gondar, Ethiopia

Abstract

Introduction: road traffic accident (RTA) is an incident on a way or street open to public traffic that becomes one of the most critical public health problem in the world especially in developing countries. According to WHO, every day more than 3000 people die from a road traffic accidents. Developing countries account for 90% of global road traffic deaths. Road traffic accidents are being the critical public health problem that causes disabilities and death in Ethiopia which could need due investigations. **Methods:** a six-month institutional-based cross sectional study was used on patients visited the University of Gondar Comprehensive Teaching and Referral Hospital to determine RTA and associated factors. A semi-structured pre-tested checklist was used to gather the data on the patient's chart systematically. The collected data were analyzed using SPSS version 21. **Results:** from a total of 307 traumatic patients 103(33.6%) were road traffic accident victims. The mean age of the victims was 29 (SD ±13.55). Among the victims, 40(39%) have died. Adjusting all other factors in the final model, the multivariate analysis revealed that age of injured patient AOR (95% CI) = 0.03 (0.001, 0.905), occupation AOR (95% CI) = 0.01(2.037, 92.243), month of the year AOR (95% CI) = 0.12(0.035, 0.442, and time of the day, AOR (95%CI) =0.22 (0.108, 0.459) were found significantly associated with road traffic accident. **Conclusion:** RTAs were found to be the major public health problem that needs due attention by the government, transport minister and federal police in collaboration.

Introduction

Road traffic accident (RTA) is an incident on a way or street open to public traffic, resulting in one or more persons being injured or killed and involving at least one moving vehicle [1,2]. Road traffic accidents have become a huge global public health and development problem killing nearly 1.2 million people a year and injuring or disabling between 20-50 million people worldwide; thus making the loss

of US 518 billion dollars globally [3]. Developing countries account for 90% of global road traffic deaths; while accounting only 20% of cars being driven and men comprise a mean 80% of casualties [4]. Estimates of the magnitude of road traffic injuries in low-income countries are primarily obtained from police records and sometimes hospital registry data; however, both sources are affected by under reporting [5]. The African Region remains the least motorized of the six world regions but, suffers the highest rates of road traffic accident having death rates well above the global average of 18 deaths per 100 000 population while the regional average is 24.1 deaths per 100, 000 [6]. In Ethiopia RTA is common public health problem according to World Health Organization (WHO) report, Ethiopia is considered one of the worst countries in the world where RTA kills and injures a large number of road users every year nearly 2000 people die due to road traffic accidents where, 48% are pedestrians, 45% passengers and 7% drivers and over 400 to 500 Million ETB is lost yearly, as a result, RTA [7]. Amhara region accounted for 27.3% of the total road traffic accident-related deaths in Ethiopia during the year 2008 - 2009, which is the highest share among all regions and pedestrians account the highest proportion of road traffic deaths in urban areas: Gondar, Bahir Dar and Dessie accounted for a percentage of 86.3, 54.8 and 48.5 respectively [8]. Even though the challenges are increasing, RTA in developing countries including Ethiopia the focus is still an under-reported and neglected area to be studied and solutions to be obtained promptly [5]. The productive parts of population aged 15-44 years accounted for more than half of all road traffic deaths globally [9,10]. Half of the world's road traffic deaths occur among motorcyclists (23 %), pedestrians (22 %) and cyclists (5%), car occupants 31 % and the remaining 19 % among unspecified road users [11]. Generally, Road traffic accidents are an unintended, non-communicable and preventable and common risk every day to our life that can happen to almost everyone at any place [12,13].

