A RETROSPECTIVE ANALYSIS OF MORTALITIES IN THE SURGICAL WARDS AT JIMMA UNIVERSITY SPECIALIZED TEACHING HOSPITAL , JIMMA, ETHIOPIA (September 2012 TO December 2015)

BY: - HAKIM J. JAMBA (M.D)

RESEARCH THESIS SUBMITTED TO THE DEPARTMENT OF SURGERY, COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENECES, JIMMA UNIVERSITY IN PARTIAL FULFILLMENTS OF THE REQUIREMENTS FOR THE SPECIALITY CERTIFICATE IN GENERAL SURGERY

April, 2016

Jimma, Ethiopia

A RETROSPECTIVE ANALYSIS OF MORTALITIES IN THE SURGICAL WARDS AT JIMMA UNIVERSITY SPECIALIZED TEACHING HOSPITAL, JIMMA, ETHIOPIA (September 2012 TO December 2015)

By: Hakim J. Jamba (M.D)

Advisors: Dr. Gersam Abera (Consultant Surgeon)
Dr. Fikadu Assefa (Assist. Prof. Health Management)

April, 2016

Jimma, Ethiopia

ACKNOWLEDGEMENT

I would like to acknowledge the efforts exerted by my colleagues and the hospital staffs who facilitated the success of this research. I would also like to extend my gratitude to my advisors who gave me invaluable comments and directions for the formulation of this proposal.

ABSTRACT

Background: Surgery, despite being a tool that can prevent loss of life or part of the body, it also is associated with considerable risks. Data about surgery related mortalities are scarce in Ethiopian hospitals, so this study, conducted at the Jimma University Specialized Hospital that serves the southwestern parts of Ethiopia, tries to highlight the prevalence and common causes of mortalities encountered in Jimma University Specialized Hospital in the period from September 2012 to December 2015.

Method: A retrospective study was conducted, involving the stated period, utilizing the data of patients who died at the Jimma University Specialized Hospital with reference to all patients who were admitted to the surgical wards during the stated period. Data were collected from patients' cards, admission and discharge records and then were entered into SSPS windows 20 and analyzed and then tabularly demonstrated.

Results: A total of 292 (3.6%) deaths were encountered among 8083 admissions to the surgical wards during the study period. The mean age was 41.58. Males to females were in a ratio of 1.87:1. The majority of the deaths occurred among patients aging between 19-40 years. Rural areas inhabitants mounted it 65.1% of the time. Hypertension and diabetes mellitus (5.1% and 3.4% respectively) were dominating the 18.5 % of the co-morbid conditions. Acute abdomen (36%) and trauma (34.9%) were the leading cause and head injury was 51% of the time among the trauma cases. Death due to severe sepsis was attributed most of the time (47.3%).

Conclusion: Delay in presentation to the facility due to many socioeconomic and geographical reasons hindered patients from showing up early to the facility. Acute abdomen, with resultant severe sepsis, and trauma (severe head injury) were leading due to lack of proper postoperative and life support care facilities, increasing death rates in surgical patients.

CONTENTS

LIST OF TABLES

Table 11: Type of anesthesia of cases that died in surgical wards from September 2012 up to December2015

Table 12: Post op complications of cases that died in surgical wards from September 2012 up to December 2015

Table 13: Type of post op complication of cases who died in surgical wards from September 2012 up to December 2015

Table 14: Timing of death in relation to the operations and the possible cause in those who died from September 2012 up to December2015

Table 15: Possible cause of death with duration of symptoms before presentation to the ER of those who died from September 2012 up to December 2015

Figure 1: Bar graph for duration of symptoms and post op complication of those who died from September 2012 up to December 2015

