ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF MEDICINE

DEPARTMENT OF EMERGENCY MEDICINE

RESEARCH THESIS ON

ANALYSIS OF THE CAUSE, CLASSIFICATION AND ASSOCIATED INJURIES OF PELVIC FRACTURE IN PATIENTS PRESENTING TO TIKUR ANBESSA SPECIALIZED HOSPITAL EMERGENCY DEPARTMENT, ADDIS ABABA, ETHIOPIA

By

Kindalem Worku (MD)

A RESEARCH THESIS TO BE SUBMITTED TO COLLEGE OF HEALTH SCIENCES, ADDIS ABABA UNIVERSITY, FOR PARTIAL FULFILLMENT OF SPECIALITY CERTIFICATE TRAINING ON EMERGENCY MEDICINE AND CRITICAL CARE.

JULY, 2018

ADDIS ABABA, ETHIOPIA

ANALYSIS OF THE CAUSE, CLASSIFICATION AND ASSOCIATED INJURIES OF PELVIC FRACTURE IN PATIENTS PRESENTING TO TIKUR ANBESSA SPECIALIZED HOSPITAL EMERGENCY DEPARTMENT, ADDIS ABABA, ETHIOPIA

By

Kindalem Worku (MD)

Advisor

Hywet Engida, MD, Assistant professor of Emergency medicine Head Department of Emergency medicine and critical care, AAU.

Tigist Zewdu MD, Assistant professor of Emergency medicine and critical care,AAU

JULY, 2018

ADDIS ABABA, ETHIOPIA

Declaration

I, the undersigned, declare that this is my original work and that all sources of materials used for this thesis are duly acknowledged.

Name: Kindalem Worku

Email: 3152kindeworku@gmail.com

Signature: _____

Date of submission: _____

Place: Addis Ababa, Ethiopia

This thesis has been submitted for examination with my approval as University advisor

Name of advisors: Dr. Tigist Zewdu

Signature: _____

Date: _____

Name of advisors: Dr. Hywet Engida

Signature: _____

Date: _____

Acknowledgment

First of all I would like to thank Almighty God, who has been and will be the source of strength throughout my life.

I would also like to express my deepest and heartfelt gratitude to my advisor ***Dr. Tigist Zewudu, and Dr.Hywet Engida*** for enlightening me to take this research title and to write a thesis

My special respect goes to Hawassa University College of medicine and school of health sciences which offered me such a rewarding educational opportunity and Addis Ababa University for enabling me to experience diverse intellectual setting from which I acquire many things for my study.

Last but not least thanks goes to my wife **Birhan Melese**

Table of contents

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AaBET-Addis Ababa Burn Emergency and trauma center

BLH –Black Lion Hospital

DVT- Deep Venous Thrombosis

ED- Emergency Department

ICU- Intensive care unit

MVC- Motor Vehicle Collisions

NPG- Non pelvic groups

RTC- Road traffic crashes

SPSS- Statistical package for social sciences

ZMH-Zewuditu Memorial Hospital

IQR-Interquartile range

ABSTRACT

Back ground;

The trauma, a world public health problem, has been a major cause of morbidity and mortality, as it affects more than 50 million people today, an aggravated circumstance in urban centers, mainly due to the growing number of vehicles and the aggressiveness in traffic Which cause accidents with high energy and leading to an increase in the number of deaths and injuries.

Among the orthopedic traumas, pelvic injuries are considered the third cause of death due to auto accidents; represent 20% to 25% of fractures in poly traumatized patients. However the pattern of pelvic fracture is not known in our setting.

Objectives;

The purpose of this study was to analyze the cause, classification and associated injuries in pelvic fracture in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia during the time of september1, 2016 – September 1, 2017.

Methodology:

A Retrospectivedescriptive study was conducted on 60 patients who were admitted to adult emergency medicine department of Tikur Anbessa specialized hospital, Addis Ababa university, Addis Ababa, Ethiopia with a diagnosis of pelvic fracture during the study period. The data were collected using structured pretested data collection tools and analyzed using SPSS for windows version 21.0.

Results:

From total of sixty patients enrolled in study thirty five patients were males (58.33%) and twenty five patients were females (41.67%).Age ranges from 13-75 years with a mean of 31.3 years (SD ± 14.8) and mode and median of 22 and 25.5years respectively. There were 2 deaths in this study 2/60(3.3%) both of them were in the ICU.

Conclusion:

In the data presented in this study 39/60 (65%) of hospitalized pelvic fractures were caused by transport accidents, and the mean length of stay is 11.3,7 and 13 days in Tile A, Tile B and Tile C respectively.

Key words; pelvic fracture,

INTRODUCTION

1. 1 BACK GROUND

Trauma, a world public health problem, has been a major cause of morbidity and mortality, as it affects more than 50 million people today, an aggravated circumstance in urban centers, mainly due to the growing number of vehicles and the aggressiveness in traffic Which cause accidents with high energy and leading to an increase in the number of deaths and injuries [1].

Among the orthopedic traumas, pelvic injuries are considered the third cause of death due to auto accidents; represent 20% to 25% of fractures in poly traumatized patients, their incidence ranges from 3% to 8% of all skeletal fractures and encompass a broad spectrum of injuries, from low-energy osteoporotic fractures to high-energy disruptions of the pelvic ring [1, 6].

Pelvic fractures, marked by mechanical instability, hemodynamics and presence of injuries in other body segments, are most often the result of strong impact traumas, especially in young people, such as falls from high altitude and auto accidents [1], requiring a frontal collision at least 50 km/h or lateral at 40 km/h to damage the pelvic ring. In about 72% of cases, injuries occur in compact vehicles, which are increasingly common in urban centers [1]. Patients with pelvic fracture have several associated severe lesions, especially involving the extremities, brain, urogenital and abdominal regions [1]. It is observed that up to 60% of the deaths occur in the area of the accident itself and about 90% of the cases, there are concomitant lesions, which represents a negative prognostic factor in relation to morbidity and mortality [1].

