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Factors Associated with Outcome of Road Traffic Accident Among Patients Visited Tgsh Emergency Department, Bahirdar, Ethiopia, 2015 E.C: Cross-Sectional Study

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**BAHIR DAR UNIVERSITY COLLEGE OF MEDICINE AND
HEALTH SCIENCE**

**FACTORS ASSOCIATED WITH OUTCOME OF ROAD
TRAFIC ACCIDENT AMONG PATIENTS VISITED
TGSH EMERGENCY DEPARTMENT, BAHIRDAR,
ETHIOPIA, 2015 E.C: CROSS-SECTIONAL STUDY.**

BY: MEHARI GEREMEW MENGSTE (M.D. SURGERY 4th YEAR RESIDENT)

**THESIS RESULT TO BE SUBMITTED TO BAHIR DAR UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCE DEPARTMENT OF
SURGERY FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
SPECIALTY CERTIFICATE IN SURGERY.**

November, 2022

BAHIR DAR, ETHIOPIA

**BAHIR DAR UNIVERSITY COLLEGE OF MEDICINE AND
HEALTH SCIENCES SCHOOL OF MEDICINE**

**FACTORS ASSOCIATED WITH OUTCOME OF ROAD TRAFIC
ACCIDENT AMONG PATINTS VISTED TGSH EMERGENCY
DEPARTMENT, BAHIRDAR, ETHIOPIA, 2022 G.C: CROSS-
SECTIONAL STUDY.**

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Declaration


This is to certify that the thesis entitled Factor associated with outcome of Road Traffic Accident among Patient Visited Tibebe Gion specialized hospital, Bahir Dar, Ethiopia: cross-sectional study, submitted in partial fulfillment of the requirements for specialty certificate in Surgery Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during the course of this investigation have been duly acknowledged.


<u>Dr Mehari Geremew</u>	<u>12/11/2022</u>	<u>Bahirdar,Ethiopia</u>
Name of the candidate	Date	Place

Approval of Dissertation for Defense


I hereby certify that I have supervised, read, and evaluated this thesis titled "Factors Associated With Outcome Of Road traffic Accident Among Patients visited TGSH Emergency Department, Bahirdar, Ethiopia, 2022 E.C: Cross-Sectional Study." by Dr. Mehari Geremew Mengste prepared under my guidance. I recommend the proposal be submitted for oral defense.

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ABSTRACT

Introduction:

Globally Road traffic injuries are the leading cause of death for children and young adults costing most countries 3% of their gross domestic product. Ethiopia has high burden of road traffic accidents compared to other African countries. Amhara region share the highest and majority Road Traffic Accident deaths occur in urban areas, RTA still an under-reported and neglected area to be studied and solutions to be obtained promptly.

In Ethiopia, and Amhara region Tibebe Ghion specialized Hospital in particular have no data showing the pattern of the injury among road traffic trauma victims and determinant of management outcome. Previous studies largely addressed the mechanism of road traffic accidents and very limited hospital based studies of road traffic accident-related injuries detecting clinical outcomes and predict why the casualties die beyond the seriousness of the actual injury.

Objective: To assess the pattern of injury and factors associated with outcome of RTA among patients visited TGS in Bahir Dar, Ethiopia.

Methods: A cross sectional study was conducted at TGS in Bahir Dar, Ethiopia. The sample size was 268 cases who sustained RTA and visited TGS ER in time period from January 1, 2022 to June 31, 2022. Checklist used to retrieve information from the patient medical document. The collected data was cleaned, and entered into Epidata and then exported in to SPSS 25 for analysis and bivariate analysis was computed. Variable who had P value < 0.25 were included in multivariate analysis.

Result: Out of 380 Road traffic trauma patients a total of 268 of road traffic accident victims were enrolled in this study. Men comprised of 207(77.2 %) and women 61(22.8 %). The modal age group 75.7% was 19–45 years. Majority had head injury 110(41%) followed by extremity fractures and soft tissue injuries 81(30.2%). Two hundred twenty eight (85.1 %) were discharged improved, 22(8.2%) discharged with permanent disability and 18(6.7%) died. Using multivariable Binomial logistic regression model initial GCS [AOR 0.072(0.01-0.523)], how patient is managed [AOR 19.036(3.555-101.938)], initial hemoglobin level [AOR 0.027(0.002-0.349)] and complication [AOR 0.054(0.013-0.224)] were found to be significantly associated with outcome of RTA at 5% level of significance.

Conclusion: The study included 268 RTA victims. The study revealed 6.7% and 8.2% of patients has outcome of death and permanent disability. Initial Glass coma scale, initial hemoglobin level, how patient managed and presence of complications were statistically significant factors that increase the poor outcome of RTA victims.

Key words: Road traffic accident, Pattern of injury, Complications

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Acronyms

ED	Emergency Department
TGSH	Tibebe Ghion Specialized Hospital
RTI	Road Traffic Incident
RTA	Road Traffic Accident
WHO	World Health Organization
BIGRS	Bloomberg Initiative for Global Road Safety
GCS	Glass coma Scale

1 Introduction

1.1 Background

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) .

Globally Road traffic injuries are the leading cause of death for children and young adults aged 5-29 years. Every year approximately 1.3 million people die as a result of a road traffic accidents costing most countries 3% of their gross domestic product (2).

