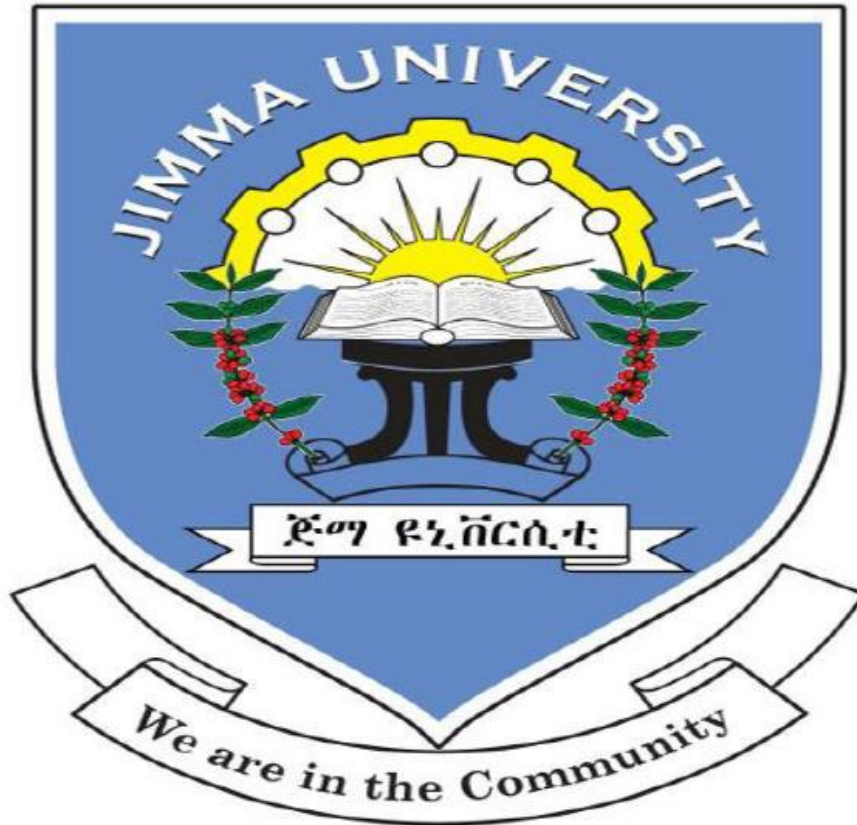


**PATTERNS OF TRAUMA AND ITS MANAGEMENT OUTCOMES
AMONG TRAUMA VICTIMS MANAGED AS IN-PATIENTS AT ST-
LUKAS CATHOLIC HOSPITAL IN 2016.**



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**THESIS SUBMITTED TO JIMMA UNIVERSITY, INSTITUTE OF
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DEGREE OF MASTER IN INEGRATED EMERGENCY SURGERY IN
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ABSTRAC

Back-ground:-Trauma is a common event in Ethiopia and is the primary reason for an emergency hospital visit as well as is from the most admitted patient as in- patient in orthopedic and surgical wards in Woliso St. Lukas catholic hospital. Trauma is the cause of many people life lost, disability and economic lost. So this retrospective study was to describe the pattern and management outcome of trauma at St. Lukas Catholic hospital in 2016.

Methods:-A retrospective cross-sectional study was undertaken in Woliso St. Lukas catholic hospital. A total of 384 trauma victims who were admitted to the hospital were selected by systematic sampling method. The data was collected from patients medical records by trained persons with well formatted questioners and the data had been checked for its completeness entered, edited, cleaned and analyzed using SPSS version 16.0.

Results;-Out of 384 studied population males accounted 301(78.4%) and females 83(21.6%) that gives male to female ratio 3.5:1. The affected peak age group was 30 to 64years old accounted 133(34.6%), followed by 15 to 29 years 126(32.8%). Victims those from urbanaccounted that 199(51.8%) &rural 185(49.2%).The commonest mechanism of injury was road traffic accident 148(38.5%), followed by homicide/violence 105(26.6%). Fracture/dislocation 197(51.3%) was the leading outcome injury followed by blunt injury93(24.8%). Extremities were the most injured region 210(54.7%) followed by head & neck 99(25.2%). Most patients 233(60.7%) stayed in the hospital for less than 1 week and the mean hospital stay 8.3 days.105(27.3%) victims had unfavorable management outcome. Head & neck injury 40% times unfavorable management outcome than multiple organ injury (AOR=0.4; 95%CI=0.17, 0.9 and blunt trauma had 7.4 time unfavorable management outcome than skin laceration/contusion.

Conclusion:-The most common cause of trauma was road traffic accident and homicide/violence that can be preventable with appropriate public awareness creation and education. Economically active age group of the population was mainly vulnerable and males were more than three times affected than females; in-spite of this, it is obvious to estimate how much trauma affect economically, politically, and socially. Injuries are neglected health problem in developing countries like Ethiopia, so to overcome the problems to trauma it needs attention and the commitment of concerned body.

Key word:-Trauma, patterns, management outcome, St. Lukas Catholic hospital and college of Nurses and Midwifery.

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Abbreviation

AIDS	-----	Acquired Immune Deficiency Syndrome.
AOR	-----	Adjusted Odds Ratio
CI	-----	coefficient interval
CT	-----	Computed tomography
DALY	-----	Disability-Adjusted Life Year
DOS	-----	Duration of Stay
HIV	-----	Human immune virus
IESO	-----	Integrated Emergency Surgical Officer
Km	-----	Kilometer
MD	-----	Medical Doctor
NGO	-----	None Governmental Organization
OPD	-----	Out Patient Department
PMTS	-----	PietermorgMetropolitan Trauma service
RTA	-----	Road Traffic Accident
RTI	-----	Road Traffic Injury
SD	-----	Standard deviation
SPSS	-----	Statistical Package for the Social Sciences
St	-----	Saint
UI	-----	Uncertainty Interval
UK	-----	United Kingdom
US	-----	United States
US\$	-----	United State dollar.
WHO	-----	World Health Organization.

CHAPTER ONE

1. INTRODUCTION

1.2 Background.

Trauma, or injury has been defined as cellular disruption caused by an exchange with environmental energy that is beyond the body's resilience which is compounded by cell death due to ischemia/reperfusion.

Trauma remains the most common cause of death for all individuals between the age 1 and 44 and is the third most common cause of death regardless of age. It is also the leading cause of years of productive life lost (1). The Global burden of disease study estimate that 10% of the global death are due to injuries, and that if current trends persist, this burden will greatly increase in the next 20 years. Globally, the lives of over 16, 000 people are cut short daily as a result of injury. About 5.8 million people die each year due to injury. This account 10% of the world deaths, 32% more than the number of fatalities that result from malaria, tuberculosis, and HIV/ AIDS combine. Injury are a neglected public health problem, developing countries, with over 90% of the world's injury death occurring in low-and middle-income countries (2).