Fractures of the pelvic ring are part of the routine of traumatology. The accompanying traumatic lesions commonly require neurosurgeries, abdominal surgeries, colostomies, cystectomies, drains and prolonged hospitalization that impair orthopedic treatment. Pelvic facture is a major public health problem in our country and it’s a major cause of morbidity and mortality. The outcomes are increased hospitalization, increased direct

patient costs, and mortality (25). They also contribute to overcrowding and resource mismanagement in the ED (12, 13, 14 and 25). Analysis of the cause, classification and associated injuries in pelvic fracture is not well studied so far in TASH. The classification of pelvic fractures requires adequate plain films (anteroposterior, inlet, and outlet views2), along with thin-cut (3 mm) CT scans. For this reason the study area is TASH ED as it reflects picture of the whole country. Due to the absence of Emergency medical services in our country (15)families and other bodies (police men, bystanders…) may be less successful in bringing patients to the hospital in a timely fashion than emergency medical services in other countries (especially western). This variability has to be assessed in our set up (20).

1.2 STATEMENT OF THE PROBLEM

Pelvic fracture exerts a heavy economic burden on the society. This burden is related to health system costs incurred by society in managing the injury. Although the service of pelvic surgery is given in few hospitals in the country (Christian Sodo hospital in SNNPR and some private hospitals in Addis Ababa), there is still an obligatory referral to TASH across the country due to in adequacy of trained physician in pelvic surgery in other hospitals of the country (14). Indirect costs resulting from productivity losses due to patient disability and premature mortality, due to occurrence of higher dependency time spent by family members accompanying patients when seeking care (21), and admission to the ED adding to the problems of ED overcrowding, intangible costs (psychological pain to the family and loved ones)(25).

1.3 SIGNIFICANCE OF THE STUDY

Identifying the commonest cause, associated injuries will help in further prevention and decreasing mortality and morbidity by putting an emphasis as to what can be done in prevention. It will also help in identifying which demography is more affected with which type of injury.

CHAPTER TWO

LITERATURE REVIEW

2.1 Burden of pelvic fracture

The overall incidence of pelvic ring injuries has been reported to range between 3% and 8% of all skeletal injuries according to a study done in United Kingdom which is correspondent to study done in New York with the overall incidence of 8% (2, 9).

According to a study in the United States between 1990 and 2007which evaluated the incidence of pelvic ring fracture there wasan increase in the population-adjusted incidence of pelvic fractures between 1990 and 2007 (27.24 casesper 100 000 capita to 34.30 cases per 100 000 capita) (16).

As per WHO 2014 report Road injuries killed an estimated 231,000 (95%UI: 180,000-306,000) people in sub-Saharan Africa in 2010, accounting for almost one-fifth of the global road injury death toll (25). The road injury death rate in sub-Saharan Africa, 27.0 per 100,000 people, was 40% higher than the global road injury death rate (25). The combined burden of non-fatal road injuries in sub-Saharan Africa exceeded 14 million healthy life years lost (25).

A study done at Tikur Anbessa Hospital showed the incidence of road traffic injuries to be 36.8% out of which pelvic injury was 11.4% (12).Similarly in a study at Zewuditu Metassebia Hospital (ZMH) showed 31 pelvic injuries out of 522 enrolled patients 31/ 522 (5.9%) and it also comprise that (7%) of all skeletal fractures 31/417 (7%).Which is comparable to the study in Taiwan (4, 13).

In another study which enrolled 690 trauma patients who visited Adult Emergency Department of Tikur Anbessa specialized hospital between January and March 2013, two hundred and fifty (36.23 %) of the patients were road traffic accident victims among which 230 road traffic accident victims were enrolled and studied during the period under the study (18). Different types of fractures were sustained by 177 (78.0 %) of the victims of which the majority of the fracture injuries sustained were accounted for lower limb fracture (64 (36.2 %) while pelvic fracture injuries 9 (5.1 %) (18).

2.2 Socio Demographic Data and causes of pelvic fracture

In the study conducted in Taiwan hospitalization incidence of pelvic fractures in were from 17.17 to 19.42 per 100,000 during 2000–2011 (4). Females had a higher incidence than males, and the elderly (**aged 65 years or more**) were noted to have a significantly increased incidence (4). In the contrary to this study a study conducted in Brazil which enrolled Seventy-nine patients 69.6% of patients were males, aged between 14 and 87 years (**mean 41.0 ± 18.9 years**) (7).And it showed that he most common mechanisms of injury was trampling in 36 cases (45.6%), falls from height in 24 (30.4%), accidents involving motorcyclists in 15 (19.0%) car accidents in 4 (5.1%) (7).

A cohort study conducted in Miami USA between 1990 and 2007 showed mean age of patients with a pelvic ring fracture was 64.5 years (standard deviation [SD]: 25.6 years) and 69.7% were female (16).

Also in a comparative study done in United Kingdom comparing pelvic and non-pelvic groups (PG and NPG) there was a male predominance concerning the percent of patients that sustained the injuries (9). And in the PG population, the patients that have sustained a pelvic injury were mostly younger and predominantly male (57.8%) (9). However, in the NPG group, the patients that were injured were predominantly older and more often of male gender (59.5%) (9).It also stated that the most common mechanism of injury as road traffic crashes (RTCs) with an incidence of 62.9% followed by falls, 30.6% (9). In contrast, more than half of NPG patients (50.9%) sustained a fall and only 29.7% were involved in an RTC (9).Indeed, motor vehicle collisions (MVCs) remain the leading cause of pelvic fractures accounting for 44% to 64% of these injuries (9) and in Taiwan, 62% of hospitalized pelvic fractures were caused by transport accidents (4).

In Saudi Arabia the socio demographic characteristics of 1 050 patients with different kinds of trauma were analyzed (23). Their mean age was 25.3±16.8 years (range 1–80). Most (45.1%) of the patients were at age of 18–30 years (23). Males accounted for 64.3% of the patients. More than half (60.6%) of the patients were from urban areas (23).

In West Africa the average age was 34.3 years, with extremes of 10 years and 75 years (17). With a sex ratio of 2.03, 69 men and 34 women (17).The circumstances of occurrence were, in order of frequency, traffic accidents (79%), work-related accidents

(17%), defenestration (3%) and domestic accidents (1%). At the epidemiological level, the most affected age group is between 20 and 29 years old with 25.24%. There is a relationship between age and the circumstances of occurrence (p = 0.02) (17).

In a study which assessed incidence of road traffic injury (RTI) at the Emergency Department of Tikur Anbessa Specialized Teaching Hospital the majority of victims were pedestrians which accounts for 94 people (71.7%), followed by passengers which consist of 17 people (13%) and drivers which constitute 16 people (12.2%), and the rest were assistants of the drivers (12). And People living in urban areas accounted for 74% of the road traffic injury (12). Similarly the study done at ZMH the majority of cases were pedestrians (69%) living in Addis Ababa (88%), and the RTI was most often caused by an automobile (78%) (13).The median age (interquartile range [IQR]) was 28 (22–24) years, and 69% were male (13).