It causes considerable economic losses to individuals, their families, and to nations as a whole. More than 90% of road traffic deaths occur in low- and middle-income countries even these countries have less than half of the world's registered vehicles. Road traffic injury death rates are highest in the African region(2).

From a young age, males are more likely to be involved in road traffic crashes than female. Speeding, alcohol and other psychoactive substances influence, unsafe road infrastructure, inadequate law enforcement of traffic laws, unsafe vehicles increase its incidence (2).

Despite, implementing different strategies by United Nations General Assembly (A/RES/74/299), WHO, Bloomberg Initiative for Global Road Safety (BIGRS) and Nations of the world towards the above mentioned risk of Road Traffic Incident (RTI), road traffic accident is still continuing as one of the major public health concern and estimated to be one of leading cause of death in the year 2030(2,3).

A significant proportion of road traffic accident victims sustain permanent disability, like amputation, head injury or spinal cord injury but data about this patients is not well documented in developing countries like Ethiopia(4).

1.2 Statement of the problem

Recent different literatures showed that road traffic accidents are expected to have moved from ninth to third place in the world ranking of the burden of disease. World Health Organization report indicates that the road traffic accident is the leading cause of death among people aged 5–44 which has a greater impact on the global economy and health of the population(5).

In the developing world, the improved life expectancy together with industrialization and urbanization are putting heavy pressure on the transport system and road traffic accidents in particular(6).

Ethiopia has high burden of road traffic accidents compared to other African countries. According to the National Road Traffic Office data, 18,309 road traffic injuries occurred in Ethiopia in 2015-2016 showing as major public health problem. But it is challenging to accurately estimate the public health burden and causes of road traffic crash in Ethiopia and other sub-Saharan African countries(7).

According to WHO report Ethiopia considered as the worst in the world where RTA kills nearly 2000 people yearly costing the country over 400 to 500 million ETB. Another report from 2020 WHO Deaths in Ethiopia reached 31,564 or 5.60% of total deaths. The age adjusted Death Rate is 42.41 per 100,000 of population ranks Ethiopia #19 in the world (8,9). Amhara region share the highest (27.3%) in the year of 2008-2009 and majority RTA deaths occur in urban areas: Gondar, Bahir Dar and Dessie accounted for a percentage of 86.3, 54.8 and 48.5 respectively. Even though the challenges are increasing, RTA in developing countries including Ethiopia is still an under-reported and neglected area to be studied and solutions to be obtained promptly(9).

Although there has been no recent clear picture of road traffic accident-related deaths and disability, it is believed that Amhara region also shares its significant burden of the problem. Beyond the actual seriousness of injuries sustained in road traffic accidents, numerous factors could determine a post-crash fate of casualties. Delay in detecting crash and presentation ; difficulty in rescuing and extracting people from vehicles, unprofessional manner of transportation of those injured to a health facility; lack of appropriate pre-hospital care are among crucial determinants of death and survival(4)

1.3 Significance of the study

In Ethiopia, and Amhara region Tibebe Ghion specialized Hospital in particular have no data showing the pattern of the injury among road traffic trauma victims and determinant of management outcome. Previous studies have largely addressed the mechanics of road traffic accidents. There have been very limited hospital based studies of road traffic accident-related injuries detecting clinical outcomes and predict why the casualties die beyond the seriousness of the actual injury. Therefore, it is with this in mind that this research has motivated to assess road traffic accident patterns, related injury characteristics, severity and determinant of outcome of RTA victim management in Tibebe Ghion specialized hospital Ethiopia.

The study help health care providers emphasize on most determinant factor of RTA outcome and the hospital as an institution and Amhara Health beuro to focus on capacity building among health care provider and to organize emergency department capacity.

2 Literature review

On the study conducted in India, western Maharashtra to determine the Pattern of injury in fatal road traffic accidents most commonly affected age group was 20-39 years, men, pedestrian and two wheeler vehicle users. Majority (64.28%) victims either died on the scene or during transportation and pattern of Injury includes skeletal injuries and internal organ injuries indicating the poly trauma nature of injuries. Most common cause of death(46.93%) was head injury (10).

Literature review conducted in Iran to study Epidemiological Patterns of Road Traffic Crashes for two Decades (1996 to 2014) which comprised of 95 articles. The review found most of the victims are males, young aged and most prevalent causes of death are head injuries and the majority of deaths occur prior to hospitalization. Increased mortality is shown among those accident occur in summer, during midnight among all age groups(11).

Another study from Rural Teaching Institution of Karachi to asses Pattern of Injuries from Road Traffic Accidents shows majority of patients had lower limb injuries (44.7%), followed by head and neck injuries (27.8%), multiple injuries (16.1%), upper limb injuries (5.7%), abdominoperineal injuries (5%), and chest injuries (0.8%). (12).

According to a study conducted in Tanzania to assess factors associated with road traffic accident showed majority are motor vehicle accidents and needed admission. Factors associated with increased mortality was using police vehicle to hospital, receiving medical attention within 2-10 hour after the injury and not using head helmet(13).