Methods

The cross sectional hospital-based study design was conducted to assess the magnitude of RTA among traumatic patients visited the emergency department (ED) of UOGCTH using retrospective chart review from October 1, 2016, to March 31, 2017, G.C. The randomly selected hospital is found in North Gondar administrative zone, Amhara region, Northwest Ethiopia at about 748 and 175 kilometers (km) away from Addis Ababa and Amhara region/Bahir Dar/respectively which serves for more than 3 regions. All patients' charts in the emergency department were included in the study period, but Charts with incomplete documentation, unclear and unreadable handwriting were excluded. The sample size was determined using a single population proportion formula to obtain the desired sample size. Systematic sampling technique was used to address each patient's chart. There were a total of 2,913 traumatic patients' seen in the emergency departments of UOGCTRH within six months. The sample size was calculated with the critical value of 95% confidence level, 5% margin of error and taking the prevalence of RTA $p=30.3\%$ [14]. Therefore, the sample size was estimated by using the formula,

$$n = \frac{Z^2 p(1-p)}{d^2}$$

=292 considering 5% of incomplete documentation rates adding 15, the final sample size was 307. The Data collection was carried out using a semi-structured checklist with the help of three trained record office workers. To address the study subjects of traumatized patient's charts were identified and traced based on registration number using systematic method every nine charts. The data were checked, edited manually, then coded and entered and analyzed with SPSS version 21. Descriptive statistics were generated and presented by frequency distribution percentages, tables, graphs and figures.

Operational definition: *accident* is a sudden unexpected occurrence leading to injury or trauma. *Injury or trauma* is tissue damage resulting from a transfer of different forms of energy either intentionally or unintentionally. *Fatal accident* at least one person (driver, passenger or pedestrian) died, within 30 days, from injuries received as a result of RTA. *Severe injury* at least one person was injured and admitted in the hospital, but no deaths occurred. *Multiple injuries:* a traumatized patient who has more than one injury at his body part intentionally or unintentionally. *Disability-adjusted life year* a health-gap measure that combines information on the number of years lost from premature death with the loss of health from disability.

Ethical consideration: to begin collecting data an ethical clearance was obtained from the University of Gondar College of Medicine and Health Science, Nursing School Ethical Review Committee. Permission was obtained from the head office of the hospital with a formal letter of cooperation. Confidentiality was kept anonymously.

Results

Socio-demographic characteristics of study subjects: a total of 307 traumatized patient's charts were reviewed. On the reviewed charts 238 (77.5%) were males. The mean age from the reviewed medical records of traumatized patients were 29 (SD±13.549). Majority 287(93.5%) of traumatized patients were Orthodox Christian followed by Muslim 20 (6.5%). Information about the educational status of the victims could not be established as the patients' records were incomplete. Related to occupational status, 96(31.27%), 81(26.4%) and 38 (12.37% were students, farmers, governmental employees respectively. Regarding the residence from reviewed charts, 177(57.7%) were in rural and 130 (42.3%) were urban dwellers (Table 1).

Magnitude of road traffic accident: the magnitude of RTA in the emergency departments of UOGCTRH was found to be 103 (33.6%) with CI: 28%, 39.1%.

The most commonly affected age group was from 20 to 29 years (33.01%) followed by 30 to 39 years' age group (26.2%). Males were more frequently affected than females (71.85% vs 28.15%). The majority of the victims 54.4% were from urban and 45.6% were from rural areas. Regarding the occupation; students 31(30.1%) were frequently injured by road traffic accident followed by governmental employees (21.4%) and drivers' injury is at last rank (9.7%) (Table 2). Among 103 road traffic accidents victims, half of the injured clients 52 (50.5%) were due to minibus followed by the three-wheel motor (Bajaj) 33 (32.04%) and 7 (6.8%) due to motor bike-related accident. Among the victims of road traffic victims, 52 (50.5%), 36 (35%), 15 (14.6%) were passengers, pedestrians and drivers respectively. Among the car accident victims, 40(39%) died. Twenty (19.4%), 12 (11.7%) and 8 (7.8%) of car accident injury patients have died; immediately, after surgical intervention and on arrival respectively. Outnumbered of car accident injury patients had multiple injuries that accounted for 36 (35%) followed by head injury 26 (25.2%). About 57(55.3 %) of the injured person GCS was not determined and 13(12.6%) of them had GCS of 3-8 (Table 3).

Time of accident and position of victims: most of the road traffic accidents occurred during rush hour; 55 (53.39%) occurred in the afternoon, 26 (25.24%) in the morning and 22 (21.35%) at night. Among the total of car accident victims, 27.18% occurred on October followed by November (18.45 %) the least 9.7% occurred during December (Figure 1). Thirty eight (36.9%) were injured when crossing the road rather than zebra line followed by crossing the zebra line 18 (17.5%), the least accounted when no action during the accident (Figure 2).