As to the study in Tikur Anbessa specialized hospital the mean age of trauma patients (40.35years, SD 17.92 years) trended towards being lower than that of non-trauma patients (45.16 years, SD 18.09 years, p = 0.09) (19). Overall, relative to medical patients, trauma patients were more likely to be male (p < 0.01) (19).

Out of 690 trauma patients who visited Adult Emergency Department of Tikur Anbessa specialized hospital between January and March 2013, 250 (36.23 %) of the patients were road traffic accident victims among which 230 road traffic accident victims were enrolled and studied during the period under the study(18). The study participants comprised of 165 (71.7 %) men and 65 (28.3 %) women, resulting in a male to female ratio of 2.6:1. The patients' ages ranged from 14 to 80 years with the mean and standard deviations of 32.15 and ± 14.38 years respectively. The median and the mode were 26 and 25 years respectively. The modal age group was 14–25 years, accounting for 107 (46.5 %) patients (18).

2.3 Associated injuries of pelvic fracture

In one study a multicenter review, of the 312 pelvic fracture patients was conducted and showed associated injuries, 63% had injury to the bladder or urethra, 35% had associated head injuries, 24% had nerve injuries, and 20% had intestinal injuries (2).

In cases of high-grade injuries, Thoraco-abdominal associated injuries can occur in 80%, and others local lesions such as bladder, urethra (1.6-25% of cases), vagina, nerves, sphincters and rectum (18–64%), soft tissues injuries up to 72% (3). These injuries should be strongly suspected particularly in patients with perineal hematoma or large soft tissue disruption (3).

A case series of 348 patients admitted due to pelvic fractures revealed that only 32 patients (9%) had an isolated pelvic fracture (4). In the study in Taiwan, as high as 25.8% of hospitalized pelvic fractures were isolated pelvic fractures (4). The incidence of abdominal injuries was 16.5%, and, in severe pelvic fractures, the incidence of associated intra-abdominal injuries was 30.7% (4).

2.4 Types of pelvic fracture and management

In study conducted at Brazil the types of Pelvic fractures were A, B and C (Tile) in 45, (61.6%) 15 (20.5%) and 13 (17.8%) patients, respectively (7). Six cases could not be classified. Of the 79 patients, 7 (8.9%) underwent angiography / embolization within the first six hours of admission, 18 underwent early external fixation in the operating room, and four were submitted to peritoneal packing (7).

Another study done in Uzbekistan showed 99 patients (34.7%) with type A injury, 106 patients (37.2 %) were in type B and 80 patients with (28.1%) were in type C (24).And among 285 patients, 202 patients (70.9%) had polytrauma injuries while 114 patients (40.4%) had traumatic shock of different levels of severity (24). 205 patients (71.93%) among 285 of this study were managed by operative interventions (24).

2.5 Length of stay and out come

A study done in Taiwan revealed longer length of stay in hospital (average 17.86 days versus 12.95 days), and a greater medical expenditure (average US$4120.86 versus US$2678.09) were noted in the unstable (Tile B and C) pelvic fracture subgroup as compared with the Tile A pelvic fracture subgroup (4).

As per comparative study conducted in UK more patients with pelvic injuries were admitted to an intensive care unit compared with the control group (24.5% vs. 11.7%) ($P < 0.001$) (9). Their median total hospital stay was 15 days, which was significantly longer than that of the control group 8 days (9). And the 3-month cumulative mortality rate in the patients with pelvic injuries was 14.2% (1,586 patients), whereas only 5.6% (7,465 patients) of the NPG patients died within the first 3 months after the injury (9).

In one cohort study average length of hospital stay was 8.0 days (SD 9.7 days) overall (16). In 1991, the average length of staywas 11.2 days (SD 13.1) decreasing to 6.5 days (SD 7.1 days) in 2007 (P < .001) (16). In-hospital mortality decreased from 4.2% in 1990 to 2.8% in 2007 (P < .001; 3.5% for this total cohort (16).

According to the study conducted in Uzbekistan average hospital stay of patients was about 12.95 days (8.7 days-17.2 days (24). And the mortality was found to be 9.1 % (26 patients), of which 19 patients were male and 7 of them were female (24). 13 patients died within 1 to 3 days of arrival, 7 patients within 4 to 10 days and 6 patients after 10 days of their arrival in the hospital (24).

CHAPTER THREE

3 OBJECTIVE

3.1 GENERAL OBJECITVES

- Toassessthe demographic features, causes, types and associated injuries of pelvic fractures in patients presenting to Tikur Anbessa Specialized Hospital Emergency department, Addis Ababa, Ethiopia.

3.2 **SPECIFIC OBJECTIVES**

- To determine the demographic characteristics of patients presenting to ED with pelvic fractures.

- To identify the commonest cause of pelvic fractures amongst the patients with pelvic fractures at TASH.
- To assess associated injuries of pelvic fracture.
- To identify the commonest type of pelvic fractures in patients at the ED.
- To assess the outcome and length of stay of patients with pelvic fracture at TASH.

CHAPTER FOUR

METHODS AND MATERIALS

4.1 STUDY AREA AND PERIOD

The study setting is TASH located in Addis Ababa, capital city of Ethiopia, Which is the biggest specialized hospital in the country and receives many patients from the city of AA and all over the country. 10 years back TASH started emergency medicine specialty program which is first of its kind in the country and currently followed by AaBET (Addis Ababa burn, emergency and trauma center). Ethiopia is among few African countries, to start the field of specialty. Currently the ED is giving service as independent department. The ED is staffed currently with 27 residents (from year one-three), nurses (both regular and masters), 6 consultants and has collaboration with university of Toronto to send two Emergency consultants and one senior resident three times per year. The study was conducted from patients 'Medical charts who were admitted from September 1, 2016-september 1, 2017 with a diagnosis of pelvic fracture.

4.2 STUDY DESIGN

A retrospective descriptive study was employed to describe pattern of pelvic fracture of patients who were admitted with the diagnosis of pelvic fracture to the ED of TASH, during the period of September 2016 to September 2017.

Diagnosis and documentation made by orthopedic residents and image reading either by Radiologist or orthopedist were acceptable as reliable result from chart review.