According to a cross sectional study conducted Tirunesh Beijing Hospital, Addis Ababa, Ethiopia Injury severity level and associated factors among road traffic accident victims attending emergency department found that male, unmarried and “can read and write” educational status group and delayed presentation have a statistically significant association with multiple injury and sever injuries (14)

A prospective hospital based study undertaken at Tikur Anbessa, Ethiopia adult emergency to assess injury characteristics and outcome of road traffic accident showed majority victims has injury to Head (50.4%) and musculoskeletal (extremities) (47.0%) and overall length of hospital stay (LOS) ranged from 1 day to 61 days mortality rate 7.4%. systolic blood pressure on admission Glasgow coma scale were statistically significant predictors of fatalities among the victims (4).

A recent Hospital based retrospective cross sectional study conducted to assess clinical pattern and management outcomes among road traffic accident victims at Jimma University Medical Center Emergency Department , mechanism of injury ,time elapsed to reach nearby health facility, time of the day, condition of patient at ED, GCS at admission and days spent in hospital were independent predictors of unfavorable outcome(15).

Another recent (2019) study hospital-based prospective study conducted in five zonal hospitals in west Ethiopia and Wolayta Sodo southern Ethiopia showed significant proportion have sustained multiple injuries and permanent disabilities. A longer distance from receiving hospital, singleness in the number of injury, lack of receiving pre-hospital care, lack of first aid help presence of co-morbid condition and severity of the injury had statistical associations with increased number of death(16,17).

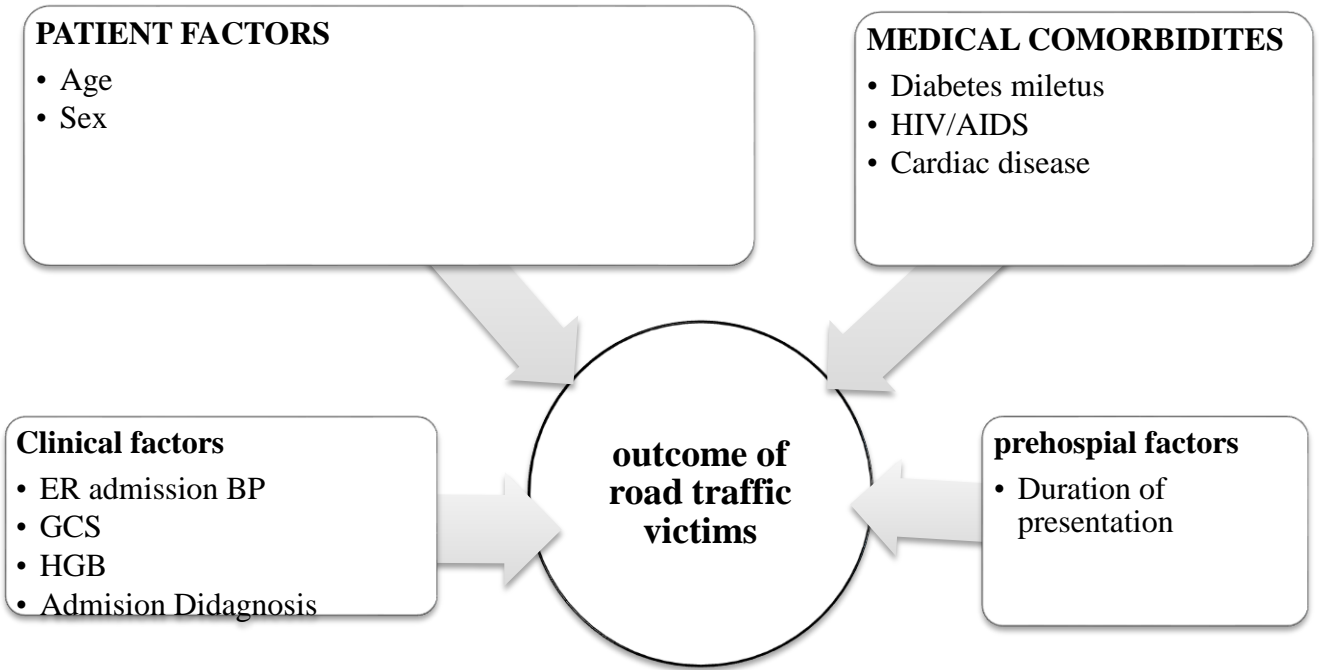


Figure 1: Conceptual frame work

3 Objective of the Study

3.1 General objective

- To assess the pattern of injury and Factors associated with outcome of RTA among patients visited TGSHE emergency Department, Bahirdar, Ethiopia.

3.2 Specific objectives

- To assess pattern of injury Among RTA victims
- To identify and determine factors that affect the outcome of RTA

4 Methods & Materials

4.1 Study design

A cross sectional study conducted at Tibebe Ghion Specialized Hospital in Bahir Dar, Ethiopia.

4.2 Study area and period

The study conducted from January 1, 2022 to June 31, 2022 in Bahir Dar city at Tibebe Ghion specialized hospital (TGSH). Bahir Dar is the capital city of Amhara National Regional State, located 565 km Northwest of Addis Ababa with estimated population of 168,899 as per 2021 world population review. TGSH is a Tertiary governmental hospital in the town with an estimated catchment population of seven million. TGSH is a teaching hospital of Bahir Dar University located in ‘Sebatamit’ 7 km to the south of Bahir Dar. The hospital started its activity in November, 2018 G.C and is working in different departments of which Surgery and Orthopedic as two separate department. There are seven wards and 8 OPDs in the department under surgery and Orthopedic Department. Ward has 99 beds. Regarding to the human power, there are 17 General Surgeon, 2 Urosurgeon, 2 Pediatric Surgeon, one GI, Head and Neck, Hepatopancreaticobiliary Surgeon each, 53 Residents, 20 interns in each group, and 23 Nurses.

