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Pattern of injuries and associated factors in patients visiting the emergency department of Hawassa university referral hospital.

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List of Acronyms

CI –coefficient Index

Dr- Doctor

ED- Emergency Department

G.C- Gregorian Calendar

GNP-Gross National Product

MD- Medical Doctor

NGO- Non-Governmental Organization

RTA- Road Traffic Accident

RTI- Road Traffic Injury

SNNPR- Southern Nation Nationality People Region

WHO- WorldHealth Organization

Title

Pattern of injuries and associated factorsin patients visiting the emergency department of Hawassa university referral hospital

Abstract

Introduction:

Injuries are major public health problem globally. Each year over 5 million people around the world die as result of injury. Injuries are ranked among the leading cause of death and disability particularly in the low income and middle income countries where they are growing in significance. In Hawassa referral hospital emergency department visited by an in average 1,500 injured patients in a year and 10% of injury is due to road traffic accident.

Statement of the problem: Injury has been recognized as one of the most life threatening public problem.Injuries present 12% of the global burden of disease and the third most important cause of overall mortality. Millions of accidents occur each year and thousands of individuals lose their lives. Also the burden of injury in Ethiopia becomes one of the 3rd leading causes of death and disability.

Objective ofstudy: The general objective of this research is to assess pattern of injury and associated effects in patients visiting the Emergency Department of Hawassa university referral Hospital.**Study design:** Retrospective cross- sectional study.

Study population: All injured patients the study populations wereconsists all injured patients, who visited the adult Emergency Department of Hawassa referral teaching Hospital from February 1 up to July 1 2012.

Sample size determination: All trauma patients who visited the adult emergency department in Hawassa referral hospital from February 1 up to July 1 2012 G.C. Data resource is from documentation.

Result: Most injuries occurred by road traffic accident accounted for 54% and the majority 80% were male. This more injured age group was 21-30 and accounted for 41%. 62% of the injuries wereaccidental and anatomically injured part of the body was head and neck accounted for 52.2%**.**

Conclusion: This research is crucial making to understand the problems of injury and the police maker will develop guide lines to prevent the cause of trauma and improving health care service systems in health institutions and society. Because the burden of trauma is highly damages the productive age groups

1. INTRODUCTION

Injuries are a major public health problem globally. Each year over 5 million people around the world die as result of injury. Injuries are ranked among the leading cause of death and disability particularly in the low income and middle income countrieswhere they are growing in significance, largely as a consequence of the epidemiologic , geographic, and socioeconomic transition, moreover, it is in these very setting that the vital statistics and routinehealth information are often seriously lacking. Globally, injury has been as one of the most life threatening public problem. Injuries present 12% of the global burden of disease and the third most important cause of overall mortality and morbidity. Millionsof accidents occur each year and thousands of individuals lose their lives. This is well recorded in high income countries

It was demonstrated that injured patients occupied more than 12% of hospital beds in the USA and more than 50% of orthopedic admissions in the UK. For each death from injury there are many more injuries that resulted in either hospitalization, treatment in emergency department

Motor vehicle accidents are the leading cause of death in adolescents and young adultsworldwide. Nearly three-quarters of deaths occur in developing countries and mencomprise a mean 80% of casualties. This review summarizes studies on the epidemiology ofmotor vehicle accidents in developing countries and examines the evidence for associationwith alcohol.[1].

Traffic-related injury accounted for between 30 and 86% of all trauma admissions. The analyzed data show that men are more at riskthan women of being injured. The preponderanceof males may be attributed to their greaterexposure to any abuse factors. Similarevidence is well documented in several studies inindustrialized countries (Warren & Simpson 1980)[2].

1.1. Statement of the problem

Injury has been recognized as one of the most inpatient health problem. Injuries present 12% of the global burden of disease and the third most important cause of overall mortality. Millions of accidents occur each year and thousands of individuals lose their lives.

Many things that produce injuries are absolutely necessary to the conduct of daily life, such as the interpersonal relationships that sustain self and other, the energy sources used for heating and lighting, the vehicles and roads used for transport, the medications used to cure illnesses, and the machinery and tools by which formal and informal industry and agriculture are practiced.

This makes the task of injury prevention and control considerably more complex than the control of infectious and communicable diseases, which, in principle at least, can be eliminated by eradication of the pathogens or vaccination of the host [3].

Around the world, almost 16,000 people die from injuries every day. For every person who dies of injuries, several thousand injured persons survive, but many of them are left with permanent disabling. In 1990, about 5 million people died worldwide and by the year 2020, 8.4 million people will die every year from injury.

The problem of trauma is most acute in sub Saharan Africa country, where the proportion of such deaths from trauma is higher than in any other region of the world and where the risk of death from injury is greatest, particularly for men in the age group 15-29 years. In South Africa, trauma has been described as a 'malignant epidemic'[4].

Considering the increasing contribution of violence, injury and medical emergencies to the burden of disease, the Ethiopian Health Sector Development Program clearly gives more attention to injuries and violence among other non-communicable diseases. To materialize this, the Ministry of Health has prepared a National Multi Sectoral Strategic Plan in coordination with various sectors. Road traffic injury, fire burn, falls and other work related injuries are priorities in the plan. The plan emphasizes the importance of well-organized emergency medical system in reducing the severity and consequences of injuries and violence.

However, there is paucity of comprehensive data on the magnitude and pattern of injury in Ethiopia. Without reliable information, health care planners at all levels are unable to allocate resources so as to achieve the greatest impact in preventing injuries, treating and rehabilitating injured persons [5] .

1.2. Significance of the study.

TheSignificance of this study is that effective injury prevention, patient care and rehabilitation all require a prior understanding of injury pattern and associated factors in patients visiting the emergency department of health institutions. This will help to develop an effective response to wards the problem. The results of this study will lead to an organized injury data in this teaching hospital that provides good information about its pattern and information on the external causes of injuries requiring ED visit and/or hospitalization. On top of that, it will describe the burden due to injuries in this a large publicly funded teaching referral hospital. The presence of this data in the setting is pivotal for prioritization of care [6]. Improvement of the prioritization of patients care in the emergency unit which in turn will enhance the effectiveness of the care and services rendered in the emergency unit of this particular hospital by reducing the overcrowding of the department. Regarding injury to the emergency unit and will hopefully assist in improving the formal trauma care system in place when this research completed. Moreover, the information of the result will also contribute inputs during planning to reorganization of the emergency department in a manner that allow the hospital to deliver quality emergency health service to the emergency medical care users in general and for injury victims in

particular . Finally, the result of this research will serve as a base for further research on the topic and therefore, when this research completed it will provided a data on pattern of injury and associated factors in patients visiting the emergency department of Hawassa University of referral hospital [7].