4.3 POPULATION

4.3.1 SOURCE POPULATION

Patient's seen and kept at TASH adult ED from september1, 2016 – september1, 2017

4.3.2 STUDY POPULATION

Patients presenting with pelvic fracture to TASH ED from September 1, 2016-september 1, 2017. From patients registered with pelvic fracture at the triage and orthopedic section of ED.

4.4. INCLUSION AND EXCLUSION CRITERIA

4.4.1 INCLUSION CRITERIA

All the patients who present with pelvic fractures TASH ED will be included in the study irrespective of sex and age group above 12 years.

4.4.2. EXCLUSION CRITERIA

Non pelvic fracture trauma patients.

4.5 SAMPLING TECHNIQUE AND SAMPLING SIZE

All patients registered with pelvic fracture during the study period and who met the inclusion criteria was included.
Using convenience sampling.

4.6 METHODS OF DATA COLLECTION

Data was collected using pretested structured tools by the investigator. The tools included the card number, the date of admission to ED, socio-demographic variables (age, sex, residence of patient) and patient diagnosis including investigations regarding to the underling pelvic fracture (imaging, documentation from orthopedics resident) total hours of stay at ED, condition on discharge or admission to ward, the number of days or months on treatment from chart review.

4.7 MEASUREMENT VARIABLES

4.7.1 DEPENDENT VARIABLES (OUTCOME)

- Pelvic fracture,
- ED stays,
- Patient's condition on disposition

4.7.2 INDEPENDENT VARIABLES

- Age,
- Sex,
- Etiology (mechanism of injury),
- Type of injury and
- Associated injuries.

4.8 DATA COLLECTION AND STASTICAL METHODS:

The HMIS registration book of emergency department at triage and orthopedic section was used to get the card numbers of patients who were admitted with a diagnosis of pelvic fracture during the study period. After getting the card numbers, patient charts were retrieved from record and documentation office. Data was collected by principal investigator and entered into SPSS for Windows version 21.0.

Descriptive statistics and chi-square were used where appropriate and p-value <0.05 was considered significant.

4.9 DATA QUALITY ASSURANCE:

The data quality control measures were undertaken include: pre-testing of data collection tools, and checking completeness and internal consistencies of data.

4.10 ETHICAL CONSIDERATIONS

Ethical clearance was obtained from the Ethical Review Board of Addis Ababa University College of health science, school of medicine, department of emergency medicine. Also permission to conduct the study was obtained from Emergency department. Information from patient records and logbook was used only for the purpose of this research. Confidentiality was kept during the study and will be kept during dissemination of the result.

4.11 DISSEMINATION OF THE RESULTS

The study result will be presented submitted to Addis Ababa University, Faculty of Medicine department of emergency medicine and critical care and documents will be disseminated to all responsible bodies in the study area, for the hospital where the study is conducted, MOH and Addis Ababa university school of emergency medicine and critical care.

4.12 OPERATIONAL DEFINITION

•Adult ED - refers to age for patients to be seen by adult ED physician at TASH which is above 12 years.

•Types of pelvic fracture- this study used the tile classification system for data collection and analysis.

- Tile A-Stable
- Tile B- Rotationally unstable; vertically stable
- Tile C- Rotationally and vertically unstable

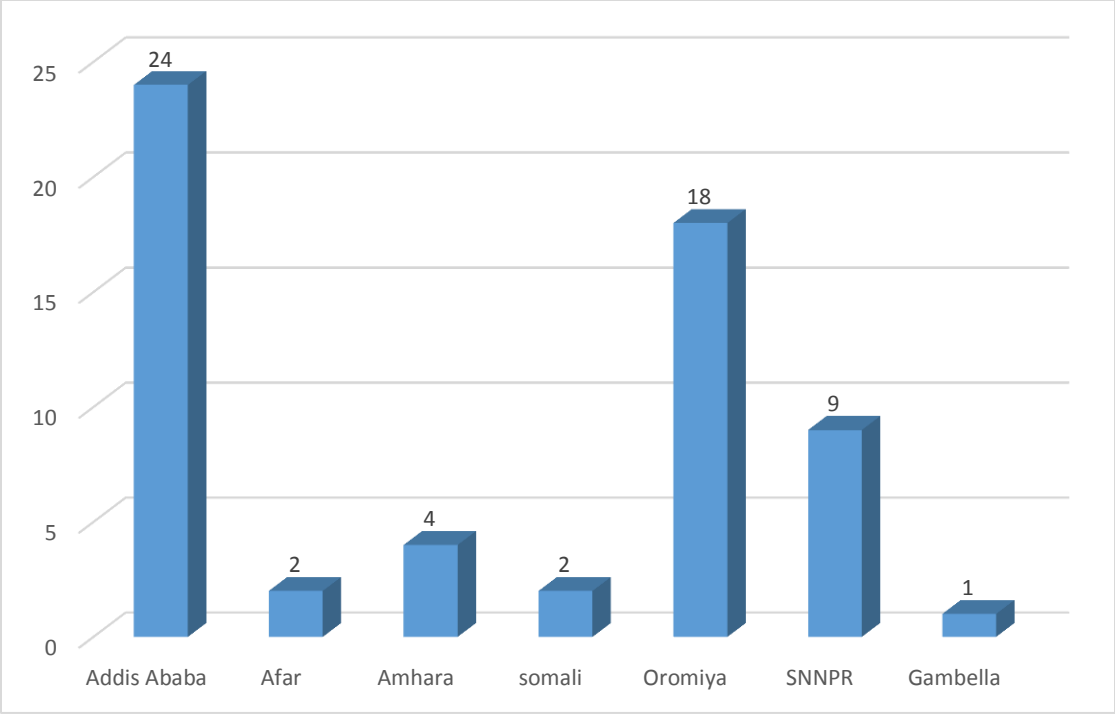
CHAPTER FIVE

RESULTS

5.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS

A total of 96 patients were seen with a diagnosis of pelvic fracture at TASH ED during the study period. From these 86 patients medical charts were collected but only 60 patients were found tomeet the inclusion criteria and their data was analyzed in the study.From total of 60 patients enrolled in study thirty five patients were males (58.33%) and twenty five patients were females (41.67%).Age ranges from13-75 years with a mean of 31.3 years (SD ± 14.8) and mode and median of 22 and 25.5years respectively. Majority of patients were from Addis Ababa 24/60 (40%), Oromiya 18/60(30%), see Fig (1).