4.3 Source population

Patients who visited TGSH Emergency Department (ER) after sustaining Road traffic accident (RTA) were the source population.

4.4 Study population

Patients who sustained RTA and visited ER in the time period from January, 2022 to June 31, 2022 were the study population.

4.5 Sample size

Sample size calculated using a single population formula with the assumption of 95% level of confidence and 5% margin of error. And using the rate of RTA outcome at black lion specialized hospital, Ethiopia, which is death, permanent disability and discharged improved with the rate of 7.4 % (P=0.074), 6.1 % (P=0.061) and 77.5 % (0.775) respectively.

$$n = \frac{(Z\alpha/2)^2 * P (1 - P)}{d^2}$$

By using the above formula: when $(Z\alpha/2)$ is 1.96, $d = 0.05$ and $P = 0.775$ the sample size (n) is 268.

4.6 Sampling procedure

From the ER registration logbook all the study populations were listed according to their order by date and time. Then Simple random sampling method used.

4.7 Variables of the study

4.7.1 Dependent variable: outcome of patient who sustained RTA.

4.7.2 Independent variable

- ✓ Age
- ✓ Duration of presentation
- ✓ ER blood pressure
- ✓ Initial Glass Coma Scale
- ✓ Medical Comorbidity
- ✓ Admission Diagnosis
- ✓ Preoperative Hemoglobin
- ✓ Length of hospital stay
- ✓ Complication

4.8 Operational definitions

- ✓ **Permanent disability:** - a patient who is discharged with neurologic weakness, unable to communicate, amputation, incontinence
- ✓ **Multiple injuries:** – a patient who sustained injuries in more than one site of the following(Head, Neck, Chest, Abdomen & pelvis and Extremity)
- ✓ **Complications:-** Occurrence of either of the following problems with the operational definition will be taken as complications

- Infection :- : a patient with a diagnosis of one of the following: surgical site infection(SSI), urinary tract infection(UTI) or respiratory tract infection(RTI)
- Failed conservative management :- a patient for whom conservative(non-surgical) management decided and later with follow-up and monitoring decision changed to surgical
- ✓ **Medical comorbidity:** patient who had a diagnosis of diabetes mellitus, HIV/AIDS, known hypertensive, cardiac disease or obesity
- ✓ **Poor outcome:** patients who discharged with permanent disability as described above and died.
- ✓ **Improved outcome:** patients who is Discharged without permanent disability and with verbal advice, PO medication or Appointment.
- ✓ **Death:** Patient whom declared dead by treating team during the course of treatment while in hospital and after Six hours arrival to Emergency Department.

4.9 Inclusion & exclusion criteria

- **Inclusion criteria:** Patients who sustained RTA and visited TGSH ER in the study period and whose document are retrieved from the archive.
- **Exclusion criteria:** Patients who sustained RTA and visited TGSH ER and Surgically managed at other hospitals and referred for any of the perioperative complications and those cases with missed data on complication variables (age, ER BP, Duration of presentation, Diagnosis , Perioperative hemoglobin) are excluded from the study unit.

4.10 Data collection, processing and analysis

Data collected by a well-designed checklist containing the important prehospital presentation, hospital data and outcome treatment.

Data collected by interns and residents working under Surgery department after training them and supervised by senior resident. For this a four hours training in one day given about the objective of the research, how to use the checklist and how to review the patient chart.

Data then entered into Epidata, data packager tool, and then transferred to SPSS version 25 to get the descriptive figures on major variables. Bivariate analysis was computed.

Variable who had P value < 0.25 were included in multivariate analysis. And then the degree of association between the dependent and independent variables assessed by multivariate Binary logistic regression with 95% confidence interval.

4.11 Data quality control

Prior to data collection, the check list tested to check the consistency of the checklist format and the ability of the data collector's performance. Pre-test conducted on 10 cases then the checklist modified based on the pretest results.

One day training and orientation on how to carry out data collection; how to use the checklist; how to review the patient chart and quality control given for the data collectors. -

The final checklist checked by data collectors & supervisors on daily basis for completeness, accuracy, validity and consistency of data. In addition the recorded data reviewed daily for readability, odd indicators and data reliability. Finally, identified problems and errors corrected daily before patient chart returned back to the archive.

4.12 Ethical consideration & consent

Ethical approval received from the institutional review board of college of medicine and health sciences, Bahir Dar University. Permission letter to access charts of patients for retrieving data and to conduct the study obtained from TGSH hospital office of medical director and head of department of Surgery.

Since the study was a retrospective chart review, informed consent from patients not applicable. However, use of the patient chart not result in any damage or distress; personal identifiers not included in the check list; confidentiality maintained when handling each case files; all the information retrieved kept in the way that not affect personal privacy and confidentiality. And finally all charts returned back to their original place.

4.13 Dissemination of the result

Research result submitted to TGSCHE, Bahir Dar University College of medicine and health science and to the regional health bureau. And possible options will be tried for scientific publication of the research.