ABBREVIATION

CHF: Congestive Heart Failure

DM: Diabetes Mellitus

ER: Emergency Room

Freq: Frequency

HIV: Human Immune Virus

HTN: Hypertension

ICU: Intensive Care Unit

INTRA-OP: Intra- operation

JTH: Juba Teaching Hospital

JUSH: Jimma University Specialized Hospital

PRE-OP: Pre-operaion

POST-OP: Post- operation

RTA: Road Traffic Accident

SSI: Surgical Site Infection

TB: Tuberculosis

CHAPTER ONE: INTRODUCTION

BACKGROUND

Surgery is performed in every community: wealthy and poor, rural and urban. Although surgical care can prevent loss of life or limb, it is also associated with a considerable risk of complications and death.[1] Surgical care is an integral part of healthcare throughout the world, with an estimated 234 million operations performed annually.[2] Mortality is an inevitable complication of surgery. Among the sick, mortality could be due to medical or surgical reasons; medical or surgical errors; delay in treatment and error in judgment; limited hospital resources and poor infrastructures on the ground. Audit of pattern of mortality entails a systematic, critical analysis of the quality of care, including the procedures used for diagnosis and treatment, the use of resources, and the resulting outcome and quality of life for the patient.[3]

Mortality during surgical care may result directly from the pathologic process necessitating surgical care, as a complication of a surgical procedure and anesthesia, or other co-morbid factors. Delay in diagnosis and treatment, medical and surgical errors, lack of expertise, and inadequate or limited health care facilities may contribute significantly to mortality during surgical care in the developing world.[4]

A study of the mortality pattern can help bridge knowledge gaps in a particular surgical setting and can identify areas of care that require more education, practice modification, and/or policy formulation. In-hospital surgical mortality is traditionally defined as deaths occurring within 30 days of admission for surgical care.[5] This definition may give rise to both underestimation and overestimation of surgical death rates. Patients dying in hospital of causes not related to the surgical treatment during the period constitute overestimation, and those who die outside the hospital or after 30 days constitute underestimation.[6]

The magnitude of mortality and causes are different from ward to ward even in one hospital.[7]The magnitude of mortality in the health care set up is more affected by state of hospitalization, length of stay, number of co-morbid conditions, and type of illness among others.[8]
Advanced age, co- morbid disease, and major and urgent surgery are the key factors associated with increased risk.[9]

In general, health care settings are not as safe as they should be, due to mortality of the patient, which has traditionally been one of the most frequently used indicators of quality care. Mortality is the oldest known health care indicator and a valuable tool for planning and managing in hospitals.[10] The causes of mortality in hospitals are mostly human related problems and disease conditions like infectious and non-infectious diseases.[11] Identifying the causes of mortality in hospitals is important for monitoring the health of the nations, identifying priorities, and national burden of disease analysis which attempts to estimate the causes of loss of healthy life.[12]

STATEMENT OF THE PROBLEM

About 234 million surgical procedures are carried out annually worldwide with some mortality. Approximately 4,000 procedures per 100,000 in many countries and up to 11,000 procedures per 100,000 are carried out in high-volume countries.[6]

A study done over 12 month period on the outcome of patients operated on in one of Estonia's tertiary hospitals, which is responsible for approximately half of the operations performed nationally for gastrointestinal malignancy, mortality was relatively low at 2%; this is because of in which 73% of the deaths occurred among patients who were never admitted to ICU, and where postoperative mortality was lower in countries which have better provision of intensive care beds/better access to the ICU.[9]

A study done in southwest Nigeria, The surgical mortality rate over the 6-year period of this study was 5.08 %, which is relatively low compared to other reports from Africa, although values of crude surgical mortality rates are not a true reflection of hospital quality of service.[6,13]

On the same study done in southwest Nigeria, burns as the primary cause of death accounted for the highest percentage of deaths, which is due to a variety of reasons. Breast cancer is the second commonest primary cause of death. It is the most common cause of all cancer deaths in our cohort of patients.[6]

Research done in South Sudan on A Retrospective Analysis of Mortality Distribution in Juba Teaching Hospital (JTH), mortality rate was 7.6%, this is because mortality figures are not accurately recorded. The Statistics Department in JTH issues death certificates but it is not clear if these are exclusively issued to the in-patient population or also for other deaths in Juba outside the hospital. Also, there are no permanent medical records storage facilities in JTH and it is normal for patients to take their medical case notes away with them on discharge. It is not clear what proportion of mortality case notes of inpatients that died was retained by the Statistics Department.[7]

In 2009, a five-year review done of in-patient surgical mortality in Tikur Anbessa hospital, Ethiopia revealed an overall mortality rate of 7% and postoperative death rate of 4.5%. It showed, also, that it could have been reduced significantly had there been appropriate setting to manage trauma cases. Trauma and Neurosurgical cares are yet to develop and need special attention.