Factors associated with road traffic accidents: bivariate analysis was used to explore the association between road traffic accidents with each of the determinant factors. Age, sex, occupation, educational status, marital status, residence, the month of the year and time of the day have met the criteria ($P < 0.2$) for a road traffic

accident to be further analyzed in multivariate logistic regression analysis. Factors which had bivariate associations at p -value < 0.2 were then entered into multivariate logistic regression for further analysis. The variables associated with multivariate logistics analysis ($p \leq 0.05$) with road traffic accident were: age, occupation, and the month of the year and time of the day (Table 4).

Discussion

Magnitude of road traffic accident: this study found that the magnitude of road traffic accident was 33.6 % (95% CI: 28%, 39.1%). This finding is in line with the study conducted at Tikur-Anbesa specialized hospital at Adult Emergency Department (36.23 %) [11], at Jima University specialized hospital 30.3% [14], Emergency Departments of Amhara Regional State Referral Hospitals 33.9% [10]. The finding of this study is higher than a study conducted in Lusaka, Zambia, (25.6%) [15], in Nigeria at Kaduna state (27.7%) [16], in Mekelle, Northern Ethiopia (14.1%) [7]. The differences may be due to the study period, the sample size, data reviewing technique and quality of the emergency department. The result of the current study is much lower than the study conducted in Saudi Arabia (84.4%) [17], in Vellore district, southern India (73 %) [18], in Diredawa, Eastern Ethiopia (80%) [19], in Wolita Zone, SNNPR, Ethiopia (62.5%) [3]. This difference might be due to the difference in sample size and study period. The result also found that males were more victims by RTA than females with a ratio of 2.6: 1; this result is consistent with the study conducted in Jimma specialized hospital Ethiopia, Tanzania, Saudi Arabia [14,20,21]. This is maybe due to the nature of the men's work (outfield), which increased the risk. Our study revealed that majority of RTA victims were passengers 52 (50.48%), followed by pedestrians 36 (34.95%) which is similar to the study conducted in Wolita zone southern Ethiopia, Tanzania, Two neighboring nation in Africa [3,20,22], it was found to be that pedestrians were majority of the victims followed by passengers in studies conducted in

Tikur-Anbesa Ethiopia, Diredawa administrative zone Ethiopia and central Ethiopia [2,19,20,23]. This difference may be due to low public awareness on road traffic accident, poor road design and poor road safety measures taken by the population.

Factors associated with a road traffic accident: the variables associated with multivariate logistics analysis ($p \leq 0.05$) with road traffic accident were: age, occupation, month of the year and time of the day. The current study found that age was found to be the significant factor for road traffic accident; age of <10 years was found significantly associated and age range 30-39 years was also found strongly associated with road traffic accident: those participants with the age of <10 years AOR (95%CI) = 0.03[(0.001, 0.905) and 30-39 years AOR (95%CI) = 0.76(0.211, 2.753) were by 97% and 49% less likely to have road traffic accident as compared to participants with the age of ≥ 50 years respectively. Age as one factor for road traffic accident was found to be consistent with the study conducted in Juba, South Sudan [24], but the more productive age groups were affected more in that study. This could be because Causalities with the age range of ≥ 50 do not have the power to cease from the accident and even decrease in visual and hearing ability. The occupation was found to be another factor for the road traffic accident. Participants with other occupation (daily laborer, shepherd) AOR (95%CI) = 13.71(2.037, 92.243) was 13.7 times more likely associated with road traffic accident than drivers. The study result is consistent with the study done Amhara regional state Hospitals [10]. Months of the year were found to be a significant factor; December AOR (95%CI) = 0.12(0.035, 0.442) was found strongly associated with a road traffic accident. Month December was by 88% less likely associated with RTA as compared to month march. Month as a factor for RTA is consistent with the study done in Juba, South Sudan with rainfall season [24]. Time of the day was also another significant factor for the road traffic accident. Night AOR (95%CI) = 0.22(0.108, 0.459) was strongly associated with road traffic accident. The night was by 78% less likely to have an accident as compared to other times of the day. This result was consistent

with the study conducted in Thika, Kenya [25] but, inconsistent with the study conducted in Tikur-Anbesa Specialized hospital Ethiopia [26]. This could be due to road safety and density of pedestrians at the road and road setup difference.