5 Result

Socio- Demographic Characteristics

Out of 380 Road traffic trauma patients who visited Emergency Department of Tibebe Gion specialized hospital between January 1 and June 31, 2022, a total of 268 of road traffic accident victims were enrolled in this study. The study participants comprised of 207(77.2 %) men and 61(22.8 %) women, resulting in a male to female ratio of 3.4:1. The patients' ages ranged from 1 to 85 years with the mean and standard deviations of 31.77 and ± 13.98 years respectively. The median and the mode were 30 and 35 years respectively. The modal age group was 19–45 years, accounting for 204 (75.7%) patients.

Table 1: Socio-demographic characteristics of road traffic accident victims at Tibebe Gion specialized hospital between January and June 31, 2022

Variable		Frequency	Percentage
Sex	Male	207	77.2
	Female	61	22.8
Age	Pediatric (-18yr)	27	10.1
	Adult (18 – 45yr)	203	75.7
	Old (above 45yr)	38	14.2

Clinical characteristics of RTA victims at admission Emergency Department

About 52(19.4%) of the respondents come to the hospital within the first 1 hours of the accident while 179 (66.8%) and 37(13.8%) come to the hospital within 24

hours and after 24 hours respectively. During presentation to the emergency department 2045(91.4%) and 221(82.5%) have normal blood pressure Glass coma scale correspondingly the remaining 16(6%), 7(2.6%) came with their blood pressure <90mmHg and Unrecordable. 29(10.8%) and 18(6.7%) RTA patients came with their GCS 9-13 and <8 respectively.

From initial Laboratory analysis of CBC test their hemoglobin level were 224(83.6) had >11g/dl, 33(12.3%) were 7.1-11g/dl and 11(4.1%) had hemoglobin level less or equal 7g/dl. The mean hemoglobin level 13.37g/dl with standard deviation \pm 2.52 7g/dl. Both the median and mode were 14g/dl ranges from 5-28g/dl. Only two patients found to have comorbidity (DM).

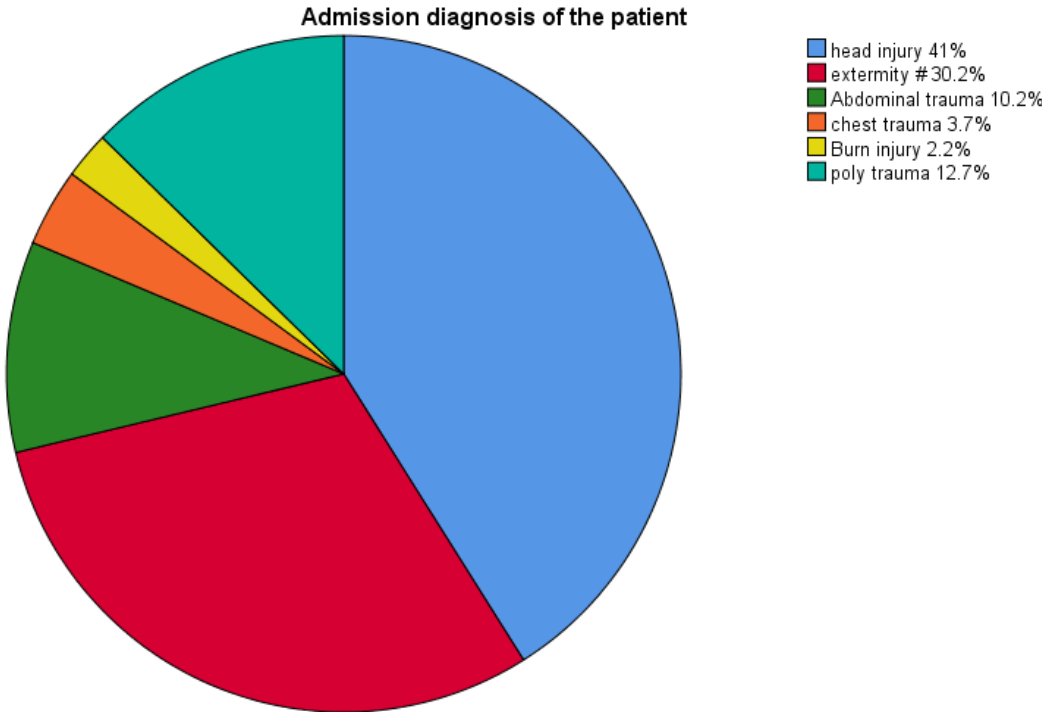
Table 2: Clinical characteristics of RTA victims during admission at Tibebe Gion specialized hospital between January and June 31, 2022

Variable	Category	Frequency	Percentage
Duration of presentation	With one hour	52	19.4
	Above 1hour but within 24 hour	179	66.8
	Beyond 24hr	37	13.8
Initial blood pressure	Unrecordable	7	2.6
	<90mmhg	16	6
	Normal	245	91.4
Initial Glass coma scale	<=8	18	6.7
	9-13	29	10.8
	14-15	221	82.5
Initial Hemoglobin	<=7g/dl	11	4.1
	7.1-11g/dl	33	12.3
	>11g/dl	224	83.6

Medical comorbidity	Yes	2	99.3
	No	266	0.7

Among the respondents admitted or kept at emergency frequently diagnosis were head injury 110(41%) and extremity fractures and soft tissue injuries 81(30.2%). For the remaining RTA Victims, involves abdomen, chest, Burn injuries, and multiple injuries 27 (10.2%), 10 (3.7%), 6 (2,2%), and 34 (12.7%), of the victims correspondingly.