Figure 1 Distribution of patients in area of residency.TASH ED, AA, Ethiopia, July, 2018.TASH ED.



5.2 ASSOCIATED INJURIES

Out of the sixty patients there was associated injury in 14 patients (23.33%) of cases injury involved abdominal, urethral, bladder, vertebral body with transverse process fracture without nerve injury and vertebral body with transverse process fracture with nerve injury comprising 4(28.6), 3(21.4%), 2(14.3%), 1(7.1%) and 4(28.6%) respectively. Majority of patients with associated injuries are those who have unstable pelvic fracture (Tile A and B).See table (1).

Table: 1 Cross tabulation of associated injuries and types of pelvic fracture. TASH ED, AA, Ethiopia, July, 2018

Types of pelvic fracture (Tile)		Associated injuries					Total
		Abdominal	Urethral	Bladder	VTB*1 without	VTB*2 with	
	A	0	0	0	0	1	1 (7.1%)
	B	0	1	0	0	1	2 (14.2%)
	C	44(28.6)	2(21.4%)	2(14.3%)	1(7.1%)	228.6%)	11 (78.7%)

Key: *1Vertebral body with transverse process fracture *2 Vertebral body with transverse process fracture and nerve injury

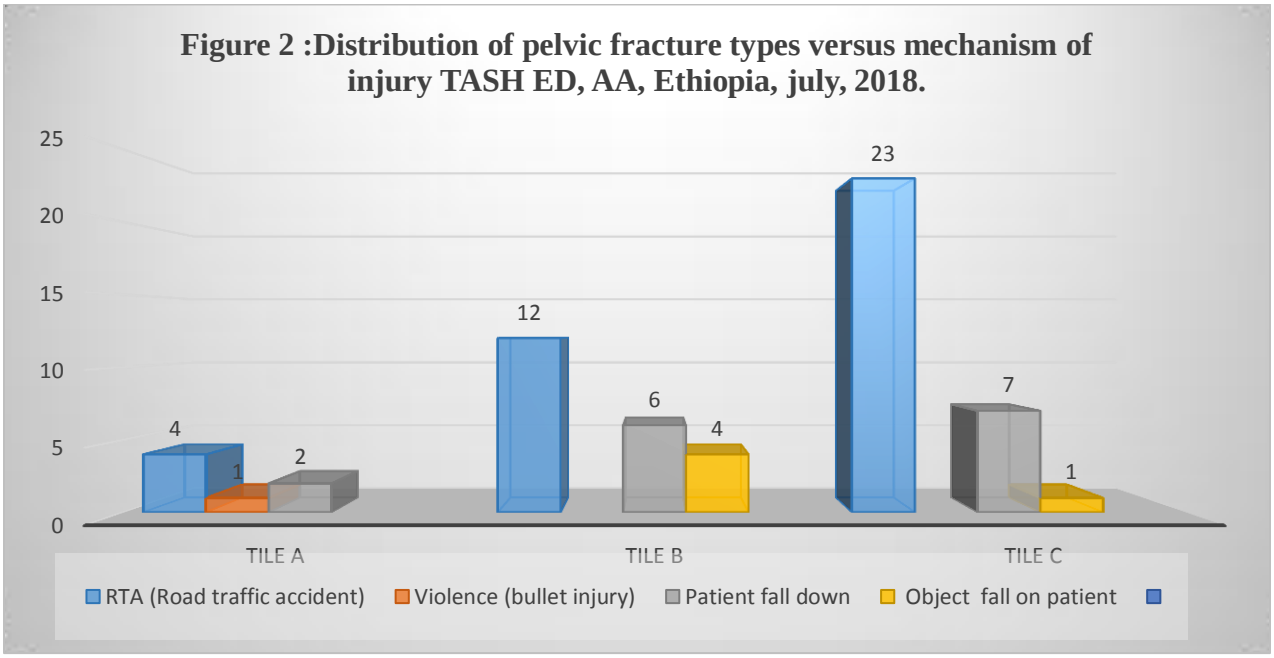
5.3 TYPES OF PELVIC FRACTURE AND MANAGEMENT

Out of the sixty enrolled patients most of them have unstable type of fracture comprising 88.3%. Tile C pelvic fracture 31/60(51.7%), Tile B 22/60(36.7) and tile A 7/60(11.7) but still most of patients 25/60(41.7%) managed conservatively table (2).And the more unstable the fracture type tends to relate with RTA as the mechanism or cause of injury. See fig (2). Seventeen (54.8%) patients with Tile C pelvic fracture managed with surgical intervention while one (3.2%) patient went against medical advice the rest six

(19.5%) and seven (22.5%) was respectively managed conservative way and referred. See table (2).

Table 2: Types of pelvic fracture versus types of intervention TASH ED, AA, Ethiopia, July, 2018.

		types of intervention				Total
		non operative	surgical management	Referred	went against medical advice	
Types pelvic fracture	Tile A	4	2	1	0	7(11.6%)
	Tile B	15	5	2	0	22(36.67%)
	Tile C	6	17	7	1	31(51.67%)
Total		25(41.67%)	24(40%)	10(16.67%)	1(1.67%)	60



5.4 LENGTH OF STAY AND OUT COME

Length of hospital stay(ED to discharge from ED/inpatient ward) ranges from 1-40 days with mean of 10.68 days (SD ± 9.75 days) and with a mean time presentation to ED is 4.92 days (SD ± 8.47 days). . There were 2 deaths in this study 2/60(3.3%) both of them were in the ICU and one them has intraabdominal injury for whom laparotomy was done and patient died after staying a total of 10 days in the hospital ,the other patient stayed for 4 days, the fracture type in both patients was Tile C. See table (3) and (4).

Table 3: Association of patient outcome and associated injuries TASH ED, AA, Ethiopia, July, 2018.

		Associated injuries					Total
		Abdominal	Urethral	Bladder	Vertebral body with transverse process fracture	Vertebral body with transverse process fracture and nerve injury	
patient out come	Recovered	2	2	1	1	4	10(71.4 %)
	Death	1	0	0	0	0	1(7.1%)
	Referred	1	1	1	0	0	3(21.4%)
Total		4(28.6%)	3(21. 4%)	2(14.3%)	1(7.1%)	4(28.6%)	14

5.5 MECHANISM OF INJURY

The most common mechanism of injury was road traffic accident 39/60(65%) followed by patient fall down 15/60(25%), violence and object fall on patients comprise 1and 5 respectively. From road traffic accidents passengers are affected mostly19/39(48.7%) followed by pedestrians15/39(38.5%) then, drivers 5/39(12.8%). See fig 3 & 4 depicted below.