1.3 Frame **work**

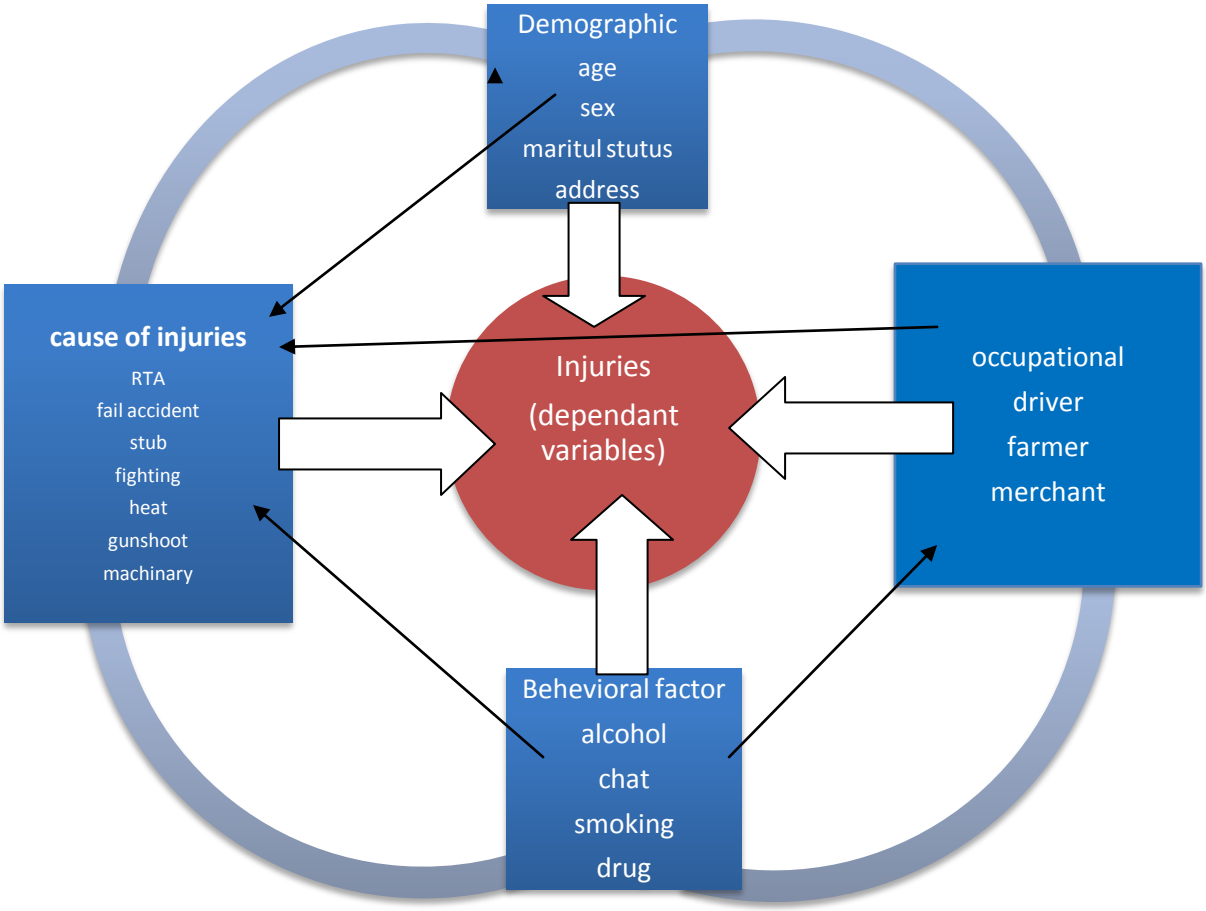

Fig-1. The relationship between dependant and independent variables.

Source: Developed bythe principal investigator after thorough looking literature review.

2.Literature review

The World Health Organization (WHO) estimates that 5.8 million deaths annually are attributable to injuries, 90% of which occur in developing countries with mortality rates expected to increase as these nations further develop, urbanize, and industrialize. In addition, an overwhelming proportion of these deaths occur before patients even reach the hospital. Two third (60.7%) of the accident victims belonged to the age range of 15 to 44 years. This is the economically productive age-group and major financial support for their families (8-10).

One of the patterns of injury leading cause of mortality and morbidity Road traffic accidents (RTAs) are the leading cause of deaths in adolescents and young adults globally (Mohan and Romer 1991). The World Bank (1993) estimates that of the 865,000 traffic deaths occurring annually worldwide (an extremely conservative estimate by some accounts), 74% are in developing countries. Furthermore, while RTA rates and related death and disability are decreasing in most industrialized countries, they are increasing rapidly in many less developed countries. Road traffic mortality increased by more than 200% in African countries and by 150% in Asian countries between 1968 and 1983, while they decreased by more than 20% in Europe over the same period (Ross 1991). RTA also exert a considerable economic burden on developing countries, estimated to cost 1-4% ofa country's GNP per annum (Zwi 1993)[11-13].

In an effort to examine the underlying causes of this growing burden ofpremature death and disability developing countries are experiencing due to road traffic accidents, the available epidemiological and anthropological literature will be reviewed. One of the top three causes of deaths for 5-44 years age group in many countries is RTIs (World Bank, 2011). This has enormous implications for development. In 1990, about 5 million people died worldwide as a result of injury.

It is estimated that by the year 2020, 8.4 million people will die every year from injury, and injuries from road traffic accidents will be the third most common cause of disability worldwide and the second most common cause in the developing world [14-16]

In 2001, over 18,000 patients attended the Johannesburg Hospital Trauma Unit and approximately 140 priority-one casualties were treated per month. In that year there were 1715 resuscitations for trauma, 688 for blunt trauma, of which the majority were associated with road traffic injury. There are characteristic injury patterns, with multisystem injury being the rule rather than the exception [17].

In the western world, the most common cause of death after trauma is severe brain injury. The incidence of death from head injury is approximately 7 per 100,000, and the severely brain-injured also have the

highest mean length of stay and mean hospital costsinjuries due to road traffic related trauma are worsening each year.

Injury is the leading cause of death among young adults in the western world and trauma is imposing an increasingly severe burden on the health infrastructure of the developing world. The use of motor vehicles is growing worldwide; a particular concern in emerging nations where increasing urbanization, overcrowding and scant regard for the rules of the road are the norm [18].

The concepts of risk and vulnerability will be examined in order toreveal the complex web of socio-cultural and politico-economic factorsinfluencing the rapidly increasing rates of RTAs in developing countries, asillustrated by the cases ofNigeria and Kenya.

Another cause of injury among males in the economically active age group, motorvehicle injuries are considered to be the third most important cause of death indeveloping countriesthe severity of the problem, road traffic accidents - and associated death and disability in Nigeria and Kenya will be discussed. The situations foundin Nigeria and Kenya in relation to RTAs is typical of many developingcountries; in fact, the fatality rate per 10,000 vehicles is at least as great in manyAfrican countries such as Ethiopia, Malawi, Lesotho, Swaziland and Niger (Jacobsand Sayers 1983). It is also important to keep in mind that the RTA fatality ratesare at least 20 times greater in developing countries such as Nigeria and Kenyathan for countries of Western Europe and North America [19].

Road Traffic Accidents are a major cause of morbidity and mortality worldwide, but especially in low- and middle-income countries. The World Health Organization estimates that more than 3000 people are killed every day in road traffic accidents globally, with at least 30,000 others injured or disabled. This adds up to over 1 million people killed and between 20-50 million injured or crippled in road traffic crashes each year (Krug et al, 2000).