SIGNIFICANCE OF THE STUDY

There are few reports from different parts of the world addressing different aspects of surgical mortality. There are two reports from our country, however, and one of them has dealt with mortality in every department. The aim of this study is to determine the prevalence of mortality associated with surgical care and the trends in prevalence of surgical mortality. We will use our results as benchmarks to identify areas of improvement.

Finally the study will help identify the mortality prevalence in JUSH's surgical wards, the commonest cause of death, a reference for other researches in the future, policy makers and the hospital administration to draw policies that help reduce the mortalities in JUSH

CHAPTER TWO: LITRATURE REVIEW

From January 1st-December 30th 2002 in Pakistan, at the south surgical ward of the Mayo Hospital, a total of 2771 patients were admitted. Out of these 173 patients expired rating 6.2%. 51.4% were males and 48.5 were females. The average age was 37 years. Trauma was frequent and burns were the majority 34.1% dominated by females. Stabs and Firearm Injuries (FAI) figured prominently. 52.1% patients had septicemia and eventually multiple organ system failure.[15]

A five years review at federal medical center in Nigeria, Between January 1997 and December 2001 there were 4583 surgical admissions in all the surgical wards of the Federal Medical Centre, Owerri of which males were 2751 and females 1832. During this period there were 419 deaths with an overall death preadmission crude mortality rate of 9.14%. Of the 419 deaths males were 305 (72.79%) and females 114 (27.21%) in a ratio of 2.68:.Majority of mortalities271 (64.44%) were below 50 years. Two hundred and ninety one, 291 (69.45%) of these mortalities, were from rural area. 356 (84.96%) of the patients were offered surgical intervention while 63 (15.04%) had conservative management. Of the 356 that had surgical intervention, 8 (1.91%), died on table due to anesthetic problems. The most frequent clinical condition of the patients was acute abdomen (22.20%) followed by head injury (18.14%) and malignant conditions (14.56%) of which breast cancer was the most prominent.[4]

Studies conducted in Olabisi Onabbanjo University Teaching Hospital, Sagamu, Ogun State, Southwest Nigeria, the total admission in the surgical wards for the 6-year period (2005–2010) was 5,444. A total of 2,217 surgical operations were carried out during that period. There were277 (5.09 %) total deaths (165 males, 112 females). The ages of these patients ranged from 1 day to 92 years (mean ± SD 40.5 ± 22.7 years, median 41 years). There were 45 children aged<15 years (16.2 %). Among them, there were 25 deaths (9 %) in infants, 12 of which occurred in neonates (4.3 %). There were 20 deaths of children aged >1 year (7.2 %).Of 277 patients who died, only 170 case notes (61 %)were available for review.[6] In the study Surgical operations were carried out in only 60 (35.3 %) of the patients who died. Among the operations, 40 (66 %) were done on an emergency basis. There were four intraoperative deaths during the 6-

year period. Three were associated with laparotomy. No surgical procedures were undertaken in 50 of 66 patients who experienced trauma associated death. There was also no surgery performed in34 of 50 patients with cancer-associated death. The primary causes of death/diagnosis in the group with no surgical intervention were as follows: burns 25, breast cancer 11, head injury secondary to a road traffic accident (RTA) 11, multiple injuries secondary to RTA 5, peritonitis5, abdominal malignancy 5, others 48. Co-morbidity factors present in the patients were as follows: none in 133 of the 170 patients who died (78.2 %), diabetes 5, hypertension4, anemia 7, neonatal period 4, previous exploratory laparotomy 3, renal failure 3, others 11.[6]