Figure 2: Admission diagnosis of the RTA victims during admission at Tibebe Gion specialized hospital between January and June 31, 2022



Treatment and Outcomes of road traffic accident victims at Tibebe Gion specialized hospital

Treatment of RTA victims includes 154(57.5%) managed conservatively and 114(42.5) managed surgically with the most common procedure being orthopedics

accounting 63(53.3%) out of surgically managed patients. the remaining includes neurosurgical procedure, abdominal, chest and head & neck procedure 19(16.7)7(6.1%), 16(14%) and 9(7.9%) respectively.

Of the total RTA victims, about 228 (85.1 %) were discharged with improving, 22(8.2%) and 18(6.7%) discharged with permanent disability and died respectively

For the purpose of this study outcome is categorized into poor outcome (died and disability) 14.9% and discharged improve.

The most complication seen in the study following the RTA is infection &DVT which account 40(14.9%) and failed conservative management 19(7.1%).

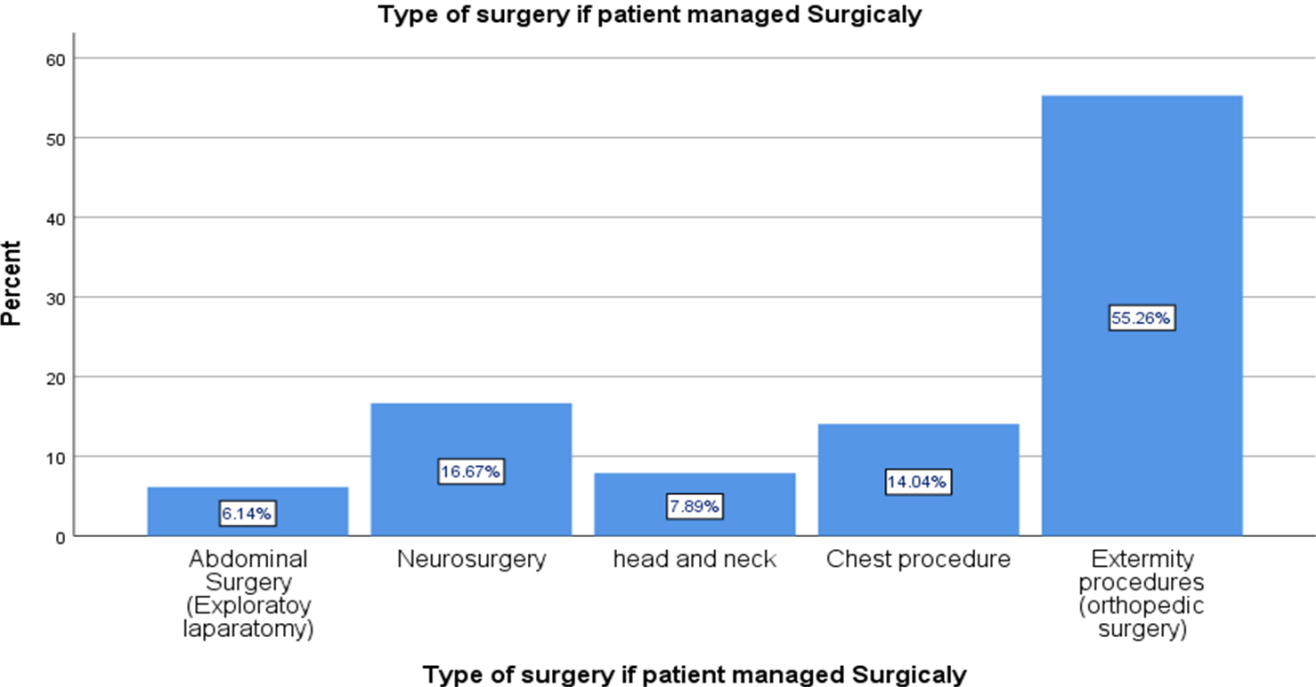
21(7.8%) RTA victims were transfused with cross matched blood with range of 1-6 unit and mean 3unit of blood. The average length of hospital stay 7.18 days with standard deviation \pm , range 1-47 days ,median and mode were 3 and 1 days respectively. But majority 132(49.3%) stay 2-7 days and 72(27.2%), 63(23.5%) stayed above one week and only a day correspondingly.

Table 3: Treatment and outcome characteristics of RTA victims during admission at Tibebe Gion specialized hospital between January and June 31, 2022

Variable	Category	Frequency	Percentage
how patient is managed	Conservative	154	57.5
	Surgically	114	42.5
Length of hospital stay	<=1	63	23.5
	2-7	132	49.3
	>=8	72	27.2
Need blood transfusion	Yes	21	7.8

	No	247	92.2
Complication	Infection, DVT	40	14.9
	Failed conservative management, Deteriorates	19	7.1
	No	209	78
Outcome during Discharge	Improved discharged	228	85.1
	Disability	22	8.2
	Death	18	6.7

Figure 3: Type of procedure performed among surgically managed RTA victims during admission at Tibebe Gion specialized hospital between January and June 31, 2022



Factors associated with the outcome of RTA

Bivariate analysis at 25% level of significance was run to select variables to be fit into the multivariable Binomial logistic regression model and from which sex, age, initial blood pressure, initial GCS, Admission Diagnosis, initial hemoglobin level, how patient is managed, length of hospital stay and complication were found to be significantly associated with outcome of RTA. However, on multivariable Binomial logistic regression model, after adjusting for other covariates GCS, initial hemoglobin level, how patient is managed and complication were found to have a statistically significant relationship with the outcome of RTA at 5% level of significance.