Trauma is not more considered accidental but preventable epidemic with a unique pattern of host, agent, and environment working in unison to produce injury. Traumatic injuries are associated with significant morbidity and mortality and are of particular relevance currently with technological sophistication in all sphere of life and upsurge in armed conflicts glob ally.

Pattern and cause of trauma differ from place to place. Road traffic accident, fall, assault, firearm injuries, burn, sports injuries, animal bites, and industrial accident are some cause of trauma. Road traffic accidents are the most common in most studies. Death from road traffic accidents are predicated to increase from 1.2million in 2002 to 1.9million in 2020 globally, to become the third leading of DALYs losses (2).

Injuries are classified as unintentional and intentional (violence). Unintentional injuries comprise most of the traffic injuries, fires, falls, poisonings and drowning. On the other hand intentional injuries or violence are classified as interpersonal violence (including violence against intimate partners), collective violence (including war) and self-direct violence (suicide).

Injuries is one of the commonest causes of death and disability in the Africa region, particularly among those aged 5-29years. Three of the top five causes of deaths for this age group are injury related. Every day in Africa about 2,400 people die from injuries. Injury related deaths in Africa among people aged 15- 44 years rank second behind HIV/AIDS, Road traffic (RTI) are among the leading causes of injuries in Africa. Death from RTI in Africa region are 40% higher than in all other low and middle income countries and 50% higher than the world average.

In Ethiopia, like other developing countries, injuries are common but little attention is being given to this problem. Injuries constitute around a half of all surgical emergencies, and were the major reason for an emergence room visit in Addis Ababa during the year 2007-2008 , more than quarter of surgical admission and 62% of orthopedic admission in black lion hospital. Data compiled by the ministry of health in year 2008/2009 showed that injuries ranked fourth and fifth as leading cause of admission and death respectively accounting for 6.2% and 1.6%. Ethiopia hosts an annual road traffic fatality of 144 death per 10,000 vehicles and a property loss of over 56 million US dollar every year. In Ethiopia the occurrence and health impact of injuries have not received due attention .This can mainly be attributed to the lack of information on the magnitude of the problem (3).

Study done in 2009 at St. Lukas hospital injuries were the first cause of in hospital death (10.4%) of the total patients seen in the hospital male to female ratio was 3.2:1 and the second leading cause of admission (7.9%) male to female ratio was 2.6:1(4).

This studies devised mainly to assess patterns of trauma and management outcome of trauma among trauma victims managed as in-patients at Woliso St. Lukas Catholic hospital to fill the gap between information found and the magnitude of trauma. The review will make a basis for further regular date generation on the subject.

1.2 Statement of the problem.

Trauma represents a major epidemic of non-communicable disease in present century. They are no longer considered accidental but are part of price we pay for technological progress. Trauma has its own natural history and follow the same epidemic pattern as any other diseases that is agent, the host, and the environment(5).

Trauma is the commonest health problems that causes morbidities, mortalities and disabilities worldwide and developing countries carry the heaviest burden and neglected epidemic in the developing countries, causes more than 5 million deaths each year roughly equal to the number of death from HIV/AIDS, Malaria and tuberculosis combined. The global of burden of disease and risk factor estimate that injury accounted for more than 15% of all ill-health in the world in 1990 and forecast this to increase to 20% in 2020 (6).

Trauma fulfills the disease classification criteria for a global pandemic, this being a recurrence and significant cause of morbidity and across continents despite efforts to control its impact. Worldwide about 16,000 people die every day as result of an injury (5.8 million death per year, and, the projection for 2020 show that 8.4 million death per year are expected. Consequently injury will be the second common cause disability adjusted years of life lost within the next13 years. The major burden of injury is increasing occurring in the developing world as it industrializes, adopts, motorized transportation and remain the major center for armed conflict(7).

In all region injury rate are much higher in men than women. In boys under the age of the of 15 years

DALY rates per 100,000 vary from a low of 464.4 in west Europe to a high of 6471.4 in central sub-Saharan Africa. In girls under the of 15 years DALY rates vary from a low of 307.4 in west Europe to a high 4788.1 in central Sub-Saharan Africa. The DALY rate of RTI is 9.7 times higher in boys and 9.1 times higher in girls in central sub-Saharan compared with high in-come Asia pacific. In young adults aged 15-49 years DALY rate in men vary from a low of 2651 per 100,000 population in in western Europe to a high of 10780 in east Europe . Women rate range from a low of 798 in Australia to a high of 3268 in south Asia. Pattern of injury DALY rates in the age group 50-79 years follow similar pattern as those in the younger adult age group DALY, rates per 100,000 men 2873 and women 1574.2 are seen in Australia , while south Asia has the highest rate in men 7525 and in women 4798. Falls become a more prominent cause of DALYs in the age group and self-harm become a great cause then valances in most region(8).

Trauma injury represents a significant and growth disease burden in the developing world and now represent one of the leading causes of death in economically active adults in many low and middle income countries. Reports from South Africa and Zimbabwe revealed the injury occurred for the large proportion of all death and morbidity. Injury was causes for 14% of all death in South Africa 73% were violence related, 13% were transport related and the 14% were due to other unintentional causes. In Zimbabwe injury was reported to contribute 15% and over 9% of the total record death in male and female respectively. The total economic coast amount to as much as 65 billion US\$.

Injury is become serious threat to the health and well-being of Ethiopia. The magnitude of RTI and case fatality rates were 946 and 80 per 10,000 respectively and account for over a third of all injuries and property worth US\$ 56 million, homicidal is the second leading causes. About 10% of the injury disabled less than 10% need rehabilitation of the Ethiopian population (9).

CAPTER TWO

Literature Review

According to WHO report on global burden of disease in year 2015 ,Injury accounted for 10.1% , it estimate that 972 million sustained injuries that warranted some type of health care and 4.8 million peoples died from injuries . Major cause of injury death were road injury (26.9%), Self-harm (17.6%), falls (11.6%) and interpersonal violence (8.5%). Of the people who sustained injuries that warranted some type of health care 5.8%(56.2 million warranted inpatient care ,of whom 38.5% (21.7 million) sustained fracture .Of the patient who warranted outpatient care 75.2% sustained minor injuries(689 million) (8).