About 14.2% (312) of admissions were surgical patients in July 2008 during a retrospective analysis of mortality distribution in Juba Teaching Hospital[5] of which 0.3% expired mounting one death per day. While 12% (78) of trauma cases died as a result of severe head injury in an Eight month study in 2006.[7]

In a five year review of in-patient surgical mortality conducted at Black Lion Specialized Teaching Hospital (January 2002- December 2006), 694 deaths were encountered out of 9991 admissions and 9860 procedures conducted. There were 6.9% overall deaths among the admissions and 7.0% per procedure. The postoperative mortality rate was 4.5% (443/9860). The male-to-female ratio was 2.9:1. The mean age was 41 years. 452 (15.7%) patients admitted on emergency basis and 242 (3.4%) of elective admissions died. About 56% of deaths resulted from non-traumatic causes whilst 44% from traumatic causes. Similarly operative deaths were observed in 443 (63.8%) while non-operative mortality in 252 (32.2%). Among patients with trauma, isolated head injury (59.2%) was major cause of death, while, of the non-traumatic admissions, malignancy accounted for 164 (42.1%) of the deaths.[14]

In a review of morbidity and mortality among patients admitted to surgical intensive care unit at tikur anbesa specialized teaching hospital, Ethiopia, 441 surgical admissions over one- year period were included. Their age ranged from 10 to 90 years mean 37.55 ± 16.56 years. Mortality was high in 21-30 years age group, 9.1%. The highest admission was from cardiothoracic surgery unit, 37.4%, the average length of hospital stay was 4.52 days (range 1 to 87 days). Significant number 52 (33.3%) of patients who died under surgical ICU care belongs to General

surgery unit. Two Hundred eighty (63.5%) patients had an uneventful course, while 156 (35.4%) and 161 (36.5%) died and developed complications respectively. Notice in the study was that the age of the patient at the time of admission, mode of admission, and post admission complications were significantly and positively associated with mortality ($p = 0.0001$) while gender did not show any association with mortality at SICU ($p = 0.528$).[16]

CHAPTER THREE: OBJECTIVES

General Objectives

- To analyze the prevalence, pattern, causes, and associated factors of mortalities in the surgical wards at the JUSH

Specific Objectives

- To identify the prevalence of surgical wards mortality at JUSH.
- To identify the pattern of deaths in the JUSH's surgical wards
- To identify causes of surgical wards mortality at the JUSH.
- To identify risk factors affecting the outcome of the management

CHAPTER FOUR: METHODOLOGY

STUDY AREA AND PERIOD

The study was conducted in Jimma University Specialized Hospital (JUSH) surgery wards from September 2012 to December 2015. JUSH is located 352kms Southwest of Addis Ababa in Jimma City. It is one of the oldest teaching hospitals in the country giving services to people living in Jimma zone and serving as a referral hospital in the South-West Ethiopia for more than 15 million population. It is also serving as a clinical post graduate specialty teaching hospital for Obstetrics and Gynecology, Internal Medicine, Pediatrics & Child Health since 2005 and for Ophthalmology, and in Surgery since 2007. The department of surgery has three wards {two general surgical wards and one orthopedics ward}. It also has one emergency OPD, one cold OPD and a referral clinic that functions trice a week; and three major operating tables in addition to two minor operating tables. It has a general and cardiothoracic surgeon, a gastrointestinal oncologic surgeon, nine general surgeons, and 30 residents. The hospital also has an emergency specialist, two anesthesiologists, and few anesthesia residents. There are two plastic surgery fellows and two neurosurgeons expected to join the department

STUDY DESIGN

Institutional based retrospective cross-sectional study design was applied in JUSH from September 2012 to December 2015.

POPULATION

SOURCE POPULATION

All patients, who were admitted to the surgical wards and underwent any operation or treated conservatively at JUSH from September 2012 to December 2015.

STUDY POPULATION

All patients, who were admitted to the surgical wards and deceased during the study period.

SAMPLING TECHNIQUE

None probability convenience sampling was used.