Conclusion

In conclusion, RTAs are major public health problem in Ethiopia. The magnitude of trauma caused by RTA had been increased day to day. Urgent road traffic accident preventive measures and prompt treatment of the victims are warranted to reduce morbidity and mortality among the victims of the road traffic accident. Education on the proper use of sideways by pedestrians and periodic Vehicle examination should be given due emphasis by Government especially by transport minister and Federal police in collaboration. Furthermore, advice on the use of seat belts and safety measures should have been enforced strictly. As the data were collected retrospectively by reviewing the medical records/charts at the hospital; some information like educational status of victims were difficult to access.

What is known about this topic

- RTA was found to be an immerging man made injury;
- RTA took many lives per day especially in developing countries.

What this study adds

- The study aimed to investigate the magnitude of RTA.
- It could identified the causes of RTA.

Competing interests

The authors declare no competing interests.

Authors' contributions

AH designed the study, participated in the data quality control, performed analysis and interpretation of draft of the paper and prepared

the manuscript. TW assisted the design, assist the analysis and interpretation of the draft of the paper and revised the manuscript. The authors contributed to and approved the final manuscript.

Acknowledgments

We would like to acknowledge University of Gondar, Department of Emergency and critical care, school of Nursing for fulfilling all things to go through and facilitating this study.

Tables and figures

Table 1: socio demographic characteristics of study subjects

Table 2: frequency distribution of car accident by age, sex, religion, ethnicity and residence from October to March 2016/2017

Table 3: outcome of the road traffic accident by body parts injured, nature of the injury and GCS score of the victims

Table 4: bivariate and multivariate analysis for factors associated with road traffic accident among traumatized patients at University of Gondar Comprehensive Teaching and Referral Hospital, Northwest Ethiopia, 2017

Figure 1: monthly occurrence of Road traffic accident

Figure 2: action of victims when accident occurred

References

1. Odero W GP, Zwi A. Road traffic injuries in developing countries: a comprehensive review of epidemiological studies. *Tropical Medicine & International Health. Trop Med Int Health* . 1997 May;2(5): 445-60. **PubMed** | **Google Scholar**
2. Tiruneh BT, Biftu BB. Incidence of road traffic injury and associated factors among patients visiting the emergency department of Tikur Anbessa specialized teaching hospital, Addis Ababa, Ethiopia. *Emergency medicine international*. 2014;2014: 439818. **PubMed** | **Google Scholar**
3. Hailemichael F, Suleiman M, Paulos W. Magnitude and outcomes of road traffic accidents at Hospitals in Wolaita Zone, SNNPR, Ethiopia. *BMC research notes*. 2015;8: 135. **PubMed** | **Google Scholar**
4. Woldeyohannes SM, Moges HG. Trends and projections of vehicle crash related fatalities and injuries in Northwest Gondar, Ethiopia: A time series analysis. *International Journal of Environmental Health Engineering*. 2014;3: 30. **Google Scholar**
5. Abegaz T, Berhane Y, Worku A, Assrat A, Assefa A. Road traffic deaths and injuries are under-reported in Ethiopia: a capture-recapture method. *PloS one*. 2014;9(7): e103001. **PubMed** | **Google Scholar**
6. Organization WH. Road safety in the WHO African region: The Facts 2013. Geneva, Switzerland: World Health Organization. 2013.
7. Amdeslasie F, Kidanu M, Lerebo W, Ali D. Patterns of trauma in patient seen at the emergency clinics of public hospitals in Mekelle, northern Ethiopia. *Ethiopian medical journal*. 2016;54(2). **PubMed** | **Google Scholar**
8. Mekonnen FH, Teshager S. Road traffic accident: the neglected health problem in Amhara National Regional State, Ethiopia. *Ethiopian Journal of Health Development*. 2014;28(1): 3-10. **Google Scholar**
9. Peden M, Scurfield R, Sleet D, Mohan D, Hyder AA, Jarawan E *et al*. World report on road traffic injury prevention. World Health Organization Geneva. 2004. **Google Scholar**
10. Bashah DT, Dachew BA, Tiruneh BT. Prevalence of injury and associated factors among patients visiting the Emergency Departments of Amhara Regional State Referral Hospitals, Ethiopia: a cross-sectional study. *BMC emergency medicine*. 2015;15: 20. **PubMed** | **Google Scholar**