Study done in India at Kasturba hospital mahatma Gandhi, institute of medical science, a total number of 1521 trauma patients were studied over a period of 2 years. Among them male account 1201 (78.8%) and female account 324 (21.2%). Age of the patients ranged between 1year and greater than 60 year. Majority of the patients were in in the age group of 16-30 years, followed by patients between 31-45 years of age. It was observed that maximum number of patients sustained injury to head 788(55%), followed by superficial injury 247(16%), chest injury 154(11%), abdomen injury 141(9%) and 98(8%) patients sustained poly trauma. It was also observed that maximum mortality occurred in patients sustained poly trauma 24(22.8%), abdomen 10(6.6%), head injury 43(5.2%), chest injury 5(3%) and last was superficial injury 6(2.4%). Mechanism of injury was more patients 75% sustained injury due to RTA, 15% were non RTA (include fall etc.) and 10% were due to physical assault. Blunt trauma is the leading cause of injury (84%), penetrating injury (15%) and crushing (1%) (10).

In a study at the Emergency department of Dhulikhel Hospital,Kathmandu University Hospital for a period of one year (May 2011 to April2012), magnitude of trauma those treated as in-patient in this hospital is Male 1460, Female 745 Male to Female ratio is 1.96:1. From 2205 totally admitted patient Falling 1072(48.6%), RTA 681(30.8%) ,physical Assault 184 (8.3%) , other (Animal related ,Burn ,Natural disaster ,Firearm, occupational related) 268(12.1%) ,Not available not document 16(0.7%).The outcome status of trauma case in this Hospital is Miner soft tissues, Sprain e t c) phalanx and toe fracture 1391(63.1%) ,Moderate Head ,Chest, Abdominal injury that can managed conservatively with observation and No surgical intervention needed ,un displaced fracture that can be managed with simple measure like cast and slab isolated displaced fracture 610(27.6%), Sever Head chest Abdominal injury that need detail

Investigation like CT scan and probably several intervention needed multiple injury and poly trauma ,multiple fracture, open fracture or fracture associated with hemodynamic instability or unstable spinal fracture and hip fracture 178(8.1%) ,No documentation 26(1.2%)(11).

According study done in South Africa at university of Kwa-Zulu Natal Nelson .R. Mandela school of medicine, a total of 2,733 patients were admitted in this hospital. This included 2659(97.3%) new emergency admission and 74(2.7%) re-admission. the average patients age was 28.3 years (IOR23.6-46.3 years). There were 2255(82.5%) male patients and 478(17.5%) female patients. The mechanism of injury that 1,450 (54%) patients sustained blunt trauma , 1,081 (40.7%) penetrating trauma, 88 (3.3%) bite wound, 10(0.4%) electric burn injury, 30(1.1%) combination of blunt and penetrating injuries. In blunt trauma group 566(47%) were victims of RTA, 471(32%) patients were victims of assault 92(6%) were victims of community beating. Cause of isolated trauma, head injury compromised 355cases (34.3%), thoracic injury 328 cases (21%), abdominal injury 262 cases (16.8%), extremities injury 207cases (13.3%), neck injury 126 cases (8.1%), maxillofacial injury 91 cases (5.8%), pelvic injury 11 cases (0.7%) and perianal injury 1 cases (0.065).A total of 812 operative procedures were performed, this include 592 index operative cases and 220 laparotomy revision operation. The total number of operative cases performed with PMTS included 17 operative procedures to the head, 31 maxillofacial procedure, 29 neck exploration, 74 thoracotomies, 269 laparotomies, 6 pelvic procedure, 157 extremities operation procedure. The average duration of stay (DOS) for patients under the care of the PMTS was 5.12 days (IOR 2.3-13.2 days). Some 2,432(92.12%) patients survived, and 208(7.88%) died (12).

Study done on an epidemiology of the burden of trauma in Makurdi, Nigeria, a total of 250 patients. There were 203(81.2%) male and 47(18.8%) female with male to female ratio of 4.3:1. Their ages ranged from 3 to 74 years the model age group was 21-30 years. Unintentional injuries were the predominant form of trauma (n=209, 83.6%). Road traffic accident were the most common cause (n=118, 72%). this was followed by gunshot (n=21, 8.4% and assault (n=20, 8.0%. The extremities were the most commonly injured body region (n=148, 43.5%). This was followed by the head (n=11,32.9%),chest(n=46,13.5%, abdomen (=16, 4.7 %), spine(n=202.9%),and pelvis(n=8, 2.4%). The majority of patients (n=138, 55.2%) were admitted and treated in the accident and emergency (A and E) ,110(44.0%) in the general /pediatric surgical and orthopedic ward and two (0.8%) in the intensive care unit , Of the 250 ,142were treated surgically .the length of hospital stay range between 1and 160 days with a mean duration of about 8days. Majority of patients (n=133, 53.2% were treated and discharged without permanent disability. Eleven

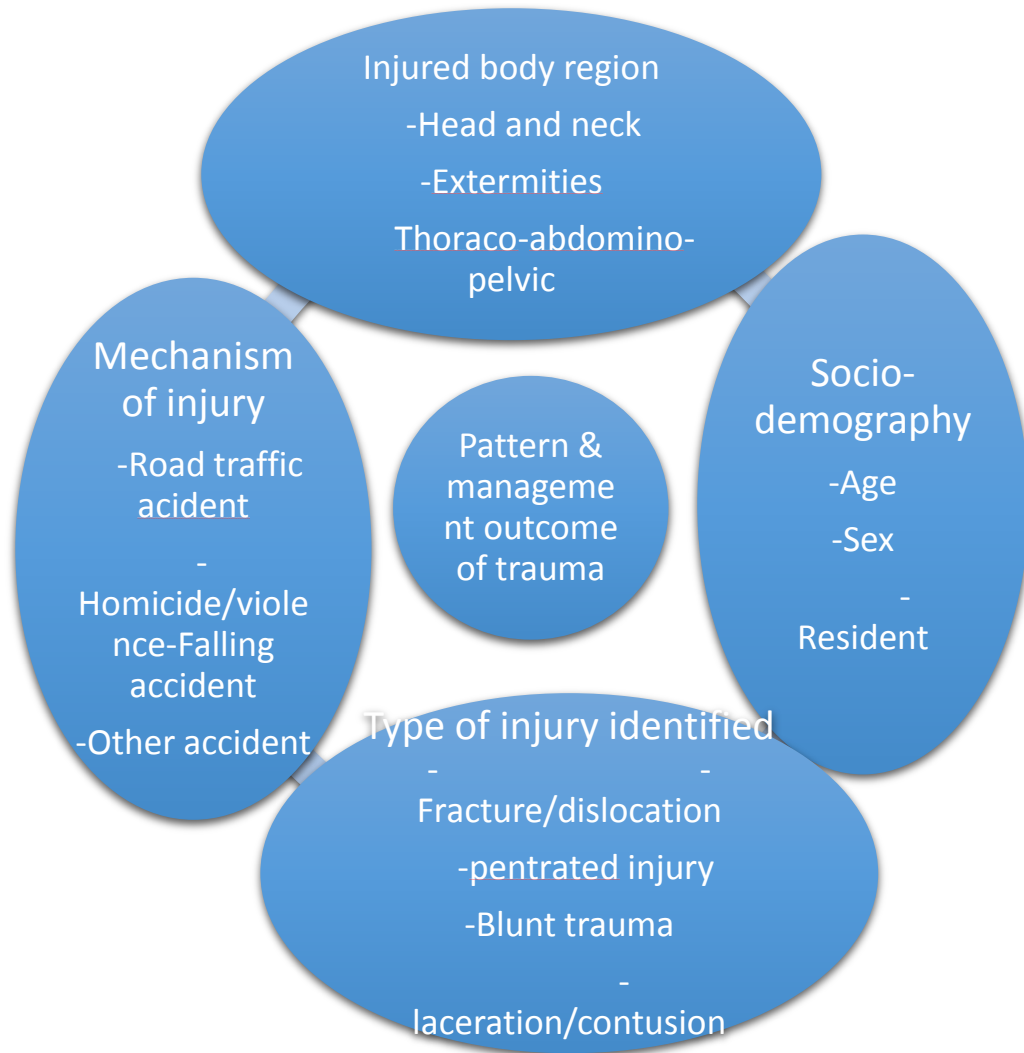
(4.4%) were discharged with permanent disability (paraplegia, limb loss etc.), 56(22.4%) opted for discharged against medical advice, while 12(4.8%) were referred. Thirty-eight patients died giving as death rate of 15.2% (13).