VARIABLES

INDEPENDENT VARIABLE

- Socio-demographic information (Age, Sex, Address)
- Date of admission
- Surgical Ward
- Date of diagnosis
- Diagnosis at admission
- Date of operation/surgical intervention
- Type of operation (elective vs. emergency)
- Who conducted the operation (Surgeon or Resident)
- Complications
- Date of death
- Incriminated cause of death

DEPENDENT VARIABLES

- pattern of deaths
- causes of mortality

DATA COLLECTION TECHNIQUE

First, ward admission records was reviewed to develop lists of deceased cases during the study period. Then, using the patient's card number on the ward admission record, patient's card was sought from the hospital's card office or room. Finally, data was collected from patient's card, admission records using checklist developed for this purpose.

DATA PROCESSING AND ANALYSIS

The collected data were cleaned, stored and checked for completeness on daily basis. Data was analyzed by description of major variables, and comparison of relationships among variables using SPSS version 20 software program. Final results were presented with graphs, tables and narratives based on the nature of data.

ETHICAL CONSIDERATIONS

Formal letter was delivered from ethical committee to major Operation Room and record keeping unit of JUSH. Privacy of patients was highly recognized by not exposing their names. Results of the study were disseminated to concerned bodies only.

DATA QUALITY ASSURANCE

Cautious matching of information from operation notebooks to patients' card was done. The collected data was checked for accuracy and completeness on daily basis. Any inconsistent data was rechecked before data analysis.

LIMITATIONS OF THE STUDY

Since the study was retrospective, some of the records were incomplete, and few charts were lost. The study was conducted in a tertiary and a teaching hospital so it may not be a representative of the general population.

DATA DISSIMINATION PLAN

The result was commented by the advisors and was presented to the surgery department and after final comment is corrected the result was submitted to CBE office. Finally, after appraisal critics the article might be published and used as baseline reference.

CHAPTER FIVE: RESULTS

During the study period 8083 patients were admitted to the surgical wards of the JUSH, of them 292 (3.6%) lost their lives. The mean age was 41.58 and range was 99.97 year (0.03 years (11 days) – 100 years). The males were 177 (60.62%) and 115 (39.38%) were females in a ratio of 1.87:1. The majority of the deaths occurred among patients aging 31-40 years (Table 1).

Table 1: Age and sex distribution of cases died in surgical wards from September 2012 up to December 2015

		Sex				Total	
		Male		Female			
		Frequency	percent	Frequency	percent	Frequency	percent
Age in year	0 – 10	5	1.71	1	0.34	6	2.05
	11 – 20	25	8.56	14	4.79	39	13.36
	21 – 30	22	7.53	15	5.14	37	12.67
	31 – 40	55	18.8	29	9.93	84	28.76
	41 – 50	20	6.85	23	7.88	43	14.73
	51 – 60	20	6.85	22	7.53	42	14.38
	61 – 70	17	5.82	5	1.71	22	7.53
	71 – 80	8	2.74	3	1.03	11	3.77
	81 – 90	3	1.03	3	1.03	6	2.05
	91 – 100	2	0.7	0	0	2	0.7
Total		**177**	**60.62**	**115**	**39.38**	**292**	**100**

Table 2 - Address of cases that died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
address	Urban	102	34.9
	Rural	190	65.1
	Total	**292**	**100.0**

Patients from the rural areas mounted the majority (65.1%) of the deaths (Table 2).Most of them (39.7%) presented after three days of the onset of their illness and 34.6% of them showed up within a day (Table 15), while 81.5% (238) of them were not reported to have co-morbid illnesses (Table 3). From this the leading co-morbid illness were others accounted 23 (TB, HIV, malnutrition, epilepsy, CHF, and meningitis), next to this hypertension 15 cases, diabetes mellitus accounted for 10 cases, and asthma accounted for 6 cases.