Accordingly patients with GCS of 14-15 were 0.072(92.8%) times less likely to develop poor outcome compared to patients with GCS ≤ 8 [AOR 0.072(0.01-0.523)]. Patients with initial hemoglobin level $>11\text{g/dl}$ were 0.027 times less likely to have poor outcome compared with those with hemoglobin with $\leq 7\text{g/dl}$ [AOR 0.027(0.002-0.349)]. Patients managed conservatively were 19.036 times more likely to develop poor outcome compared to those patient managed conservatively [AOR 19.036(3.555-101.938)]. Patient who had no complication during treatment course compared to those had complications had 0.054 less likely to have poor outcome [AOR 0.054(0.013-0.224)].

Table 4: Bivariate and multivariate analysis to identify factors associated to RTA outcome among RTA patients visited Tibebe Gion specialized hospital between January and June 31, 2022

Variable		Poor outcome	Improved outcome	COR (95%CI)	AOR((95%CI)	P-value
sex	Male	35(16.9%)	172(83.1%)	0.439(0.164-1.174)	4.527(0.431-0.47494)	0.208
	Female	5(8.2%)	56(91.8%)	1	1	
Age	1-18year	1(3.7%)	26(96.3%)	0.17(0.02-1.476)	0.171(0.07-4.032)	0.273
	19-45 years	32(15.8%)	171(84.2%)	0.829(0.336-2.044)	3.808(0.668-21.794)	0.133
	>45years	7(18.4%)	31(81.6%0	1	1	
Initial blood	Unrecordable	5(71.4%)	2(28.6%)	1	1	
	<90mmhg	8(50%)	8(50%)	0.4(0.59-2.702)	21.434(0.181-	0.208

pressure					2535.938)	
	Normal	27(11%)	218(89%)	0.05(0.009-0.268)	8.935(0.05-702.952)	0.465
Initial Glass coma scale	<=8	15(83.3%)	3(16.7%)	1		
	9-13	9(31%)	20(69%)	0.09(0.021-0.391)	0.404(0.047-3.49)	0.41
	14-15	16(72%)	205(92.8%)	0.016(0.04-0.6)	0.072(0.01-0.523)	0.009*
Initial Hemoglobin	<=7g/dl	8(72.7%)	3(27.3%)	1	1	
	7.1-11g/dl	9(27.3%)	24(72.7%)	0.141(0.03-0.651)	0.485(0.039-6.036)	0.573
	>11g/dl	23(10.3%)	201(89.7%)	0.043(0.011-0.173)	0.027(0.002-0.349)	0.006*
Diagnosis	Head injury	25(22.7%)	85(77.3%)	1		
	Extremity fracture and soft tissue injury	2(2.5%)	79(97.5%)	0.86(0.02-0.375)	0.24(0.03-1.937)	0.18
	Abdominal trauma	2(7.4%)	25(92.6%)	0.272(0.06-1.228)	0.016(0.0-1.567)	0.077
	Burn injury	3(50%)	3(50%)	3.4(0.646-17.9)	2.792(0.207-37.65)	0.439
	Multiple injuries	8(23.5%)	26(76.5%)	1.046(0.421-2.597)	0.275(0.023-3.33)	0.311
how patient is managed	Conservative	29(18.8%)	125(81.2%)	2.172(1.035-4.56)	19.036(3.555-101.938)	0.01*
	Surgically	11(9.6%)	103(90.4%)	1	1	
Length of hospital stay	<=1	8(12.7%)	55(87.3%)	0.5186(0.205-1.308)	0.171(0.013-2.214)	0.117
	2-7	16(12.1%)	116(87.9%)	0.142(0.58-0.47)	0.332(0.058-1.89)	0.214
	>=8	16(21.9%)	57(78.1%)	1	1	
Complication	Infection, DVT	12(30%)	28(70%)	1	1	
	Failed conservative management, Deteriorates	16(84.2%)	3(15.8%)	12.444(3.049-50.788)	2.87(0.33-24.929)	0.339
	No	12(5.7%)	197(94.3%)	0.142(0.58-0.347)	0.054(0.013-0.224)	0.00*

6 Discussion

Road Traffic Collisions have become a major public health and economic problem worldwide. This study mainly focused on pattern of injury and factors that affect outcome of patients who sustained road traffic accidents.

Concerning age distribution of the victims, most (75.7%) were in their economically productive age group (19-45years) which is in line with the finding at Trinesh Bejing hospital, Jimma specialized hospital, Gondar specialized hospital, Ethiopia ,Tanzania studies which show that RTA is frequently affecting the financially fruitful age group(5,9,15).With regard to sex, male 207(77.2%) were more commonly affected by RTA than female 61(22.8%) with a male to female ratio of 3.4:1. Male predominance in traffic accident is also reported by many other researches. Economically active young adults, particularly males, have been identified as high-risk group to be affected by this type of injury (5,9,15).