Study done at Gondar University in Amhara regional state, among the 416 study participant, 414 respond to the interview, making the respond rate 99% in the study male; outnumbered female by a ratio of 2:1 (male 278(67.1%) and female 136(32.6%). The mean SD of age of the patient was 30(\pm 16 years). The prevalence of injury in emergency department referral hospital, was found to be 230(55.6%) with the 95% CI (50.7-60.4%). Unintentional injuries were the primary cause for 165(71.7%) of cases, 46% of the unintentional injury was contributed by RTA. regarding the mechanism of injury, assaults was cause for 86(37.4%) and RTI for 78(33.9%). concerning the outcome of injury and type of care given 99(43%) of patients suffered moderate injuries that need skilled treatment, such as suturing of wounds and stabilization of fracture. The other 78 (33.9 %) had a severe injury requiring high specialized skill of medical and surgical management and the rest 53(23%) encountered minor superficial injury. Among the injured patients 161(70%) patients were admitted to hospital, 66(28.7%) patients were treated and discharged. The injured related fracture in 95(41.3%) of patients, 68(29.6%) had cut. Age sex, occupation, residence, substance abuse e t c were identified to be significant association with injury. However age 20-44(AOR) =2.25; 95% CI (1.06-4.81), Sex male (AOR) = 2.83 95% CI, 1.03-3.45) (14).

In Mekele university, 600 trauma patients involved in the study, from these male accounts 446(74.3%) and female accounts 154(25.7%).The mostly affected age group was those from 16-25 years (38.5%) followed by 26-35 years age group (21.4%). Male is more frequent than female (73.3% V 25.7%). The majority of the patients (83%) from urban area. The most common cause of trauma was assault (31.2%) and accidental fall (19.2%). exposure to inanimate mechanical forces (inanimate object coming trauma, but not related to assault) constitute 22.7% and exposure to animate mechanical force (animal bite and collision) 14.6%. RTA were the causes in 14.1% and burns in 2%. There were statistical significant association between the cause of trauma and sex, age, address of the patients (whether residing in or out of Mekele) and the affected part of the body. The common cause of trauma among females were assault (22.9%, n=35) and exposure to animate mechanical force and poisoning (22.9%, n=35). Among the males the most frequent causes were assault (34.6%, n=150) followed by exposure to inanimate mechanical forces (25.45, n=1100). The difference between males and females was statistically highly significant. ($p < 0.0001$) (15).

Ten month from April 09 2010 to January 07 2011 study in Jimma University Specialized Hospital in Surgical outpatient department from 13500 total visited patient 1102(8.2%) were trauma case .The commonest mechanism of injury was blunt assault 341 (30.9%) followed by RTA 334(30.3%). Fracture was the leading outcome of trauma 454(41.2%) followed by bruise or skin laceration 404(36.7%). Male is predominant than female. The most functional limitation were difficult to use hands, 312(28.3%) and difficult to use legs, 217(19.7%). 83(7.5%) of the patient died and RTA alone accounted for almost half 179(49.7%) of the severe injury. 872 (79.1%) cases managed as out-patient department, while the rest ,230(20.9%) were managed as in-patient, the median length of the hospital stay was 14 days ranging from half days to 150 days and the major 1019(92.5%) of the case were discharged with improvement and follow up and 83(7.5%) died and 60(72.3%) of the deceased were male. Death is more common in those between 15-49 years of age, 66(79.5%), followed by those 5-14years old, 10(12%). With regard to injury spectrum, 360(32.7%), were classified as having had sever, 455(41.3%) as moderate and 287(26.0%) as minor injury .Most importantly, road traffic accident alone accounted for almost half of the severest injuries 179(49.7%), followed by stab injury 45(12.5%) and cut by sharp tool 41(11.4%). All of the deceased cases, 83(100%), were severely injure (16).

Conceptual frame work of the study



CHAPTER THREE

3 Objective.

3.1 General objective.

To assess patterns of trauma and management outcomes of trauma victims those managed as in-patients at St. Lukas Catholic hospital.

3.2 Specific objectives.

- 1 To determine patterns of trauma among trauma victims managed as in- patients at St. Lukas Catholic hospital in year 2016.
- 2 To identify management outcome of trauma among trauma victims managed as inpatients at St. Lukas Catholic hospital in year 2016.

3.3 Significance of the study

In Ethiopia, specifically at this specific study area the pattern and management outcome of trauma accidents have been poorly understood over several year. This study may be help-full to have knowledge on pattern of trauma that cause complex problem and to gain information about pattern and management outcome of trauma in the area of the study and the country at a large. It could help to develop counter measurement that could reduce the number of trauma and complication of trauma.

However, there have been no research done on the pattern and management outcome of trauma among in-patients at St-Lukas catholic hospital, therefore this study may provide baseline information for other researchers to do farther studies. The data obtained in this study, may be used by concerned body for planning and evaluating trauma prevention method. The recommendation given if concerned are going to benefit the public at large on prevention of trauma.

CHAPTER FOUR

4. Materials and methods.

4.2 Study area and period

The study was conducted in May 2017 at St. Lukas Catholic hospital & college of nurses and midwifery was established in January 2001 at Woliso town which is located in south west Shoa zone Oromia regional state located at 114km south of Addis Ababa along well maintained main road to Jimma and also 210km northwest of Jimma University. It is Non-Governmental Organization (NGO) which is owned by Ethiopian Catholic church supported by Oromia regional health Bureau and Doctors with Africa (CUAMM) Italy, Serves for 1.206 million people and landed on 83,394.95 square meters. It has a total of 273 beds and 387 working staffs. The study period was from January 01/2016 up to December 31/2016.