Table 3 – Duration of symptoms before presentation of patients who died in surgical department from September 2012 upto December 2015

		Frequency	Percent
Duration of symptoms	<24 hours	101	34.6
	24-72 hours	75	25.7
	>72 hours	116	39.7
	Total	**292**	**100.0**

81.5% (238) revealed no noticeable co-morbid condition while hypertension was eminent 5.1% (15) among the patients with co-morbidities followed by Diabetes Mellitus 3.4% (10) (Tables 3&4).

Table 4: Co – morbid illnesses among patients who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Co-morbid illness	yes	54	18.5
	no	238	81.5
	Total	**292**	**100.0**

Table 5: Type of co-morbidities reported by patients who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Co – morbid illness	DM	10	3.4
	HTN	15	5.1
	Asthma	6	2.1
	Others	23	7.9
	Total	**54**	**18.5**

Acute abdomen and trauma topped the clinical presentation mounting 36.1% (105) and 34.9% (102) respectively while the malignancies were 10.6% (31) also 4.8% (14) burned patients deceased. Head injury was the leading cause 51% (52) among the trauma deaths, followed by multiple trauma 25.5% (26) (Tables 5-6).

Table 6 -Clinical condition of patients who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Clinical condition	acute abdomen	105	36.0
	trauma	102	34.9
	infection	40	13.7
	malignancy	31	10.6
	burn	14	4.8
	Total	**292**	**100.0**

Table 7 -Type of trauma of patients who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Type of trauma	Head	52	51
	Thoracic	2	2
	Abdominal	3	2.9
	Extremity	19	18.6
	Poly trauma	26	25.5
	Total	**102**	**100**

The majority of the deceased patients underwent surgical procedures 288 (97.6%) while the remainders were attended to non-operatively. Among the operation group 251 (86%) underwent emergency surgical procedure, while 34 (11.6%) were entertained electively. Surgical residents conducted 69.5% (198) of the operations while a senior was needed in 30.5% (87) of the procedures. General anesthesia was needed in 90.5% of the times (Tables 7-10).

Table 8 -Type of management of patients who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Type of management	Operative	285	97.6
	Conservative	7	2.4
	Total	**292**	**100.0**

Table 9 - Type of surgery based on schedule of patients who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Form of surgery	emergency	251	88.1
	elective	34	11.9
	Total	**285**	**100**

Table 10 – The procedure attendee of patients who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Who conduct	Surgeon	87	30.5
	Resident	198	69.5
Total		**285**	**100**

Table 11 - type of anesthesia of cases that died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Type of anesthesia	General	258	90.5
	Regional	27	9.5
Total		**285**	**100**

In 188 (66%) of the operated patients, complications were witnessed, and sepsis was the leading cause in 121 (42.5%) and bleeding and/or hematomas were seen in 25 (8.8%) patients (Tables 12-13)

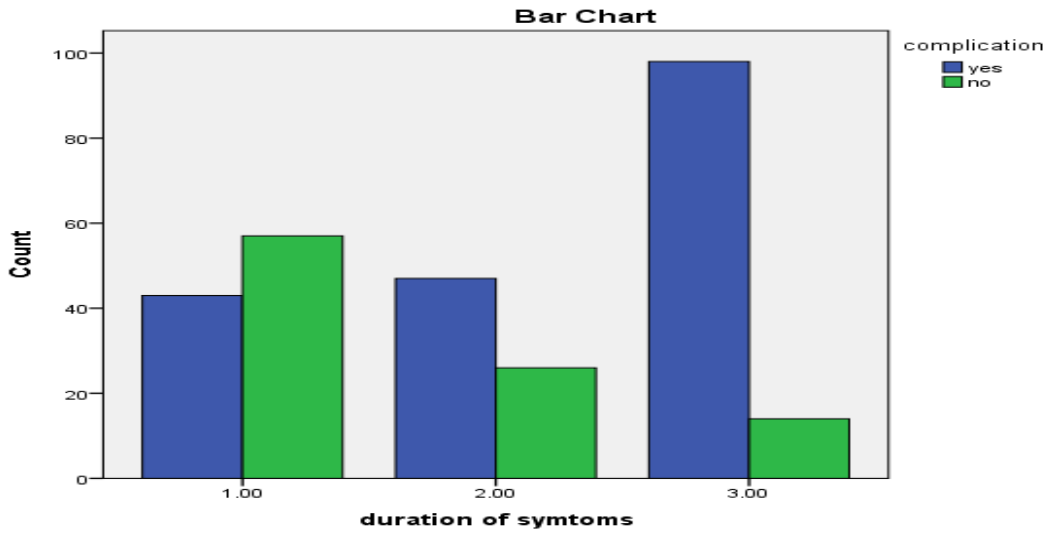
Table 12- post op complication of cases that died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Post op complication	Yes	188	66
	No	97	34
Total		**285**	**100**