Nigeria is said to have the highest road traffic accident rates in Africa (Akpoghomeh, 1998; Obinna, 2007; p. 35: Atubi and Onokala, 2009). According to one study, the proportion of deaths from road traffic accidents in Nigeria increased from 38.2 percent to 60.2 percent in ten years from 1991-2001 (Obinna, 2007).

According to data from the Nigerian Federal Road Safety Commission, the country has the highest rate of death from motor accidents in Africa[20] .

The first human fatality associated with a motor vehicle was a pedestrian killed in 1899. since then the patterns of injury from man's interaction with the motor car may have been somewhat modified by crash protection devices, such as helmets, seat belts and air bags, but injuries due to road traffic related trauma are worsening each year. Injury is the leading cause of death among young adults in the western world and trauma is imposing an increasingly severe burden on the health infrastructure of the developing

world. The use of motor vehicles is growing worldwide; a particular concern in emerging nations where increasing urbanization, overcrowding and scant regard for the 'rules of the road' are the norm.

Road deaths, disability and injury every day around the world, almost 16, 000 peopledie from all types of injuries. Injuries represent 12% of the global burden of disease, According to WHO data, deaths from road traffic injuries account for around 25% of all deaths from injury [21].

In Nigeria1 August 2004 to 12 August 2005, a total of 3,750 injury-related visits were recorded; final samples of 3,481 records were analyzed. The majority of patients (62%) were treated in the casualty department and then discharged; 38% were admitted. Road traffic injuries (RTIs) were the most common causes of injury for all age groups in this sample, Injuries were also the most common cause of mortality in trauma patients. Within traffic injuries, more passengers (44%) and pedestrians (30%) were injured than drivers (27%). Other causes of trauma included blunt/penetrating injuries (25% of injuries) and falls (10%). Less than 5% of all patients arriving to the emergency department for injuries arrived by ambulance. [22].

InIndia(Mohan&Bawa1985;Sidhu*etal.*1993)andSurinam(CAREC1987).Passengersrankedfirst amongstthe non-fatalcasualtiesreportedin14studies.Pedestriansweresecond,withtheexceptionofonehospital-basedstudybyDessieandLarson(1991)inAddisAbabathatreportedaveryhighproportionofpedestrians,accountingfor91%ofalltrafficcasualties.DriverinjuriesweregreaterinSaudi Arabia(Bener&El-Sayyad1985;Ofosu*etal.*1988),whilemotorcyclistswerethemostinvolved inTaiwan(Wu&Malison1990).Arelativelyhigh proportionofcyclistinjuriesinSouth-EastAsian countries,rangingfrom39to63%,reflectsthe effectsoftrafficmixontheroadsintheregion.A total of 836 trauma patients were admitted during the study period of whom 119 (14.2%) patients had abdominal injury, and these made the study population The ages ranged from 3 to 88 years with a median of 27 and a mean of 30.3 years. There was a predominance (83.2%) of males, only 16.8% were females; giving a male to female ratio of 5:1[23].

Animal related injuries are a major but neglected emerging public health problem and contribute significantly to high morbidity and mortality worldwide .A total of 452 (8.3%) animal-related injury patients were studied. The modal age group was 21-30 years. The male to female ratio was 2.1:1. Musculoskeletal (71.7%) region was the most frequent body region injured. Soft tissue injuries (92.5%) and fractures (49.1%) were the most common type of injuries sustained.

Falls are the most common cause of injuries leading above 14 years age groupsare admitted to hospital. Falls occurring in playgrounds and resulted in 12,091 hospitalization cases from July 2002*June 2004. Fractures were the largest injury type (85.2%).

In USA 2009; indicatesthatatotalof4,246patientspresentedtotheEDinthestudyperiodand100%were screened.Injuryofanytypecontributedto1,036visits.Themostcommoninjury waslaceration(27%),followedbycontusionorabrasion(25%)andfracture(16%).Theoverall admissionratewas11%,andtwoinjuredpatientsdiedintheED.

UniversityofBeninTeachingHospital(2010)assertsthat from 84 patients assessed for fall accident 54 males and 30 females Malesofallagegroupswere more involved than females.Highest number (26, 31%) of all falls occurred between theAgesof18and30years.Allthefallswereaccidental,butfiveoftheinvolvedmaleadultsweresuspectedtobeun dertheinfluenceofalcoholonarrival.Ofthesefive patients,threefailedataconstructionsite.

NigerianTeachingHospital (2008)verifiesthatduringthein one year ofstudyperiod,1078injuredpatientswereseenintheAccidentandEmergencyUnit.Themeanageofall patientswas31years. Therewere664male(61.6%)and414(38.4%)female patients.Analysis of thefrequency ofinjury to different anatomicalareas of thebody showedthat multiple,while theextremitiesalone wasinvolvedin41%,thehead(includingthescalpandface)andfractureswerethemostfrequentlyseeninjuriesac countingfor62.5%ofallinjuries.

InMalawibetweenFebruaryandJune2008holds thatbetweenFebruaryandJune2008Otherinjuriesincludedfractures(14.3%),headinjuries(7.5%), andburns(5.6%).Mostpatientsweretreatedandsenthome(69.7%),andaminoritywereadmitted (26.8%),broughtindead(3%),ordiedinthecasualtydepartment(0.5%).Themostcommonmodeoftransporttot hehospitalwasprivatevehicle(43.8%),followedbyambulance(15.4%),walking(14.5%),minibus(publictran sport)(12.4%)andpolicetransport(7.8%)[24].

AstudyontraumaregistryinTikurAnbessa,Hospital,AddisAbaba,Ethiopia,demonstratethata totalof3822injuredpatientspresentedintheemergencyroomduringthestudyperiod.Amongthe victims 2869 weremales and 953werefemales (M:F 3:1). Over 25% of them werein there twenties andmorethan80%werebelowtheageof40years.Road trafficinjuryaccountedfor over41% of allcasesand93%ofthemwerepedestrian.Accidentalfallandinterpersonalassaulteachaccounted for21%and20%respectively.Mostinjuriesoccurred onthestreet61.6%,while25.6%happenedat home.Intentionalinjuriescomposed34%,while64%were classifiedasunintentionalandin2%can'tbedetermined..Among patients with seriousinjury 11.6% were admitted, while 84.4% were withminorinjury and they were treated and sent home. Significant numberofpatientswithseriousinjurywasreferredtootherhospitalsduetolackofbedand20 patientswerediedintheemergencyroom.Theoverallmortalitywas566(1.47%)andmorethan 66%werevictimofmotorvehicleinjury.Burnandgunshootaccountedforonly6%oftheinjury [25].

EmergencyDepartmentinMoshi,Tanzania,datingJanuary 2010 to 31 July2010, confirms that during a 7-month time period, 10,555 patients presentedtotheEmergencyDepartment.Onethousandtwohundredtwenty-fourpatientswereidentifiedfromthe EmergencyDepartmentlogbookwithaninjury-relateddiagnosis,representing11.5%ofallvisits.Headinjuriesaccountedfor21.0%ofisolatedinjuriesandwere involvedin15.0%ofpatientssufferingmulti-organsysteminjury.Likewise,injuredextremitiesaccountedforalmosthalf,46.4%,Consistentwithinjurylocation;themostcommontypesofinjurywerefracturesandtraumaticbraininjury(TBI).Fracturesoftheextremities occurredin44.1%ofinjuredpatients.Skullfractureswеredocumentedin28.7%(95%CI25.9,31.6)ofinjuredpatients.Themajorityofinjuredpatients,59.3%wereadmittedfromtheEmergencyDepartment to thehospital wards.Theremainderwereevaluatedintheemergencydepartment,andsubsequentlytreatedandreleasedwithouthospitalization [26].