4.2 Study Design

A retrospective hospital based cross-sectional design was used.

4.3 Source of population

A total of trauma and non-trauma victims managed as in-patient at St. Lukas catholic hospital in year 2016.

4.4 Study population

The study population was trauma victims who treated as in-patient at St. Lukas hospital in 2016 and those who satisfy inclusion criteria.

4.5 Eligibility criteria

4.5.1 Inclusion criteria.

All trauma victims those managed as in-patient in orthopedic and surgical wards at St. Lukas Catholic hospital which full fill eligibility criteria.

4.5.2 Exclusion criteria.

. Incomplete cards were excluded from the study.

4.6 Variables

4.6.1 Dependent variable

- Management outcome of trauma

4.6.2 Independent variable

- Sex
- Age
- Residence
- Mechanism of injury
- Injured body region
- Type of injury identified among victims
- Classification of trauma
- Type of management given
- Type of operation given
- Length of hospital stay

4.7 Sample size and sampling technique.

After the possible final sample size was determined, patients chart had been selected by systematic sampling technique using their respective medical record number.

The number of trauma patients participating was prepared by their respective charts in the study had been estimated by applying a single population proportion formula with the following assumptions:

- α = the probability of rejecting true null hypothesis, taken to be 5% (0.05)
- d = degree of precision or margin of error (0.05),
- Z = the standard score corresponding to a 95% confidence interval, and $Z_{1-\alpha/2}$ for 95% CI is 1.96
- P = 0.5 (estimate of the prevalence rate for the population taken as 50%).

The sample size was estimated to be:

$$n = \frac{\left(Z_{1-\alpha/2} \right)^2 P(1-P)}{d^2}$$

$$n = \frac{(1.96)^2(0.5)(1-0.5)}{(0.05)^2} = \frac{3.84 \times 0.25}{0.0025} = \underline{\underline{384}}$$

From the total 798 documented trauma cases, charts of 384 cases incorporated in the study by systematic sampling technique.

4.8 Data collection procedure and instrument

Data collection checklist or formats was tested on 5% of the total study data's not included in the study. Pretest checklists or formats prepared in English was used as a data collection instrument. During data collection five nurses and one data Clerk were participated. Crosschecking for completeness and consistency of collected data had be undertaken on daily basis. During the data collection, record keepers was sort out all the trauma cases those managed as in-patients from log books and medical records. Data collector nurses from this hospital was trained and collect data from identified charts of trauma cases by using patient registration log book in order of admission then selected sample was selected as systematic sampling method .

4.9 Data analysis plan

The collected data had been checked for its completeness, clearness, entered by using updated computer statistical software of SPSS program for analysis after edition. Frequency distribution of both dependent and independent variables had been worked out. The association between dependent and independent variable had been assessed using logistic regression analysis and value $< 0.05\%$ had been considered statistically significant.

Finally the data will described and presented using tables and interpreted by looking at proportion in percent and odd ratio with 95% confidence intervals.

4.10 Ethical consideration.

The ethical issue of this study was approved by the ethical committee of Jimma University college of public health and medical science, and official permission to under taken the study was obtained from Jimma University and St. Lukas Catholic hospital. The advantage of the study was explained to the staff members of the hospital. Written consent was given to the record office of the hospitals for the confidentiality of the record information.

4.11 Operational Definition

Trauma:-Cellular disruption caused by an exchange with environmental energy.

Unintentional injury:-A traumatic incident involving any body part but not intentional.

Burn:-It tissue damage caused by such agent as heat, chemical, electricity, and sun light or nuclear radiation.

Firearm injuries:-Are injury by missile, bullet, blasts etc.

Suicidal attempt:-Is when death is averted although the person concerned intended to kill himself or herself and persuading when the attempt is made for reason other than actual killing oneself.

RTA:-Is an accident occurs on the road by vehicles such as car, lorry, motorcycle, bicycle etc.

Multiple organ injury:-is trauma that results in injuries of two or more body region.

Survive with complication:- victims who improved with organ loss or loss of function of organ long term.

Survive without complication;- victims improved without organ or without loss of function.

Thoraco-abdomino-pelvic injury:- injury that happen on region of thorax, abdomen and pelvis.

Favorable:- good management outcome injured patients those survive without complication.

Unfavorable:- not good management outcome include survive with complication, referred, died and self-discharged.

CHAPTER FIVE

5 RESULTS

5.1 Socio-demographic characteristics

From a total of 798 admitted patients due to trauma in orthopedic and surgical wards at St. Lukas Catholic hospital in year 2016; 384 population were selected for the study. Out of these 27(7.0%) were under five children, 45(11.7 %) were the age from 5-10 years, 35(9.1%) were from the age 11-14 years, 126(32.8%) were from the age 15-26 years old, 133(34.6%) were from 30-64 years old and less patients 18(4.7%) were above the age 64 years old.

Their mean age was 27.4 ± 17.9 years. The median age of this study population was 25.00 years. The peak age group more vulnerable to trauma was from the age 30-64 years which accounted for 133(34.6%). One hundred seven (27.8% of the victims were from the age less than 15 years old children. 18(4.7 %) were greater than 64 years old patients. Thus 125 (32.5%) were dependent age groups that mean under 15 years and above 64 years old; but 259(67.4%) were from 15 to 64 years old patients those in the reproductive age groups whom can be head of many family members. Of 384 patients; 301 (78.4%) were males & 83(21.6%) were females that gives male to female ratio 3.5:1.

More patients were come from urban area that accounts 199(51.8%) and some of them came from rural area accounted 185(42.9%). Most trauma patients were from out of south west shoa zone came from SNNP of Ethiopia (especially Gurage zone), West shoa zone, Jimma zone, Addis-Ababa & other place accounted 148(38.5%); these were out of the catchment area of the hospital. From the catchment area of the hospital (south west shoa zone) more patients were from wolisoworeda accounts 112(29.2%) of the totally studied population followed by Amayaworeda 34(8.9%). In general 236(61.5%) patients were from catchment area (south west shoa Zone) and 148(38.5%) were from out of catchment area (out of south west shoa zone. (Table 1).

Table 1:-Socio demographic characteristics of trauma victims those managed as in-patients at St Lukas Catholic hospital, Woliso, Ethiopia in 2016 (n= 384).