Table 13- type of post op complication of cases who died in surgical wards from September 2012 up to December 2015

		Frequency	Percent
Type of post op complication	hematoma/bleeding	25	8.8
	Sepsis	121	42.5
	SSI	13	4.6
	Others	29	10.1
Total		**188**	**66**

Figure 1: Bar graph for duration of symptoms and post operation complication of patients who died in surgical wards September 2012 up to December 2015



The majority of patients (85.3%) were lost in their postop course. Severe sepsis, being the major final label(47.3%), is possibly, findings wise, due to their late show up and lack/shortage of life support tools (table 14,15).

Table 14 – Timing of death in relation to the operations and the possible cause in those who died in surgical wards from September 2012 up to December 2015

		possible cause of death								Total	
		respiratory death		cardiovascular failure		severe sepsis		0thers			
		%	freq	%	freq	%	freq	%	freq	%	freq
Timing of death	intra-op	0.7	2	9.2	27	2.4	7	0	0	12.3	36
	post-op	15.1	44	21.6	63	43.8	128	4.8	14	85.3	249
	during conservative	1.0	3	0.3	1	1.1	3	0	0	2.4	7
Total		**16.8**	**49**	**31.2**	**91**	**47.3**	**138**	**4.8**	**14**	**100**	**292**

Table 15 - Possible cause of death with duration of symptoms before presentation to the ER of those who died in surgical wards from September 2012 up to December 2015

		possible cause of death								Total	
		respiratory death		cardiovascular failure		severe sepsis		0thers			
		%	freq	%	freq	%	freq	%	freq	%	freq
duration of symptoms	< 24 hours	7.2	21	19.5	57	4.8	14	3.1	9	34.6	101
	24 – 72 hours	1.7	5	3.76	11	20.2	59	0	0	25.7	75
	>72 hours	7.9	23	7.87	23	22.3	65	1.7	5	39.7	116
Total		**16.8**	**49**	**31.2**	**91**	**47.3**	**138**	**4.8**	**14**	**100**	**292**

CHAPTER SIX: DISCUSSION

Very few data and reports are available regarding surgical mortality in Ethiopia so far. [14, 16] some not specifically designed for the surgical wards[12]. There are no any analytic data of mortalities in the surgical wards of JUSH, so this was aiming at identifying the prevalence and common causes encountered at the surgical wards in the hospital.

In our study, the total number of patients died during the study period was 292 which gives a crude mortality rate of 36 deaths per 1000 being slightly lower than many studies from sub-Saharan Africa.[4,14]This is been less compared to a study from Pakistan which reported 62 deaths per 1000[15]. A study in Tikur Anbesa hospital revealed that the crude mortality rate was 69 in-patient deaths per 1000 admitted population. This slight discrepancy may be because of the type of poor clinical conditions that wind up at their end compared to JUSH. This discrepancy with the Lahore[15] findings could be partly due to the fact that our study was conducted over a period of three years and three months while theirs was just for one year. But this is also not in line with the data from other health facilities where the number of patients attended to were less compared to our study and the duration.[4,6,14]

Previous studies suggested that mortality patterns differ with regard to place of residence[15]. In our study around 65% of recorded deaths were from rural areas. This finding is consistent with a previous study in Nigeria where around 70% of participants died during the four years study period were from rural areas[4]also the Pakistani study showing 69.45%. The finding is explained by the fact that our hospital covers a huge zone that is surrounded by many villages and small towns. And this also explains the late presentation to the JUSH which is matching the Nigerian context.