		TYPES OF PELVIC FRACTURE			TOTAL
		TILE A	TILE B	TILE C	
PATIENT OUTCOME	RECOVERED	6	17	22	44(73.33%)
	REFERRED	1	5	7	13(21.67)
	DEATH	0	0	2	1(1.67%)
	WENT AGAINST	0	0	1	2(3.33%)
TOTAL		7(11.67%)	22(36.67%)	31(51.67%)	60

TABLE 4: PATIENT OUTCOME VERSUS TYPES OF PELVIC FRACTURE TASH ED, AA, ETHIOPIA, JULY, 2018.

Figure 3: Percentage of mechanism of injury , TASH ED, AA, Ethiopia, July, 2018

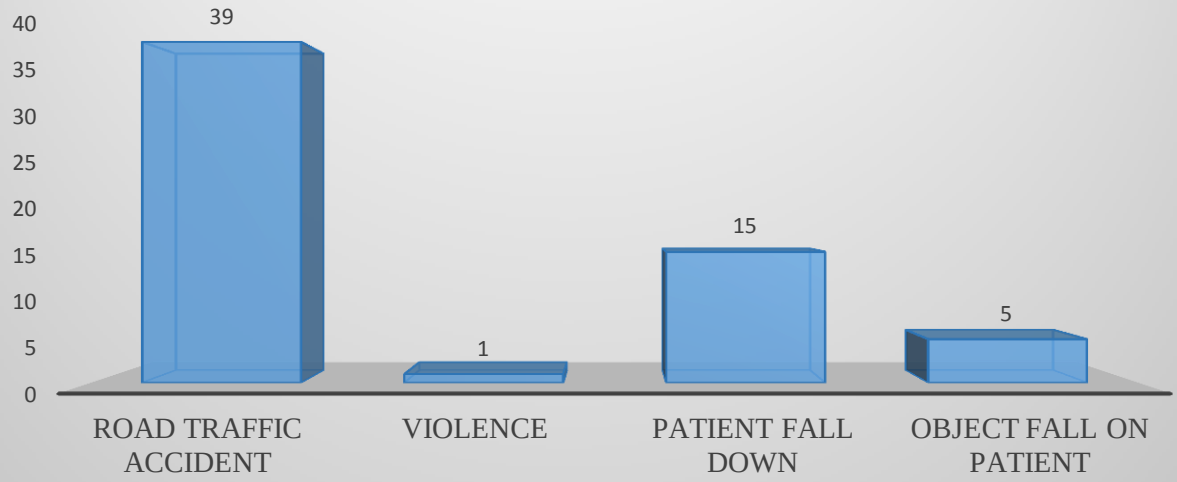
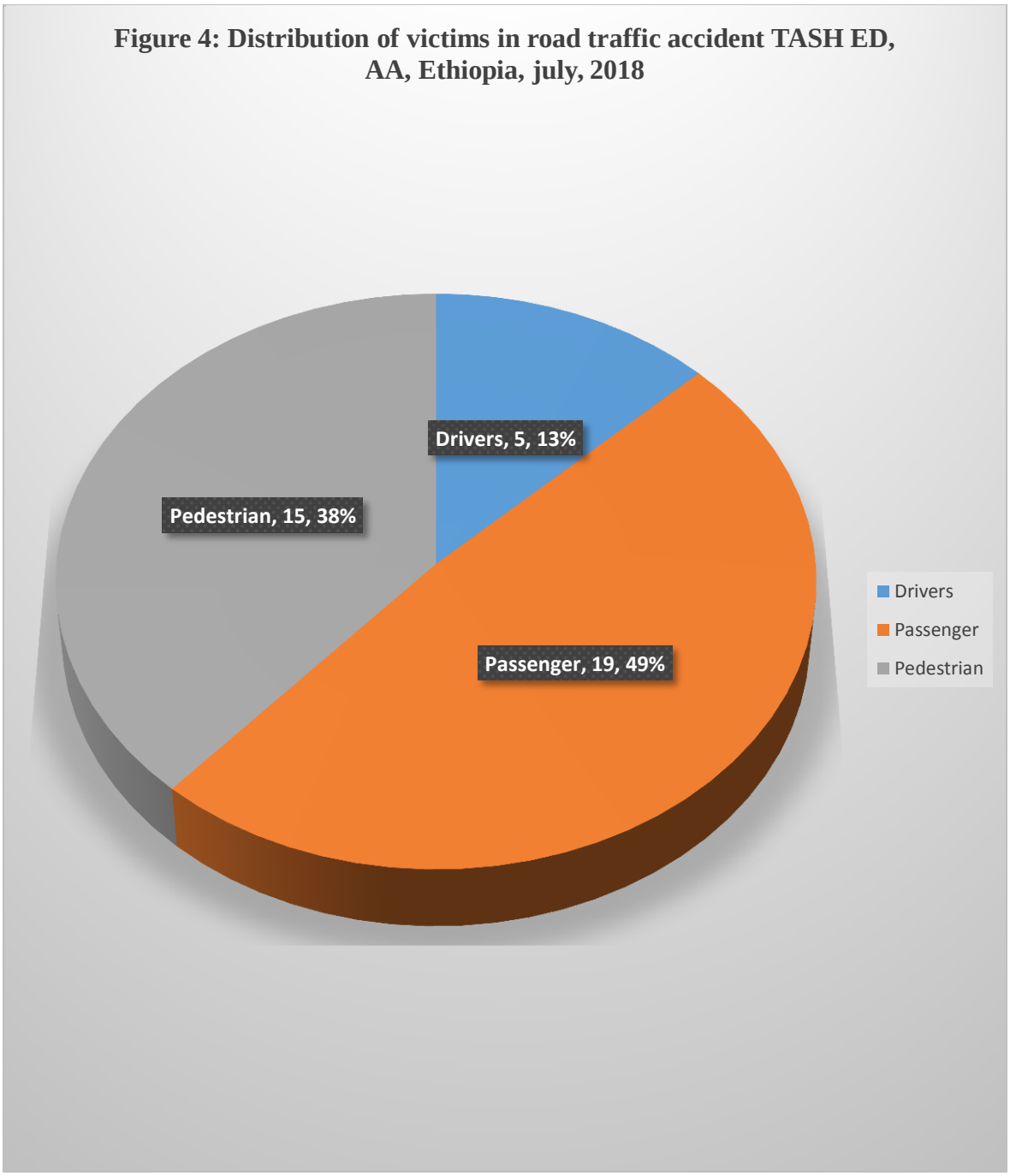