Variables	Category	Frequency	Proportion
Sex	Male	301	78.4%
	Female	83	21.6%
Age	0-4	27	7.0%
	5-10	45	11.7%
	11-14	35	9.1%
	15-29	126	32.8%
	30-64	133	34.6%
	64+	18	4.7%
Residence	Urban	199	51.8%
	Rural	185	48.2%
	Total	384	100%
Woreda	Woliso	112	29.2%
	Goro	13	3.4%
	Amaya	34	8.9%
	Wonchi	21	5.5%
	Sadden-Sodo	8	2.1%
	Dawo	7	1.8%
	Becho	15	3.9%
	Tole	8	2.1%
	Illu	17	4.4%
	Out of south west shoa zone	148	38.5%

5.2 Mechanism, injured body region, type and classification injury

From 384 injured patients, those admitted in the hospital the commonest mechanism of injury in trauma victims was Road traffic accident which accounted 148(38.5%), followed by homicide/violence 102(26.6%), falling accident 94(24.5%) and other accidents 40(10%). Extremities body region were more affected by trauma on both lower and upper limbs which accounts 210(54.7%), followed by injury on the head & neck 99(25.8%) and less number of the victims were injured on their thoraco-abdomino-pelvic area accounted 33(8.6%). Fracture /dislocation were the most identified type of injury among the victims 197(51.1%) followed by blunt injury 93(24.2%), laceration/ contusion 85(22.1) and a least penetrating injury 9(2.5%) was seen. Under classification of trauma, unintentional injuries were more predominant than intentional injuries which accounted 282(73.4%) and 102(26.4%) respectively in the ratio of 2.8:1. (Table 2).

Table 2:-Mechanism, injured body region, type and classification of injury among trauma victims those managed as in-patients at St. Lukas Catholic hospital, Woliso, Ethiopia in 2016(n=384).

Variables	Categorical	Frequency	Percent
Mechanism of injury	RTA	148	38.5
	Homicidal/violence	94	24.5
	Falling	102	26.6
	Other accident	40	10.4
Injured body region	Head & neck	99	25.8
	Extremities	210	54.7
	Thoraco-abdomino-pelvic	33	8.6
	Multiple organ	42	10.9
Type of injury	Fracture / dislocation	197	51.3

	Penetrate	9	2.5
	Blunt	93	24.2
	Laceration/contusion	85	22.1
Classification of Injury	Unintentional	282	73.4
	Intentional	102	26.6
	Total	384	100

5.3 Season of injury

More patients were seen at the season of spring which accounted 120(31.2), followed by summer season 102(26.6%) and in winter and autumn equal number of patients were seen 81(21.1%) for each season. (Table 3.

Table 3:- Season of injuries of trauma victims those managed as in-patients at St. Lukas Catholic hospital, Woliso, Ethiopia in 2016.

Season of injury	Frequency	%
Summer	102	26.6
Spring	120	31.2
Winter	81	21.1
Autumn	81	21.1
Total	384	100

5.4 Type of treatment given and management out come

Type of treatment given; from 384 studied population 100% of them were treated either operational accounted 263(68.5%) or conservatively (non-operational) accounted 121(31.5%). Out of 263 operated patients for 133(50.6%) major operation and 120(49.4%) minor operation were performed.

Most trauma patients were discharged from the hospital with clinical outcome of survived without complication which accounted 279(72.7%) & 67(17.4%) patients were survived with long term complication. Fourteen (3.7%) victims were died; among them 8(2.1%) were died within 48hrs & 6(1.6%) after 48hrs, 16(4.6%) patients were referred to other hospital and 8(1.6%) were self-discharged. Total death rate show that 14(3.7%), from these only rode traffic accident accounted greater than half 8(57.1%) followed by homicidal/ violence 4(28.6%) and falling accident 2 (14.3%). Head & neck injury was the leading cause of death only account 85.7% from the total death followed by abdominal injury and multiple organ injury accounted 2(14.3%) for each.

Hospital stay of the patients, majority of them were stay in the hospital for less than one week which accounts 233(60.7%), followed by stays for 1week to 2weeks 110(28.6%), 27(7.0%) were stays for 2 to 3 weeks, less number of patients stay for 3 to 4 weeks and greater than 4 weeks accounted 10(2.6%) & 4(1.0%) respectively. The mean hospital stay of the patients was 8.3 days ranged from the minimum of one day to the maximum of 94 days.

More patients had favorable management outcome 279(72.7%) and less of them had unfavorable management outcome 105(27.3). (Table 4)

Table4:-Type of treatment and outcome of trauma victims those managed as in-patients in St. Lukas Catholic hospital, Woliso, Ethiopia in 2016.

Viable	Categorical	Frequency	Percent
Type of treatment	Non-operational	121	31.5
	Operational	263	68.5
	Major operation	133	50.6
	Minor operation	120	49.1
	Total	263	100
Clinical out come	Survive without complication	279	72.7
	Survive with complication	67	17.4

	Died in the first 48hr	8	2.1
	Died after 48hr	6	1.6
	Referred	16	4.2
	Self-discharge	8	1.6
Hospital stay	Less than 1 week	133	60.7
	1 week to 2 weeks	110	28.6
	2 weeks to 3 weeks	27	7.0
	3 weeks to 1 month	10	2.6
	Greater than 1 month	4	1.0
Cause of death	Road traffic accident	8	57.1%
	Homicide /violence	4	28.6%
	Falling	2	14.3%
Leading cause of injured body region	Head and neck	14	85.6%
	Abdomen	1	7.2%
	Multiple organ	1	7.2%
Management outcome	Favorable	279	72.7
	Unfavorable	105	27.3

5.5 Factors independently associated with unfavorable treatment outcomes

Multivariate logistic regression analysis assessed association of region body injury of trauma victims with who had sustained trauma on the head & neck had 40% times more less likely unfavorable management outcome than those sustained multiple organ injury (AOR =0.4; 95%CI =0.17,0.9) and Multivariate logistic regression analysis also assessed for factor associated with management outcomes of trauma victims managed as in-patient in the study setting and found that the trauma victims who sustained blunt trauma had 7.4 times more likely to developed unfavorable management outcome as compared to those with sustained skin laceration/ contusion (AOR=7; CI=95%, 2.82,19.7).

Table 5:- Selected factor associated of trauma victims and management outcome of trauma victims those managed in Woliso year 2016.

Variables	Management outcome		COR(95%CI)	AOR(95%CI)	p-value
	unfavorable	favorable			
Injured body region					
Head& neck	34(34.5%)	65(65.5%)	0.25(0.25, 1.09)	0.393(0.172,0.900)*	0.027
Extremities	40(19%)	170(81%)	0.24(0.12,0.47)	0.103(0.031,0.336)	0.00
Thoraco-abdomino-pelvic	10(30%)	23(70%)	0.35(0.17,1.13)	0.22(0.06,0.794)	0.02
Multiple organ	21(50%)	21(50%)	1.0	1.0	
Type of injury					
Fracture/dislocation	50(24.4)	147(75.6%)	3.8(1.64,8.75)	14.55(4.5,47.2)	0.00
Penetrate	5(55.6)	4(44.4%)	13.9(4.0,22.97)	18.64(2.762,125.908)	0.00
Blunt	43(46.2%)	50(53.8%)	9.58(4.0,22.97)	7.35(2.82,19.17)*	0.00
Laceration/contusion	7(8.3)	78(91.7%)	1.0	1.0	

*Variables which had p-value <0.05 at multivariable logistic regression analysis.