11. Seid M, Azazh A, Enquesselassie F, Yisma E. Injury characteristics and outcome of road traffic accident among victims at Adult Emergency Department of Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia: a prospective hospital based study. *BMC emergency medicine*. 2015;15: 10. **PubMed** | **Google Scholar**
12. Organization WH. Global status report on road safety: time for action. World Health Organization. 2009. **Google Scholar**
13. Shah Ta. Prevalence Of Road Traffic Accidents; Admitted In One Surgical Ward At Allied Hospital Faisalabad During One Year. *Professional Medical Journal*. 2016;23(4): 378-382. **Google Scholar**
14. Woldemichael K, Berhanu. Magnitude and pattern of injury in jimma university specialized hospital, South West Ethiopia. *Ethiopian journal of health sciences*. 2011 Nov;21(3): 155-65. **PubMed** | **Google Scholar**
15. Seidenberg P, Cerwensky K, Brown RO, Hammond E, Mofu Y, Lungu J *et al*. Epidemiology of injuries, outcomes, and hospital resource utilisation at a tertiary teaching hospital in Lusaka, Zambia. *African Journal of Emergency Medicine*. 2014;4(3): 115-22. **Google Scholar**
16. Jobin PD. Analysis of road traffic accident hotspots along Zaria-kaduna expressway, kaduna state. Nigeria. 2015.
17. Mansuri FA, Al-Zalabani AH, Zalat MM, Qabshawi RI. Road safety and road traffic accidents in Saudi Arabia. A systematic review of existing evidence. *Saudi medical journal*. 2015;36(4): 418-24. **PubMed** | **Google Scholar**
18. Mohan VR, Sarkar R, Abraham VJ, Balraj V, Naumova EN. Differential patterns, trends and hotspots of road traffic injuries on different road networks in Vellore district, southern India. *Tropical Medicine & International Health*. 2015;20(3): 293-303. **PubMed** | **Google Scholar**
19. Belachew M, Zeleke D. Statistical analysis of road traffic car accident in Dire Dawa Administrative City, Eastern Ethiopia. *Science Journal of Applied Mathematics and Statistics*. 2015;3(6): 250-6. **Google Scholar**
20. Boniface R, Museru L, Kiloloma O, Munthali V. Factors associated with road traffic injuries in Tanzania. *Pan African medical journal*. 2016 Feb 19;23: 46. **PubMed** | **Google Scholar**
21. Ghaffar U, Ahmed S. A review of road traffic accidents in Saudi Arabia: the neglected epidemic. *Indian journal of forensic and community medicine*. 2015;2(4): 242. **Google Scholar**
22. Wiebe DJ, Ray S, Maswabi T, Kgathi C, Branas CC. Economic development and road traffic fatalities in two neighbouring African nations. *African journal of emergency medicine*. 2016;6(2): 80-6. **PubMed** | **Google Scholar**
23. Asefa F, Assefa D, Tesfaye G. Magnitude of, trends in, and associated factors of road traffic collision in central Ethiopia. *BMC public health*. 2014;14: 1072. **PubMed** | **Google Scholar**
24. Akway M Chama AL, Riing Y Chanc, Angelo L Jockmetc, Asmaa S Korokonc, Malong A Aguerc, John L. Otwaric Causes of road traffic accidents in Juba. *South sudan medical journal*. 2017;10(7). **Google Scholar**
25. Osoro Mogaka , Ng'ang'a Zipporah, OJ, OJ, LE. Factors associated with severity of road traffic injuries, Thika, Kenya. *PanAfrica Medical Journal*. 2011. **Google Scholar**
26. Bewket Tadesse Tiruneh AD, and Berhanu BB. Incidence of Road Traffic Injury and Associated Factors among Patients Visiting the Emergency Department of Tikur Anbessa Specialized Teaching Hospital, Addis Ababa, Ethiopia. *Hindawi Publishing Corporation*. 2014;2014. **Google Scholar**