3. OBJECTIVE OF RESEARCH

3.1. General objective.

- To assess pattern of injury and associated factors in patients visiting the Emergency Department of Hawassa university referral hospital Dec 2013 up to June 1, 2014 G.C.

3.2. Specific objective

1. To determine injury pattern in patients visiting the Emergency Department of Hawassa university referral hospital.
2. To determine anatomical location of trauma.
3. To identify associated factors of injuries in patients the Emergency Department HawassaUniversity of referral.

4. Methodology and Material

4.1. Study design

Institution based retrospective cross- sectionalstudy.

4.2. Study area and Study period

4.2.1. Study area

Hawassa university referral hospital is the largest of all the Hospitals in SNNPR and situated in Hawassa city 3km far from Hawassa city eastern part and surrounded by Lake Hawassa provides a tertiary level referral treatment and is also open 24 hours for emergency services. The hospital is administered by federal and Hawassa University and is the teaching hospital among in Ethiopia.Providing teaching for about medical students and other health related fields. The hospital offers diagnosis and treatment for approximately 65,597 patients per year.

The hospital has 400 beds, with 115 teaching doctors and 173 nurses and from those 16 nurses serving in emergency department. The emergency department sees in average 1,500 injured patients in a year and they have planned to start a new trauma unit in the recent years.

4.2.2. Study period

The totalstudy period was from december1, 2013up toJune 30-2014 G.C.

4.3. Source population

All injured adultpatients visitedemergency department of Hawassa referral hospital from February 1 up to July 1 2012 G.C which was retrospective study.

4.3.1 Study population

The study population wasconsisting of all injured patients, who visited the adult Emergency Department of Hawassa referral Hospital from February 1, 2012 up to July 1, 2012.

Inclusion criterion:-All injured patients, who visited the adult surgical Emergency Department of Hawassa referral teaching Hospital from February up to July 2012.

Exclusion criterion:-Those injured patients who need immediate transfers to other hospitals and Chart with any missing informationwas excluded in this study.

4.4. Sample size determination

All injured patients who visited to Hawassa referral hospital for 6 months from February up to July 2012 G.C and the minimum number of sample required for this study is determined by using single population proportion formula.

$$n_i = \frac{(Z\alpha/2)^2 \, p\,(1-p)}{d^2}$$

Where:

ni=minimum sample size required for the study

Z= standard normal distribution (Z=1.96), CI of 95% = 0.05

P= prevalence of pattern of injury and associated factors patients visiting ED was unknown in my study area; Hence; p=50%(0.5) was used

d=Absolute precision or tolerable margin of error= 5%(0.05)

$$\frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2} = 384$$

By adding 10% that of non respondent the total sample size for this 38.4.

So by adding 384+38.4=422

4.5 Data collection

In this study, the data collectors (triage nurses) one degree and one diploma nurses after training for one day with one supervisor also included on the process of dada collection and theywere collected data using Injury surveillance guidelines form which is developed by experts from the WHO and the US in 2001 with modification in the emergency department of Hawassa university referral hospital to gather the desired information from the sample population according to the inclusion criteria.

4.5.1. Data collection tool

Injury surveillance guidelines form which is developed by experts from the WHO and the US in 2001 with modification will be used to gather the information from injured patients chart reviewed in the study seasons. This surveillance manual is also knowingly designed in order to help researchers and practitioners during the task of data collection on injuries. There is a strong believe that this surveillance manual can effectively work in settings where resources, including trained staff and electronicequipment, are limited. In addition, the work has taken two years to complete the development this manual.

4.5.2. Study variable

4.5.2.1. Dependant variable

Injuries

4.5.2.2. Independent variables

Age,Sex, Address,Marital Status, Occupation, alcohol, Smoking, chat, other drug abuseand pattern of injuries.

4.6. Data collection procedure

The data was collected from documented patient chart that was taken from registered book in emergency room; surgical ward injured patients and recorded data using the data collection instruments.

4.7. Data processing and analysis

The data wasentered, cleaned and analyzed using SPSS for windows version 16.0 and presented using tables and figures. Counts of the injury cases were calculated for the study population by age, sex and other socio demographic characteristics. Rates of injury and percentages of admissions to hospital for treatment of injuries were calculated; patterns of injuries also examined by mechanism, intent, place, and other measures of descriptive statistics were determined.

4.8. Data quality management

To maintain data quality, training was given for data collectors and for supervisors for one day. Properly designed data collection materials developed. Supervision was carried out on daily bases to check completeness, consistency both by the supervisor and by principal investigator to keepthe quality of data highly. Correctly complete abstraction format was collected from data collectors by supervisors and submitted to principal investigator.

Pretest was done in (10% of the tool) that was in 34 injured patient chart were reviewed the Emergency Department of Hawassa adare hospital prior to the actual data collection and correction was considered. It was found to be vital in the data collection tool.

4.9. Ethical considerations

The research proposal was sent for approval to the Research and Ethics Committee at College of Health Science, Hawassa University Referral hospitalprior to commencement of the study. Permission obtained from the head of the Emergency department of the hospital to conduct the study.

4.10 Dissemination of the result

The final report of the study was presented and discussed in Department of Emergency Medicine College of Health Sciences Addis Ababa University. Finally the results of the study will be disseminated to Department of Emergency Medicine, Society of Ethiopian Emergency Medicine Professionals' Association and Federal Ministry of Health.

Scope of the study

This study primarily attempts to provide a description of the particular Emergency Department, the pattern of injuries at Hawassa Universityreferral teaching Hospital and little attempt was made to generalize its results to other situations. Should the intervention, however, enhance quality improvement; the researcher will be present the finding to the emergency medicine co-coordinators for consideration of the result.

Limitations and strength of this study

The most limitation was shortage of time because of the study design was cross sectional and retrospective.

5. Operationaldefinition

INJURY**:** Physical damage on the body intentionally or unintentionally.

PATTERN OF INJURY: Numerical representation of the leading causes of injury in all injured patients during the study paired.

NATURE OF INJURY**:** The physical nature of the injury, real or suspected, which brought the person to the emergency department.

PEDESTRIAN**:** A person walking rather than travelling in a vehicle

DEATH AT ARRIVAL**:** Death causation at one hour of arrival to hospital.

6. Results

5.1 Characteristics of study population

During the study period out the total 520 patient charts were assessed at Hawassa University referral hospital from those injured and seen in surgical emergency department. From those not clearly documented and not eligible charts were excluded from this study and 345 patient charts were documented clearly and included in this study.