CHAPTER SIX

6.1 DISCUSSION

The study reveal that road traffic accident is the leading cause of trauma accounted 148(38.5%), extremities are the frequent body region 210(54.7%), fracture/ dislocation is the most leading outcome of injury 197(51.3%) injury, unintentional injury predominant than intentional injury 282(73.4%), 268(68.5%) victims got operational treatment and 105(27.3%) victims had unfavorable management outcome .

In this study, composition of the study population was similar to that found in developing countries, being relatively young adults. 259(67.4%) of the patients were from age 15 to 64 years old; those in the productive age groups, with peak age groups 30 to 64 years and many of whom were likely to be head of household & responsible for several family member. Since due to the nature of the work males are more affected than females in trauma which is comparable with the same study. In this study males 301(78.4%) are more affected than females 83(21.6%) in the ratio of M: F 3.6:1. This finding is almost similar to the finding in Tikur-Anbessa specialized referral hospital M: F ratio 3.58:1(9), in India of Kasturba, hospital of Mahatma Gandhi institute of medical science from 1521 patients male accounted 78.8% and female 21.2% (5).

Most of trauma patients were from different woreda of south west shoa zone out of which, 112(29.5%) were from Woliso woreda , followed by Amayaworeda 34(8.9%). this finding was similar with that of study done at Jimma University most patients were from different words of Jimma zone of which; 40.4% were from Jimma town(16). This was probably due to easily accessibility to the hospital.

According to the study revealed that, the main mechanism of trauma was road traffic accident which comprised 148(38.5%), followed by homicide 102(26.6%) & falling accident 94(24.5%). It was similar to the finding in Tikur-Anbessa specialized hospital RTA 38.3%, followed by homicide/ violence 31.5, falling accident 21.2%(9) and in Nigeria at the accident and emergency unit RTA that accounted 92.6% much higher rate than this finding because of the location of the study center close to two major interstate highway(13). probable reason for such finding was St. Lukas hospital is built in Woliso side to the road well maintained from Addis Ababa to Jimma and there is no other referral hospital along this road in between Addis -Ababa and Jimma.

Most type of injuries were unintentional 282(73.4%) & less of them were intentional 102(26.4). This finding was likely to the finding of Addis Ababa city health Bureau unintentional injury accounted 76.4%

& intentional 23.6% of the trauma victims(3) and in Makundi Nigeria unintentional 82.2% & intentional 18.8% (13).

The most common causes of injury for under five children was falling accident 59.3% followed by burn 22.2% and productive age group from age 15-64 was RTA 45.9%, followed by homicide 35.5%. This study was similar to the study done in Addis Ababa city health bureau in under-five the common mechanism of injury was accidental fall, followed by burn and from age 15-64; RTA followed by homicide(3). but this finding is unlike to study in Gander show that; the most cause of injury for under five was firearm 25%, falling 22% & burn 16%, for age 15-64 homicide, followed by RTA (14) and study done in Mekele the common mechanism of injury for under five was inanimate mechanical force 35.5%, followed by falling accident 29.2%, for age 15-45 assault 41.8%, followed by inanimate mechanical force 18.3% (15).

In this study the most frequent injured body region was lower limbs which accounted 147(38.3%), followed by head & neck 99(25.8%), upper limbs 63(16.4%) & multiple organ injury 41(10.7%). This finding like with the finding in CMS medical university in India lower extremities were the more frequent injured region 29.0%, followed by head 28.8% & upper limbs 11.1% (5) and unlike with the study done in Mekele, head & neck 35.5%, upper limbs 20.5% & lower limbs 18.5%(15) and the finding at Tikur-Anbessa hospital head & neck 43.6%, lower limbs 23.1 & upper limbs 10.3%(9).

In this study lower limbs 42.6% were the most body region which injured by road traffic accident followed by head & neck 33.1%. Secondary to falling accident 45.7% were lower limbs injury followed by upper limbs 33.9%. Due to the mechanism of other accidental injury 42.9% were lower limbs, followed upper limbs 27.7% and due to burn 27.3% were lower limbs, followed head & neck 22.7%. Head & neck (30.4%) was the most injured body region by homicide/Violence followed by lower limbs (25.5%). Generally lower limbs were the most frequent injured body region accounted 38.3%, followed head & neck 25.9% and upper limbs 16.4%. These findings unlike with the finding at Mekele, show that head & neck 60.4% the most injured body region secondary to assaults higher than the current study, followed by falling accident 14.6%. Lower limbs were the most injured body region due to inanimate mechanical injury & animate mechanical injury comprised each 28.2%. Lower limbs injury due to falling accident 16.5% & RTA 15.6%. Upper limbs were mostly injured by the mechanism of inanimate mechanical force 31.4%, followed by falling accident. Finally according to the study in Mekele; head & neck was the most frequent injured body region accounted 33.5%, following upper limbs 20.4%, lower limbs 18.5%. Chest & abdomen were rarely injured body region accounted 3.2% & 2.3% respectively (15). This difference may be due to the difference in study setting, since the current study conducted in the hospital among admitted patients.

According to this study; of 384 sample population more of them 279(72.6%) were survive without complication; of these RTA accounted 97(34.7%), followed by homicidal/violence 82(29.4%), falling accident 66(22.2%) and others 34(11.4%).From 67(17.4) survived with complication the most mechanism of injury RTA31(46.3%) followed by homicide/ violence 23(34.3%),and of 14(3.6%) death road traffic accident alone account greater than half 8(57.1%), followed by homicide/violence 4(28.6%) and falling 2(14.2%). The mortality rate of trauma less likely similar to study done in Addis Ababa (3%) and the study done in Saud Arabia 2.6% (17), but mortality rate 8% among admitted patients in South Africa(12) and 7.5% in Jimma which had higher rate than this study(16). This study show that 72.7% victims had favorable management outcome and 27.3% had unfavorable outcome. These finding is unlikely with the finding in Makundi Nigeria majority of the patients 52.2% were discharged with favorable management outcome and 47.8% with unfavorable management outcome (13).The difference is due the study setting.

All patients got either operational management 263(68.5%) or conservative management 121(31.5%). Operative procedures were done for lower limbs accounted 137(52.1%), upper limbs 59(22.4%), multiple organ injury 29(11.0%), head & neck 21(8.0%), abdomen 9(3.4%) and for chests 8(3.0%) in sequential order. These finding is unlike with the finding in South Africa in university of Kwa-Zulu. Ntal Nelson Mandel School of medicine,the most operational procedure done wereabdomen 50.8%, extremities 25.4%, thorax 11.9%, head & neck 9.6%, perineum 1.4% and pelvis 0.9%(12).