Table 1: socio demographic characteristics of study subjects

Variable		Frequency(n=307)	Percent (%)
Sex	Males	177	57.7
	Females	130	42.3
Age	Less than 10years	16	5.2
	10-19 years	47	15.3
	20-29years	124	40.4
	30-39years	59	19.2
	40-49years	35	11.4
	50 and above years	26	8.5
Ethnicity	Amhara	300	97.7
	Tigre	7	2.3
Religion	Christian	287	93.5
	Muslim	20	6.5
Occupation	farmer	81	26.4
	student	96	31.27
	merchant	40	13.02
	Daily laborer	42	13.68
	Governmental employee	37	12.05
	driver	5	1.62
	none	6	1.95
Marital status	Married	168	54.7
	Unmarried	116	37.8
	Widowed	4	1.3
	Divorce	2	0.7
	Not applicable	17	5.5

Table 2: frequency distribution of car accident by age, sex, religion, ethnicity and residence from October to March 2016/2017

Variables	Frequency(n=103)	Percent (%)
Age		
< 10 years	6	5.83
10-19years	17	16.5
20-29years	34	33.01
30-39 years	27	26.2
40-49 years	8	7.77
≥ 50years	11	10.7
Sex		
Males	74	71.85
Females	29	28.15
Religion		
Orthodox Christian	94	91.3
Muslim	9	8.7
Ethnicity		
Amhara	100	97.1
Tigre	3	2.9
Residence		
Urban	56	54.4
Rural	47	45.6

Table 3: outcome of the road traffic accident by body parts injured, nature of the injury and GCS score of the victims

variables	Frequency	Per cent (%)
Conditions of victims after a car accident		
Immediately died	20	19.4
Died after surgical intervention	12	11.7
Died on arrival	8	7.8
Discharge after surgical intervention with or without disability	58	56.3
The result not known	5	4.9
Glasgow coma scale		
12-12	12	11.7
13-15	21	20.4
3-8	13	12.6
Not determined	57	55.3
Injured body parts /nature of the injury		
Head injury	26	25.2
Bone fracture	15	14.6
Abdominal injury	2	1.9
Chest injury	3	2.9
Multiple injuries	21	20.4
Soft tissue injury	36	35

Table 4: bivariate and multivariate analysis for factors associated with road traffic accident among traumatized patients at University of Gondar Comprehensive Teaching and Referral Hospital, Northwest Ethiopia, 2017