5.2 Socio demographic characteristics

From three hundred forty five (345) inured patients, there were 277(80%) are males and 68(20%) are females. The ratio male to female was 4:1. The more injured age group were 21-30 years old group accounts 140(40.6%), next 12-20 years 85(24.6%) ,the least injured age group is >50 years. The greatest majority of injuries affect SNNPR which accounts for225 (65.2%) and the next ethnicity groups were Oromo 118(34.2%).

Most of the religion part notrecorded in patients chart accounts for 200(58%) but Muslim 43(12.5%), protestant 36[10.4%] and orthodox 33[9.6%]. The marital status were the same in both single and married which accounts 109[31.6] . The commonestinjured group were student 90(26.1%) and unemployed 63(18.3%). Most of the injured came from <20km distance 123(35.7%), followed by 20-50km distance and >50 km distance accounts 107(31%).

Table -1. The demographic data variables of injured patients visited to Hawassa university referral hospital emergency department at time of study period

Sex	**In frequency**	**In %**
Male	277	80.3
Female	68	19.7
Total	345	100
Age		
12-20	85	24.6
21-30	140	40.6
31-40	59	17.1
41-50	29	8.4
>50	32	9.3
Total	345	100
Occupation		
Government	26	7.5
NGO	2	.6
Student	90	26.1
Farmer	18	5.2
Merchant	21	6.1
Unemployed	63	18.3
Unknown	125	36.2
Total	345	100

5.3. Pattern of injury.

Most pattern of injurieswere occurred in RTA 186(53.9%), fighting76 (22%), fall down accident 52(15.1%) and stub injury 11(3.2%). The majority of males injured by road traffic accident were morethan females, in percentage these accounts 81.1% males and 18.9% female. The more affected age group was 21-30 years of age by RTA and fighting.

Table.2 The pattern of injuries visited .to adult surgical emergency department at Hawassa university referral hospital from February 1 up to July 1 2012 G.C

	In frequency	**In %**
RTA	186	53.9
Fighting	76	22
Heat	6	1.7
Fall down accident	52	15.1
Stab injury	11	3.2
Gunshot	5	1.4
Machinery	2	6
Other	7	2.0
Total	345	100

From these injured patients because of road traffic accident, the majority were pedestrian (46.1%) and transport user (33%) others are at home and farm area 15.7% and1.9% respectively. The majority context of injuries were accidental 216(62.6%) and the next by the quarrel 81(23.5%) followed by drug related like alcohol accounts 11.3%. Further information see Fig.2

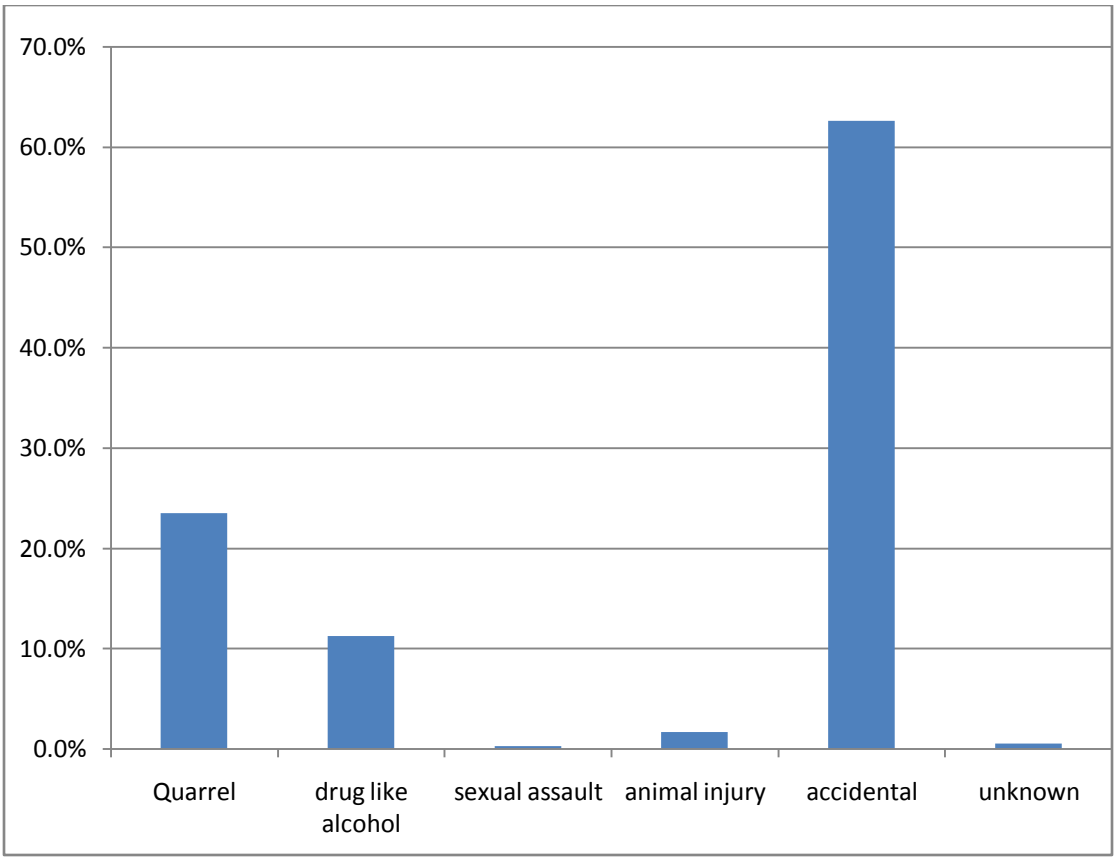

Fig.2- The frequency context of injuries visited to surgical departmentat Hawass university of referral hospital

In anatomical position or the injured part of the body in anatomical positions head and neck accounts 181(52.5%), extremities 87(25.2%), abdomen 34(9.9%), chest 25(8.9%), pelvic area 12(3.5%) and the least affected part of the body is spinal and spinal cord 6(1.7%).