The average hospital stay of the patients was 8.5 days. Most victims 133(60.7%) were discharged from the hospital within less than one week, 110(26.6%) in between 1 to 2weeks, 27(7.0) in 2 to 3 weeks, 10(2.6%) were discharged within 3 to 4 weeks and 4(1.0% were stay in the hospital for greater than 4 weeks. Similar study done on Jimma university specialized hospital average hospital stay of the patients was 14 days(16), it was more days than the current study, study in south Africa university of Kwa-Zulu the average stay was 5.12 days little bit less days than this study(12). This all difference may be due to the difference in study setting and time.

In this study multiple variable logistic regression finding; a trauma victims who sustained blunt trauma had 7.4 times more unfavorable management outcome than those sustained laceration/contusion injury (AOR =7.4;95%CI=2.82,19.17) and who sustained injury on the head & neck region had 0.4 times less likely unfavorable outcome then those sustained multiple organ injury (AOR=0.4; 95%CI=0.17, 0.93).

In conclusion, trauma affect adult population those were active in productive age groups predominantly involving male. The incidence of unintentional injury was higher than intentional. Road traffic accident is the leading mechanism of injury. Lower extremities and head & neck were the most injured body region. Fracture and blunt trauma were the leading outcome of injury.

Appropriate prevention strategies should be designed and implement against rode traffic accident, homicide/violence. Factors those associated with rode traffic accident also need to identify in future. Data's from hospital source can corroborate with community based data can help practitioners, researchers, program managers and police makers at different level identified population at risk, implement and evaluate prevention programs.

6.2 Limitation of the study

A retrospective cross sectional study design was employed to conduct this study due to time constraint. All the data was collected from patients' medical record cards. So, it is impossible to get clear and consistent clinical features of patients as all of the information might not be recorded on the cards.

It might be good to use a prospective study design which may help to overcome the above mentioned problem.

CHAPTER SEVEN

7 CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The finding of this study shows that from over all trauma admission, the common mechanism of injury was road traffic accident accounted 38.5%; it indicate the major public health problem. Economically active age group of the population young adults /15-64years/ were the most affected age group 67.4% and males were more than 3.5 time affected than females. The leading mechanism of trauma in children under five and old age greater than 64 year were falling accident accounts 59.3% & 55.6% respectively. Extremities and head were the most injured site and lower limbs fracture were the leading type of fracture. Of the total 384 victims studied 67(17.4%), 14(3.7%) of victims were survive with complication and died respectively, only road traffic accident account 57.1% of the total death.

7.2 Recommendation

Based on this study the appropriate prevention strategies should be designed and implemented against trauma. A large scale community based multispectral studies should be undertaken to explore the burden of trauma on the general population and broad based study was needed to explore the reason why road traffic accident was the main cause of trauma and the most leading cause of death due to trauma, then concerned body should take appropriate corrective measurement.

Data is the main source of any kind of study. So the data should be checked regularly for completeness, ovoid incompleteness and established computerized data registration system to change or refining of trauma data collecting tool update. Accurate data recording, monitoring & evaluating should be enhanced in policy makers for injury prevention & improving the quality of trauma care. Efforts must be continued to reduce trauma by using evidence from systemic analysis of the available data.

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Appendices

Annex 1. Data collection instrument

Check list

Jimma University institute of health and medical faculty, coordinating office of integrated emergency surgery in obstetrics, gynecology and general surgeon, checklist for a retrospective study on pattern and management outcome of trauma those managed as in-patient in St. Lukas Catholic hospital. This check list will be filled by the trained data collector from registration log book or patients chart.

SECTION ONE. Socio-demographic information.

Age _____ In-Pt No _____ Card No _____ code _____

No	Questions	Coding categories	Code
101	Age in year	0-4 years	1
		5-10 years	2
		11-14 years	3
		15-29 years	4
		30-64 years	5
		64+	6
102	Sex	Male	1
		Female	2
103	Address (Woreda)	Woliso	1
		Goro	2
		Amaya	3
		Won chi	4
		Seden-Sodo	5
		Dawo	6
		Becho	7
		Tole	8
		Illu	9
		Sododache	10
		Karisamalima	11
		Out of south west Shoa	12
104	Residence	Urban	1
		Rural	2

Section two:-causes of trauma, injured body regions, type &classification injury and management outcome of trauma victims

		Coding categories	Code
201	Mechanism of injury in trauma victims	Rode traffic accident	1
		Falling accident	2
		Homicide/ violence	3
		Other accident	4
202	Injured body region	Head and Neck	1
		Extremities	2
		Thoraco-abdomino-pelvic	3
		Multiple organ injury	4
203	Type of injury identify among the victims	Fracture/ dislocation	1
		Penetrating injury	2
		Blunt injury	3
		Skin laceration / contusion	4
204	Classification of trauma	Unintentional	1
		Intentional	2
205	Season of injury	Sumer	1
		Spring	2
		Winter	3
		Autumn	4
206	Hospital stay	Less than 1 week	2
		1 to 2 weeks	3
		2 to 3 weeks	4
		3 to 4 weeks	5
		Greater than one month	6
207	Type of treatment given	Operative	1
		None operative	2
207.1	Type of operation given	Major	1
		Minor	2
208	Clinical outcome of trauma victims	Survive without complication	1
		Survive with complication	2
		Died in the first 48hr of admission	3
		Died after 48hrs of admission	3
		Referred	4
		Self- discharge	5
209	Management outcome	Favorable	1
		Unfavorable	2

Annex 2

Name of the investigator yeshitilademissie (BSc, MSc candidate)

Research title pattern of trauma and its management outcome among trauma victims managed as in-patient at St. Lukas catholic hospital in woliso in year 2016,

Research objective the aim of this study is to assess the pattern of trauma and management outcome of trauma victims those managed as in-patient in St. Lukas catholic hospital in year 2016.

Study procedure to achieve the planned objective of this study, socio demographic data, clinical history and course of management of patients will be taken from patients' medical records.

Confidentiality the collected information will be kept confidential and used only for research purpose. Only the research member know information collected

Personal contact if the data collectors or the administrative staffs have any question regarding the study they can contact me personally and following my address

Email address yesshi.robzan@gmail.com or

Tell No 0938071454/0912139826

Annex 3

Declaration by a student against plagiarism:

I, the undersigned, declare that the thesis is my original work, and the due credit has been given to the work of others used in this thesis as reference.

Name Signature Date
.....

Approval by principal advisor:

Name Signature Date
.....

Approval by vice-advisor:

Name Signature Date
.....