Regarding the clinical characteristics of the patients' majority 179(66.8%) of the patients came to the hospital within 24 hour (1-24 hour) of the accident and has initial blood pressure and GCS normal 245 (91.4%) ,221(82.5%) respectively. In this study most patient 86% present to the hospital more earlier compared to on a study conducted Sodo Christian hospital where only 50 % of patients present within 24 hour after the accident(17)

The most common injury identified in this study was head injury 110(41%) followed by extremity fracture & soft tissue injury 81(30.2%) and multiple injuries 34(12.7%). This finding is in line with study conducted in southern Thailand 44.4 %(head injury).however multiple injuries 66.1% and head injury 19.2%comonly identified injury in a study conducted western Ethiopia and Fractures 34.1%,were the most common nature of injury sustained on a study done in Tanzania (5,13).

Regarding outcome of RTA 228(85.1%) of patients were discharged with improvement while 22(8.2%) and 18(6.7%) of them discharged with permanent disability and died respectively. The death reported was lower than the study conducted Jimma specialized hospital (12.6%),Sodo Christian hospital (9.5%) and much lower than study conducted western Ethiopia (38.8%) but good outcome(discharged improved) agrees with study done Jimma specialized

hospital(84.9%).permanent disability finding is also lower than the report from a study conducted in western Ethiopia (13.6%) (15–17)

This discrepancy might be due to admission of severe cases and larger sample size in the later study and timing of the study where people are not freely move from place to place due to security problem.

Patients with GCS of 14-15 were 0.072(92.8%) times less likely to develop poor outcome compared to patients with GCS ≤ 8 [AOR 0.072(0.01-0.523)]. This association also reported on the study conducted at Jimma specialized hospital showed low GCS 3-8 has 20 times more death compared to mild GCS 13-15 [AOR= 20.12; 95% CI: 7.23,55.96].

In other study's duration of presentation, initial blood pressure, injury site (admission diagnosis) and length of hospital stay found to have statistically significant association with the outcome of RTA victims unlike this study this might be due to small sample size, clinical characteristics of the patient recorded after patient stabilized and patient get first aid at the sine or local health post (9,15,16)

7 Conclusion

The study included 268 RTA victims who visited Tibebe Gion specialized Hospital from January to June 31,2022 G.C. the study revealed 6.7% and 8.2% of patients has outcome of death and permanent disability. Initial Glass coma scale, initial hemoglobin level, how patient managed and presence of complications were statistically significant factors that increase the death of RTA victims

It is better if the health care providers emphasize those RTA victims who is unstable, low GCS, low hemoglobin level and complication. Bahirdar University Tibebe Gion hospital and Amhara Health beuro to focus on capacity building among health care provider with clinical training on trauma management and to organize emergency department capacity with human power and different equipment.

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Appendix A: Permission Request Form

Date ____/____/____

To:

TGSH medical director

Subject: To request permission to accesses patient charts

My name is Mehari Geremew (M.D., 4th year Surgery resident) and as stated in the subject this is to request permission to accesses patient charts for a research. My research is on factors associated with outcome of road traffic accident at TGSH in Bahir Dar, Ethiopia: cross-sectional study. And it is on cases who had RTA and visited TGSH ER Department January, 2022 to June, 2022. The findings from this research will benefit trauma patients, surgeons Residents, Bahir Dar University College of medicine as a teaching hospital, national organizations and policy makers and as an international input. And use of the patient chart will not result in any damage or distress; personal identifiers will not be included in the check list; confidentiality will be maintained when handling each case files; all the information retrieved will be kept in the way that will not affect personal confidentiality and charts will be returned back to their original place.

Hence I would like to ask for permission to accesses patient charts that are selected as a study unit.

Name: Dr. Mehari Geremew Mengste

Signature: _____

Appendix B: Check list

MRN.....

1. Sex
 - a) Male
 - b) Female
2. Age
 - a) Pediatric (-18yr)
 - b) Adult (19– 45yr)
 - c) Old (above 45yr)
3. Duration of presentation
 - a) With one hr
 - b) 1-24hr
 - c) Beyond 24hr
4. Admission BP
 - a) Un recordable
 - b) < 90 mmHg systolic
 - c) Normal
5. GCS
 - a) <= 8
 - b) 9-13
 - c) 14,15
6. Admission diagnosis
 - a) Head injury
 - b) Extremity fracture and soft tissue injury
 - c) Abdominal trauma
 - d) Burn
 - e) Multiple injury
7. Initial hemoglobin (g/dl)
 - a) <=7 g/dl
 - b) 7.1- 11 g/dl
 - c) > 11g/dl
8. Management
 - A. conservative
 - B. surgery
 1. abdomen
 2. Neurosurgery
 3. GUS
 4. Head and neck
 5. Chest
 6. Extremity
9. Medical comorbidity
 - A. No
 - B. Diabetes
 - C. HIV/AIDS
 - D. Hypertension
 - E. Obesity
 - F. Other _____
- 10.Length of hospital stay
 - a) Less than or equal 24 hr
 - b) 1day to 1 week
 - c) Above one week
11. Need Blood transfusion
 - A. No
 - B. Yes, How many unit

- 12.Complication
 - a) Infection
 - b) Failed conservative management
 - c) No
- 13.Outcome
 - A. Discharged improved
 - B. Disability
 - C. Death