Figure 4: Distribution of victims in road traffic accident TASH ED, AA, Ethiopia, july, 2018



CHAPTER SIX

6.1 DISCUSSION

The age distribution of pelvic fracture patients in TASH ED was a mean of 31.3 years (SD ± 14.8) and mode and median of 22 and 25.5years respectively with male predominance (58.3%)which is in line with that of a study made inSaudi Arabia (25.3±16.8 years) range male (64.3%) (23) and bit lower than west Africa mean age (34.3 years) sex ratio (2.03) (17) but lower and reverse to the study done in Miami (64.5 years ± 25.6 years) and 69.7% were female (16). And a studyin Tikur Anbessa specialized hospital the mean age of trauma patients were (40.35 years ±17.92 years) (19) which is higher than the current study.

Based on the data presented in this study 39/60(65%) sustained pelvic fracture from RTA and15/60(25%) a fall from height which is similar to the study done in UK(62.9% and 30.6% respectively) (9) and in Tanzania RTA accounts for 80% (22) so did in west Africain which RTA accounts for 79%(17) also Taiwan (62%) but in Brazil it showed that he most common mechanisms of injury was trampling in 36 cases (45.6%), falls from height in 24 (30.4%), accidents involving motorcyclists in 15 (19.0%) car accidents in 4 (5.1%) (7).

In the current study among the cases of RTA the majority of victims were passengers which accounts for 19 people (49%)followed by pedestrian 15 (38%) and drivers 5 (13%) which is different in distribution from a study made in Emergency Department of Tikur Anbessa Specialized Teaching Hospital the majority of victims were [pedestrians which accounts for 94 people (71.7%), followed by passengers which consist of 17 people (13%) and drivers which constitute 16 people (12.2%), and the rest were assistants of the drivers] (12).

In the present study in TASH 75% of hospitalized pelvic fractures were isolated pelvic fractures which is higher than the study in Taiwan (25.8%) (4). and in the current study the incidence of intraabdominal injuries was higher from all associated injuries 4/14(28.6%) which is comparable to study done in Taiwan(16.5% -30.7%) (4).

In the data presented in this study 65% of hospitalized pelvic fractures were caused by transport accidents which was in line with that of the study made in Taiwan (62%) (4), and the mean length of stay is 11.3,7 and 13 days in Tile A, Tile B and Tile C respectively in this study comparable to that of Taiwan study 17.9 days and 13.0 days, respectively (4).

7. LIMITATION

Since the nature of the study was retrospective method certain data may be missed. And patient chart was lost, hence, it was difficult to include more patients for this study.

8. CONCLUSION

This study shows that the management of pelvic fracture patients in Tikur Anbessa specialized Hospital was in line with the other papers and recommendations of international guidelines. However, one patient went against medical advice and thirteen patients were referred also six patients with Tile C fracture managed conservatively.

The majority of pelvic fracture patients in Tikur Anbessa specialized Hospital were diagnosed as Tile C fracture. Abdominal and bladder injuries were the major in-hospital events for these patients. , sex being male, being diagnosed as Tile C were found to be independent predictors of in Hospital mortality in Tikur Anbessa specialized Hospital.

9. RECOMMENDATION

This study shows the pelvic fractures caused by RTA mostly followed by fall down accident. Therefore

- ☞ Improving the condition of the road network and vehicles to reduce the high prevalence of traffic accidents.
- ☞ The establishment and dissemination of a traffic accident prevention policy, the technical control of vehicles, the construction of footbridges for pedestrians.
- ☞ Educating road users to respect safety standards,
- ☞ Mandatory wearing of the seatbelt for drivers and passengers.
- ☞ Compliance with safety standards in the workplace and comforting work places to prevent slippage.
- ☞ Psychological support of victims and families.

REFERENCES

1. De Souza Nr, Freire D, Pinho Cm, De Almeida Gl, Elias Dos Santos Fm, Et Al. Lesions Associated With Pelvic Fracture: An Integrating Literature Review. Arch Med. 2017,9:3
2. Mccormack R, Strauss Ej, Alwattar Bj, Tejwani Nc. Diagnosis And Management Of Pelvic Fractures. Bull Nyu Hosp Jt Dis. 2010; 68(4):281-91.
3. Coccolini Et Al. World Journal Of Emergency Surgery (2017) 12:5 Doi 10.1186/S13017-017-0117-6
4. Epidemiology Of Hospitalized Traumatic Pelvic Fractures And Their Combined Injuries In Taiwan: 2000–2011 National Health Insurance Data Surveillance
5. Volume 34 Number 5 Khurana Et Al Pelvic Ring Fractures: What The Orthopedic Surgeon Wants To Know
6. Focus On Pelvic Fractures ©2010 British Editorial Society Of Bone And Joint Surgery
7. Comparative Analysis Between Identified Injuries Of Victims Of Fall From Height And Other Mechanisms Of Closed Trauma Rev. Col. Bras. Cir. 2014; 41(4): 285-291
8. Pelvic Ring Disruptions: Prediction Of Associated Injuries, Transfusion Requirement, Pelvic Arteriography, Complications, And Mortality Journal Of Orthopedic Trauma Vol. 16, No. 8, Pp. 553–561 © 2002 Lippincott Williams & Wilkins, Inc., Philadelphia
9. Prevalence Of Pelvic Fractures, Associated Injuries, And Mortality: The United Kingdom Perspective J Trauma. 2007; 63:875– 883.
10. Associated Injuries And Not Fracture Instability Predict Mortality In Pelvic Fractures: A Prospective Study Of 100 Patients J Trauma. 2007; 62:687– 691.
11. Pelvic Fracture From Major Blunt Trauma Outcome Is Determined By Associated Injuries Ann. Surg. * June 1991