Variable		Road traffic accident		Crude OR(95% CI)	Adjusted OR(95%CI)
		No (%)	Yes (%)		
Age in years	<10	10(3.3)	6(2.0%)	0.82[0.228, 2.933]	0.03 [0.001, 0.905]*
	10-19	30(9.8%)	17(5.5%)	0.77[0.290, 2.058]	0.85 [0.173, 4.213]
	20-29	90(29.3%)	34(11.1%)	0.52[0.215,1.233]	0.51 [0.137, 1.864]
	30-39	32(10.4%)	27(8.8%)	1.15[0.453,2.920]	0.76 [0.211,2.753]**
	40-49	27(8.8%)	8(2.6%)	0.40[0.133,1.224]	0.726[0.064 1.048]
	>=50	15(4.9%)	11(3.6%)	1	1
sex	Male	164(53.4%)	74(24.1%)	0.62[0.359,1.080]	0.81 [0.401, 1.623]
	Female	40(13.0%)	29(9.4%)	1	1
Marital status	Married	102(33.2%)	66(21.5%)	0.92 [0.335,2.549]	0.71 [0.039, 13.001]
	Un married	89(29.0%)	27(8.8%)	0.43 [0.151,1.248]	0.12 [0.007, 2.127]
	widowed	2(0.7%)	2(0.7%)	1.43 [0.161,12.701]	0.64 [0.018, 22.975]
	Divorced	1(0.3%)	1(0.3%)	1.43 [0.076,26.895]	0.31 [0.003, 29.817]
	Not applicable	10(3.3%)	7(2.3%)	1	1
Occupation	Farmer	65(21.2%)	16(5.2%)	0.79 [0.321, 1.930]	0.46 [0.136, 1.549]
	Merchant	23(7.5%)	17(5.5%)	2.37 [0.917, 6.099]	1.99 [0.595, 6.688]
	Student	65(21.2%)	31(10.1%)	1.53 [0.666, 3.496]	0.24 [0.870, 12.047]
	Governmental Employ	15(4.9%)	22(7.2%)	4.69 [1.785, 12.342]**	2.41 [0.534, 10.857]
	Others	4(1.3%)	7(2.3%)	5.60 [1.355, 23.143]**	13.71 [2.073, 92.243]*
	Drivers	32(10.4%)	10(3.3%)	1	1
Educational status	Unable to read and write	9(2.9%)	6(2.0%)	0.58 [0.183,1.842]	2.12 [0.342, 13.165]
	Able to read and write	103(33.6%)	44(14.3%)	0.37 [0.199,0.695]**	1.08 [0.363, 3.184]
	Secondary school	65(21.2%)	22(7.2%)	0.30 [0.145, 0.595]**	0.56 [0.190,1.638]
	Certificate and above	27(8.8%)	31(10.1%)	1	1
Residence	Rural	130(42.3%)	47(15.3%)	0.48 [0.295, 0.773]**	0.56 [0.285, 1.117]
	Urban	74(24.1%)	56(18.2%)	1	1
Month of the year	October	48(15.6%)	28(9.1%)	0.58 [0.231, 1.475]	0.39 [0.125, 1.199]
	November	38(12.4%)	19(6.2%)	0.50 [0.189, 1.415]	0.57 [0.177, 1.842]
	December	55(17.9%)	10(6.2%)	0.18 [0.064, 0.518]**	0.12 [0.035, 0.442]*
	January	34(11.1%)	18(5.9%)	0.53 [0.198, 1.415]	0.39 [0.119, 1.298]
	February	17(5.5%)	16(5.2%)	0.94 [0.329, 2.694]	1.02 [0.274, 3.284]
	March	12(3.9%)	12(3.9%)	1	1
Time of the day	Night	97(31.6%)	22(7.2%)	0.29 [0.161, 0.517]**	0.22 [0.108, 0.459]**
	Morning	37(12.1%)	26(8.5%)	0.49[0.484, 1.652]	0.71 [0.334, 1.509]
	Afternoon	70(22.8%)	55(17.9%)	1	1

N. B:-others: Daily laborer, Shepard



Figure 1: monthly occurrence of Road traffic accident

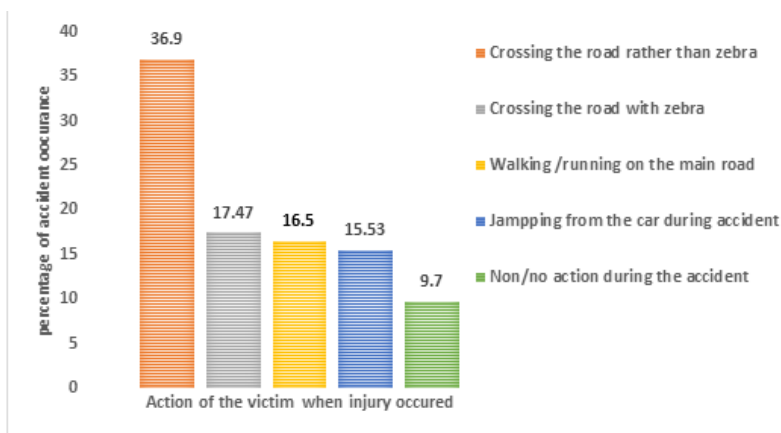


Figure 2: action of victims when accident occurred