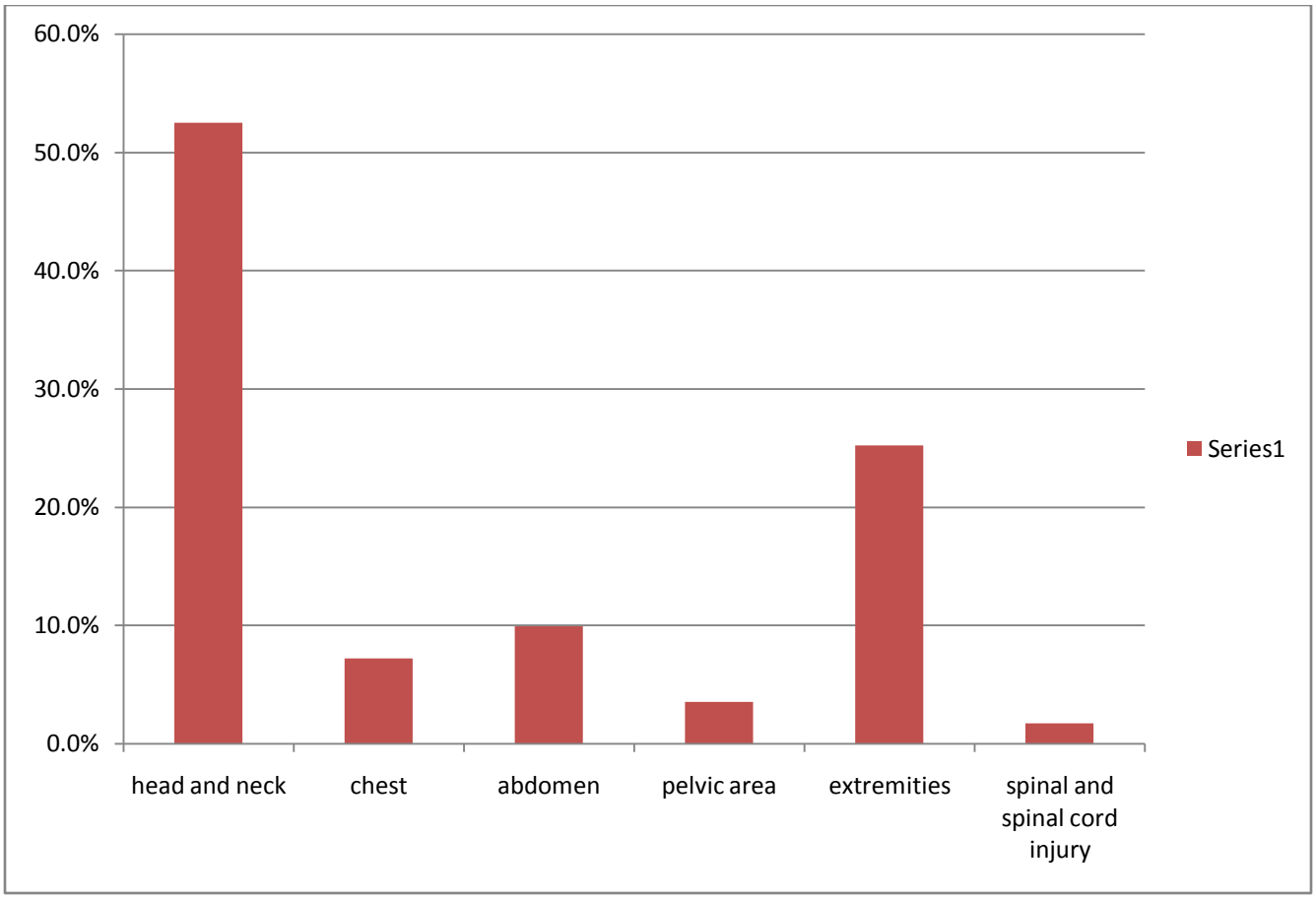

Fig .3- shows the frequency of the part of the body injured those visited to surgical emergency department of hawassa university referral hospital.

The nature /character of injury in the body fracture accounts 140(40.6%), soft tissue injuries 132(38.3%), and see others in detail below fig. 4

Table.3 –Character/nature of injuries in the body visited to surgical emergency department of Hawassa university referral hospital from February 1 up to July 1 2012 G.C summarized in frequency.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fracture	140	40.6	40.6	40.6
	Dislocation	16	4.6	4.6	45.2
	Soft tissue injury	132	38.3	38.3	83.5
	burn	7	2.0	2.0	85.5
	organ injury	28	8.1	8.1	93.6
	open wound injury	19	5.5	5.5	99.1
	other	3	.9	.9	100.0
	Total	345	100.0	100.0	

Most of the injured patients were crossing the road 185(53.9%) and the next victim patients were traveling by car were 67(19.4%),others 66(19.1%) and at the time of driving 7.5% of injuries were occurred. The time of injuries occurred mostly at night it accounts 205(61.3%) and at day time 110(31.9%) and others at unknown time were 30(8.7%).

Table -4. **The activity of the patient at the time of injury before arriving to ED**

	In frequency	**In %**
Working	75	21.7
Crossing the road	111	32.2
Traveling by car	67	19.4
Driver	26	7.5
Other	66	19.1
Total	345	100

The majority of the injured patient's modes of transportation were by taxi accounts 49.6%, and 15.4% by ambulance the rest of traveling to the hospital was by police 5.2% and unknown mode of transportation accounts for 29.9%. Most of injured patients came to surgical emergency department from the health institutions 191(55.3%) and from the scene 110(31.9%); the other 4.3% were unknown not recorded in patient chart. From those patients who gottreatment before arriving to ED were 66.4% because referred from other health institution and not taken any medication accounts 33.6%.

Table.5.The scene of injury occur for the patient visiting to emergency room.

	In frequency	**In %**
Home	54	15.7
Street	139	40.3
Transport	114	33
In industry	3	9
Pedestrian	20	5.8
Farm	5	1.4
Construction site	10	2.9
Total	345	100

Most injured patient before arriving to ED the given treatment was first aid 37.7% and resuscitation with fluid and medication accounts 18.8%, others treatment carried out by immobilization were 9.3%.

Table -6.Condition ofthe patients visited at Hawassa university referral hospital emergency department.

	In frequency	**In %**
Stable	278	80.1
Unstable	66	19.1
Died at arrival	1	3
Total	345	100

Condition of the patient at emergency room 80.6% were stable, 19.1% were unstable and 0.3% were died at arrival to emergency room. After arriving to emergency department the care given to injured patients was immobilized 43.5% and resuscitated 39.4% of injuries, the least treatment was first aid that accounts 13.3%.