12. Incidence Of Road Traffic Injury And Associated Factors Among Patients Visiting The Emergency Department Of Tikur Anbessa Specialized Teaching Hospital, Addis Ababa, Ethiopia Bewket Tadesse Tiruneh, Berihun Assefa Dachew, And Berhanu Boru Bifftu
13. The Burden Of Road Traffic Injuries In An Emergency Department In Addis Ababa, Ethiopia S. Getachew,1 E. Ali,2 K. Tayler-Smith,2 B. Hedt-Gauthier,3,4 W. Silkondez,5 D. Abebe,6 W. Deressa,1 F. Enquessilase,1 J. K. Edwards2,7
14. Referral Of Emergency Surgical Patients In A Tertiary Hospital, Addis Ababa, Ethiopia Engida Abebe Md1, Henok Teshome Md2, Mahteme Bekele Md1
15. Patterns And Determinants Of Pre-Hospital Care Among Trauma Patients Treated In Tikur Anbessa Specialized Hospital, Emergency Department Yehune Meskere, Md1, Muluwork Tefera Dinberu, Md,2 Aklilu Azazh, Md2
16. A Nationwide Analysis Of Pelvic Ring Fractures: Incidence And Trends In Treatment, Length Of Stay, And Mortality Leonard T. Buller, Md1, Matthew J. Best, Md1, And Stephen M. Quinnan, Md
17. Diouf A.B., Dembele B., Dia R., Diouf J.D.D, Gueye A.B., Mouhamed A.W., Daffe M, Sarr L., Diop P.S., Coulibaly N.F., Sane A.D., Dieme C.B. Trauma Of The Pelvic Ring: Epidemiological And Etiopathogenic Aspects. Biomed J Sci &Tech Res 4(2)- 2018. Bjstr. Ms.Id.001016. Doi:
18. Injury Characteristics And Outcome Of Road Traffic Accident Among Victims At Adult Emergency Department Of Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia: A Prospective Hospital Based Study Mohammed Seid1, Aklilu Azazh2, Fikre Enquselassie3 And Engida Yisma4
19. Patterns And Predictors Of Early Mortality Among Emergency Department Patients In Addis Ababa, Ethiopia Cheryl Hunchak1*, Sisay Teklu2, Nazanin Meshkat3, Christopher Meaney4 And Lisa Puchalski Ritchie3
20. Road Traffic Deaths And Injuries Are Under-Reported In Ethiopia: A Capture-Recapture Method Teferi Abegaz1*, Yemane Berhane2, Alemayehu Worku3, Abebe Assrat4, Abebayehu Assefa5
21. Analysis Of Emergency Care Of Trauma Patients With References To The Type Of Injuries, Treatment And Cost Kahlon I.A.,1 Hanif A.2 And Awais S.M.3

Address For Correspondence: Dr. Iftikhar Ahmad Kahlon, Senior Registrar, Department Of Orthopedics, General Hospital, Lahore

22. Road Traffic Accidents In Tanzania: A Ten Year Epidemiological Appraisal Museru L M, Mmed, Msc. Mcharo C N. Mmed., Msc. Muhimbili Orthopaedic Institute / Muhimbili University College Of Health Sciences.
23. Trauma Patterns In Patients Attending The Emergency Department Of Jazan General Hospital, Saudi Arabia Emad Hokkam1,2, Abdelaziz Gonna3, Ossama Zakaria4, Amany El-Shemally
24. Clinical Outcomes Of Pelvic Fractures In Uzbekistan. Akbar B Tilyakov*,1, Tae-Woo Kim*,2, Suman K. Shrestha*,2, 2ji-Hyo Hwang2, Saliyjan Z Bekchanov1, Erkin Y Valiev1, Kyeong-Dok Kang2, Supriya Jagga2, Do-Young Kim2#, 2sang-Soo Lee2
25. Burden Of Road Injuries In Subsaharan Africa Data Sources, Methods, And Estimates Of The National Incidence Of Road Injuries January 2014 Kavi Bhalla*, James Harrison, Saeid Shahraz, Jerry Abraham, David Bartels, Pon-Hsiu Yeh, Mohsen Naghavi, Rafael Lozano, Theo Vos, David Phillips, David Chou, Ian Bollinger, Diego Gonzalez-Medina Brittany Wurtz, And Christopher Jl Murray

QUESTIONNAIRE

To be filled by investigator by reviewing charts of patients in ED of TASH with pelvic fracture to determine common causes ,associated injuries and types of pelvic fracture, ED stay and mortality **.**I believe that knowing this basic information is mandatory to launch successful prevention programs in the country.

Annex 1. CHECK LIST

Check list to collect data on retrospective analysis of the cause, classification and associated injuries of pelvic fracture from September 1, 2016 to September 1, 2017 in TASH, Addis Ababa, Ethiopia

s.no	The study variables	Response	Remark
	Card number	_____.	
1. Socio-demography of the participants			
1.1.	Sex	1. Male 2. Female	
1.2.	Age	_____.	
1.3.	Area of residency (region)	_____	
2. History of the trauma patient who attended in the emergency ward			
2.1.	Duration of presentation in hours or days	_____	
2.2.	Length of hospital stay in days	_____	
2.3.	Presence of chronic medical condition	1. Yes 2. NO	If no skip to Q.No.2.5
2.4.	Types of chronic medical condition	1. Diabetes Mellitus 2. Cardio vascular disease	

		3. Asthma 4. Old stroke 5. Others (specify)_____ _____ _____	
2.5.	Circumstance of injury	1. Road traffic Accident 2. Violence 3. Fall down 4. Other(specify)_____ _____	
2.6.	If RTA	1. Driver 2. Passenger 3. pedestrian	
2.7.	If fall down	1.object fall on patient 2.patient fall from what height	
2.8.	Identified pelvic Injury	1.Closed 2. compound	
2.9.	Is it	1. Pure pelvic fracture 2. Intrapelvic -abdominal injury	
2.10.	Types of pelvic fracture	Tile classification 1.A 2.B 3.C	
2.11.	Is there an associated injury	1.yes 2.no	If no skip to 2.13

2.12.	What are the associated injuries	1. Abdominal injury 2. Pelvic injury 3. Urethral injury 4. Bladder 5. Vertebral body or transverse fracture (sacral) 6. Nerve injury	
2.13.	The types of intervention given	1. Non operative approach 2. Surgical management 3. Referred	
2.14.	Is there complications	1.yes 2.no	If no skip to 2.16
2.15.	If Complications	1. Wound sepsis /pin site infection 2. Pneumonia 3. Atelectasis 4. DVT 5. PTE 6. Other specify)_____	
2.16.	Patients outcomes	1. Recovered 2. Death 3. Referred 4. Went against medical advice	
2.17.	If death, in which unit the patient was died?	1. ED 2. ICU 3. Operation room 4. Orthopedics ward	