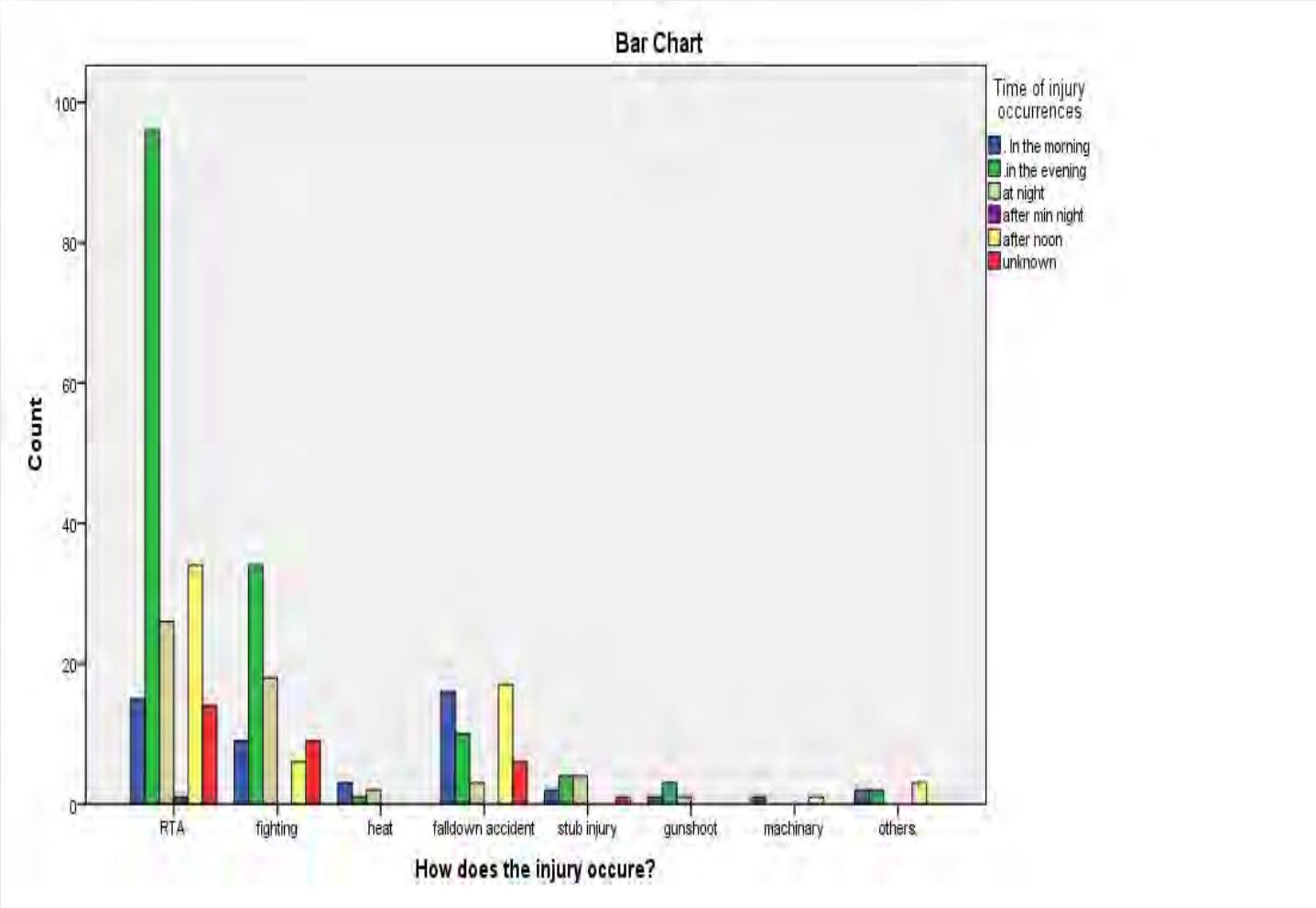

Fig.4- The cause of injury in relation to the time of injury occurrences.

After 24 hours evaluation the outcome of the patient in emergency room the majority 49% were sent home and 44.3% were admitted the ward see below fig-5**.**

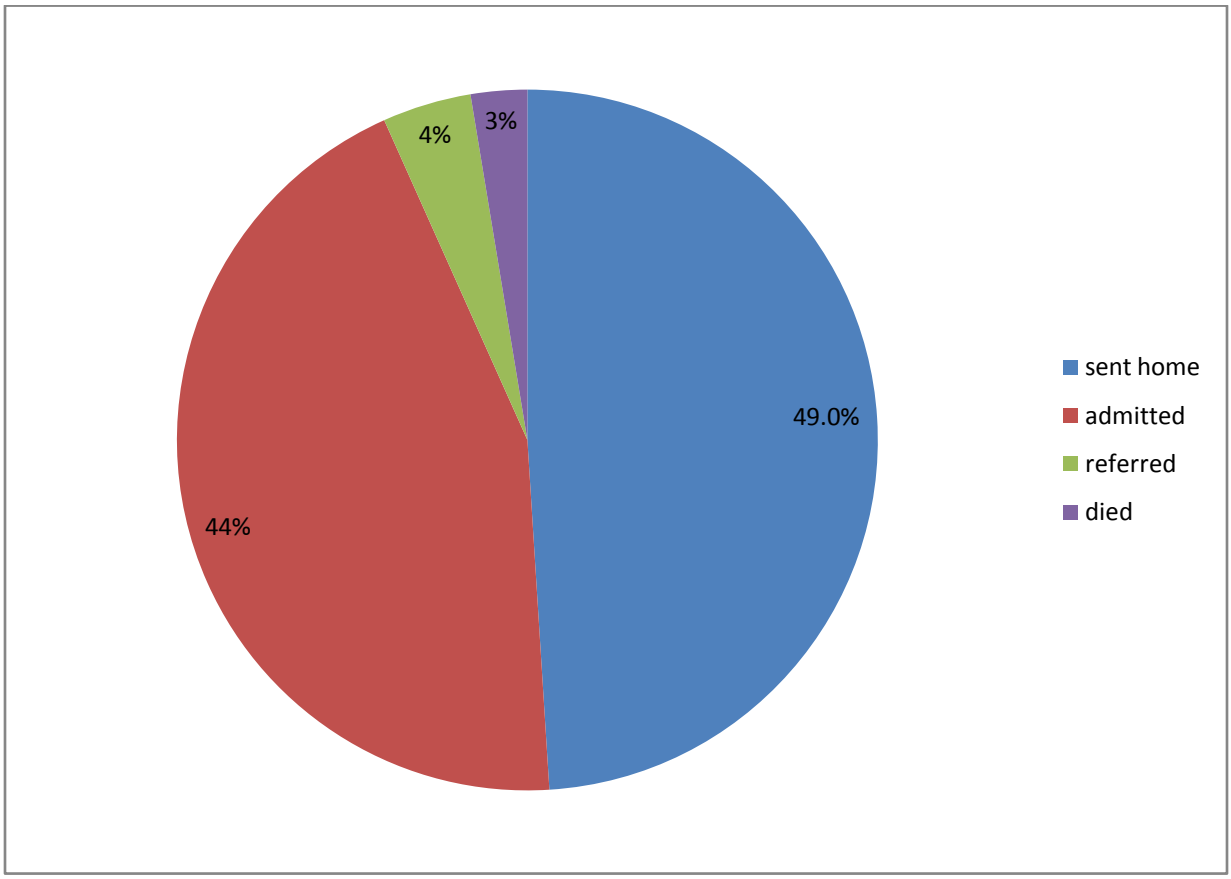

Fig.5. The outcome of the patient in emergency department after evaluation for 24 hours period of time.

7. Discussion

The discussion of this research is based on the cause of injury and associated factors in patients visiting the emergency department of Hawassa University of referral hospital. From the study population male injuries accounted for 80% and females were 20% and it was different that of Nigeria on 2008 study.
The age group 21-30 more injured group and accounted for 40.6% than other age group and this were in line with study done in Benin 2010.

The majority of the patient came from <20km distance to Hawassa university of referral hospital and which showed most injured patients came from nearer resident area.

For the occurrence of injury the main causes are RTA .Road traffic accident accounted for 59% of head and neck injury and also extremities 28%. When comparing the injuries in frequency head and neck most injured part of the body accounted for 52.5% and the next injured body part were extremities accounted for 25,2%. These study was different that that the study done in Nigeria and Saudi Arabia.

Globally road traffic accident is the most leading cause of all types of injury in 74% when comparing to Hawassa university referral hospital the pattern of injury by road traffic accident was 53.9% which is still the leading cause morbidity and mortality and 58.2% of admissions was due to road traffic accident.
In other way the leading cause pattern of injuries by RTA were accidental accounted for 88.7% and due to alcohol was accounted for only 11% and the studies done Benin accounted for 5% for alcohol caused injury by RTA. Most young age groups were consuming alcohol for celebration and different activities and it is more cash crop area that they get money easily.
Those commonly injured by RTA were crossing the road and travelling by the car was accounted for 53.9 % and 30% respectively and this study different than that of the study done in India 2004.
Thisdue to higher migration from rural to urban those doesn't know the road traffic rule and regulation so they more prone to injury. The majority of injuries occurred at night time accounted for 64.6% however, most of the injured patient arrived to the emergency department from health institutions accounted for 55.3% and from the scene was 31.9%.
The mode of transportation commonly used were by taxi (49.6%) like that of Malawi study, ambulance (15.4%) and 29.3% mode of transportation was unknown.

Before arriving to ED those who got medication accounted for 66.4% because the majority of injured patients were seen at near health institution. At the time of emergency care 80.6% of the patients were stable and the rest 19.4% were unstable. The care given in emergency room for some of injured patient were immobilization 43.5% and resuscitation 39.4%.

In USA the 2009 study in patients presented to emergency department with injury the most common type of injury was soft tissue injury accounted for 52%and fracture 16%which was different than the study done at hawassa referral hospital.

Over all admission rates were 11% in USA and in Malawi 27% but in my study 44% were admitted shows the severity of injuries were higher in developing country than developed country.

From those injured 2.6% were died in 24 hours of duration at emergency room the cause of death were due to RTA.

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8. Conclusion

. This research is crucial making to understand the problems of injury and the police maker will develop guide lines to prevent the cause of trauma and improving health care service systems in health institutionOver all the information from this research results reveals the constraints for the cause of injury and helps to comment, give suggestion and conclusion on pattern of injury and associated factors in patients visiting the emergency department of Hawassa university referral hospital s and society. Because the burden of trauma is highly damages the productive age groups and they are most important in all sectors for development and to improve socio economy of the country.

In this study the pattern of injury and associated factors shows over all the most frequently cause of trauma was road traffic accident accounted for of all injuries and the next cause of injury was fighting. Most injured at the age of 21-30 and males are affected inmost research studies. The majority of the patients used taxi for transportation and most injuries seen at health institutions first aid was given before arriving to emergency room.

Based on objectives the most cause of injury was road traffic accident and injured part of the body was head and neck (59%) and extremities(28%). Road traffic accident was the leading cause of injuries in hawassa university referral hospital in this study and when comparing with the injury caused by RTA in the world was higher in 20%.

In Nigeria study extremities and head injury was presented with fracture and soft tissue injury which was caused by road traffic accident. On other hand the majority of injuries caused by fighting, gunshot and stub injury were associated and significant with quarrel. The significances of head and neck injury associated highly with road traffic accident and the incidence was accidental as well as drug related like alcohol contributed for occurrences RTAbecause most young age group consuming alcohol for celebration and different activities and it is more cash crop area that they get money easily.

The majority of patient's condition was stable and most of them were by immobilization and resuscitationby fluids then majority of the patient sent home after 24 hours of evaluation.

9. Recommendation

Based on conclusion of this study:

- The society and driver should respect the road traffic lows while crossing the road.
- The cause of injury by road traffic accident was high in young age group so it should included in health education to teach the society to prevent RTA injury and raising public awareness to the consequenceof injury.
- Encourage administrative body to rehabilitate trauma center at Hawassa referral hospital.
- Develop and maintain in Hawassa university emergency department systemic triage and assessment processes by trained health professional on injury.
- Improving surgical document by health professionaland handling by well organized manner to facilitate surgical review.
- For the researcher further study should be done on the same topic to improve health care system and reduce the cause of injury.
- Delegated body in the hospital should communicate with road traffic authority to develop linkage with hospital to improve health care system on trauma.

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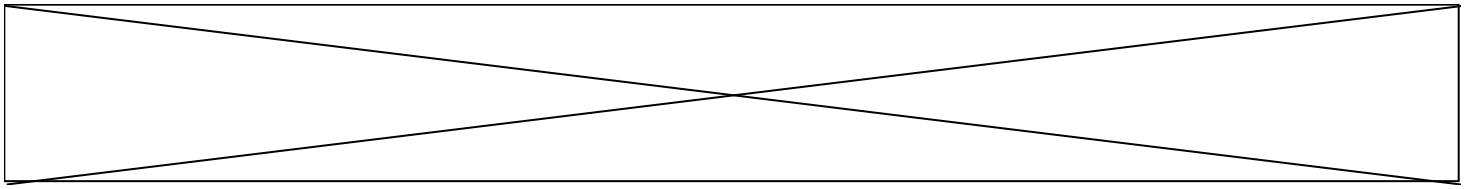

8.ANNEX-Questionnaire

8.1Questionnaire

PART I .SOCIO DEMOGRAPHIC CHARACTERISTICS

1. Sex.
1. Male 2. Female
2Age
1. 12-202.21-30. 3.31-40
4. 41-50 5. >50
3. Ethnicity
1. Oromo . 2. SNNPR.3. Amhara
4. Tigray 5. Others (specify)_____
4. Religion
1. Orthodox 2. Protestant.3.Catholic
4. Muslim 5. Other 6.unkown
5. Marital status.
1. Single 2. Married
3. Divorced/Separated 4. Widowed 5.unknown
6. Occupation.
1. Government 2. NGO 3.Student
4. Farmer 5.Merchant 6.unemployed 7.unknown
7. Residence
1. <20km2. 20-50km 3.>50km

Part II pattern of injury

8. How does the injury occur?

1.Road traffic accident 2. Fighting. 3.Heat

4.Fall down accident 5.stub injury 6.gunshoot

7.Machinery 8. Others

9.The place of injury occur

1.Home2. Street.3. Transport.4. Office

5. inindustry. 6.Pedestrian7. Farm 8.Construction site

10.Mode of transportation to the hospital

1. Walking2. By taxi 3. By ambulance

4. Carried by people 5. By police.

11. What was the context of the injury?
1. Quarrel, fight 2. Drug-related like alcohol, chat and drugs
3. Sexual assault 4.Animal injuries.5. Accidental. 6. Unknown

Part III Effects of injury on the body

12. Which part of the body was injured?

1. Head and neck 2.chest 3.Abdomen

4. Pelvic area 5.extremities6.spinal and spinal cord

13. Characteristics / nature of injury in the body?

1. Fracture 2.Dislocation.3. Soft tissue injury

4. Burn. 5.Organ injury 6. Open wound injury. 7. Other

14. What was the patient doing at the time of injury?

1. Working2.crossing the road

3.Travelling by car 4.driver 5. Other

15. Time of injury occurrences

1. In the morning 2.inthe evening 3. Atnight

4. After mid night 5.after noon 6.unknown

16. From where does the patient come to the emergency department?

1. From the scene 2. From hospital.3. from health center

4.Fromprivate health institution 5.Unknown.

17.Before arriving to ED any treatment was given?1. Yes 2. No 3 .unknown

18. If yes Q17which type of treatment was given

1. First aid 2.resucitation 3.only medication 4.Immobilization 5. Others

19. Condition of the patient at emergency department

1. Stable2. Unstable 3.died at arrival

20. Any care given in emergency department

1. First aid 2.resucitation 3.only medication 4. Immobilization 5 other.

21. Outcome of the patient in emergency room.

1. sent home2. Admitted 3.Referred 4 .died 5 unknown