Our study revealed that the majority of deaths took place among those who presented within 24 hours and after 72 hours of their complaints. This can be explained by the fact that, those who succumbed within their first day were dominated by those who sustained severe traumas, mainly head injuries. While those who presented beyond 24 hours were dominated by acute abdominal insults and were already in poor shape that affected their outcome.

In the present study acute abdomen accounted for the majority of the clinical conditions that lead to death (36%). This finding is in line with a finding from Owerri, Nigeria[4] where acute abdomen was found to be the most frequent clinical condition (22.2%) which resulted in death. Whereas, a study in Tikur Anbesa hospital indicated that, malignancy accounted for the majority (42%) of the deaths among admitted patients[14]. This discrepancy may be partly due to the difference in the study settings where malignancies are presented more often to the Tikur Anbesa hospital in Addis Ababa. The other reason may be that JUSH is main health facility serving the people around the southwestern region of Ethiopia and providing both; emergency and elective services, while there are many other public health institutions in Addis Ababa that can offload the emergency burden.

Co-morbidities were not evident in 81.5% of the deceased patients in our findings which is in line with the study from Olabisi Onabanjo University Teaching Hospital, Nigeria (78.2%).[6]

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

Conclusion:

The findings attained in our research showed that our mortality rate is 3.6% and is comparable to those around the region. Delay in presenting to the health facility as well as traumatic brain insults were leading factors. The causes were topped by acute abdominal complicated cases.

Much of those who lost their lives within the first day of their arrival were victims of severe traumatic brain injury. This was due to lack of necessary diagnostic and life support tools.

The deaths were not much related to the surgical procedure or the health professional conducting the procedure cause the majority of the deceases showed up either with severe form of injury, though within reasonable time, or late in the course of their illness.

Recommendations:

- Proper recording and documentation of patients charts should be practiced and promoted to ease further reviewing and improving services
- Patients' death summaries should be availed and attached to the daily departmental morbidity and mortality reports and to be submitted to the department promptly
- To avail awareness campaigns and encourage policies to encouraging early presenting surgical complaints to the appropriate responsible health facilities
- Since significant deaths took place secondary to trauma, which was dominated by head injuries, reviewing the ICU and improving its environment would aid in reducing the preventable deaths that occurred
- Trauma, in the form of severe head injury, being a leading cause of death alerts the need for upgrading its services to provide reliable immediate access to neurosurgical care when needed.

CHAPTER EIGHT

REFERENCE

1. Hayes AB, Weiser TG, Berry WR, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. NEMJ 2009;360 (5):491-9.

2. Weiser TG, Regenbogen SE, Thompson KD, et al. An estimation of the global volume of surgery: a modelling strategy based on available data. Lancet 2008;372:139-44.

3. McDonald PJ, Royle GT, Taylor I, Karran SJ. Mortality in a University surgical unit: what is an avoidable death? Journal of the Royal Society of Medicine April 1991;84:213-6.

4. Anelechi B.Chukuezi, Jones N. Nwosu, Mortality pattern in the surgical ward: a five year review at federal medical center, owerri, Nigeria. April 2010

5 Goldacre JM, Mackintosh A (2002) In-hospital deaths as a fraction of all deaths within 30 days of hospital admission for surgery: analysis of routine statistics. BMJ 324:1069–1070

6. Babatunde A. Ayoade, Lateef O. Thanni, Olantuji Shonoiki , mortality pattern in surgical ward of university of teaching hospital in southwest Nigeria, Nigeria. 2012

7 Ayrton J, Attwood D, Kuron LD. A Retrospective Analysis of Mortality Distribution in Juba Teaching Hospital, Southern Sudan. SSMJ. 2008;2(1) last accessed on 15/11/ 2012. URL:/ http://www.southernsudanmedicaljournal.com.

8 Caballero PP, García JJC, Ojesto AG, Arrieta NR-G, Fernández CS, Galán CDA. Early mortality in a tertiary care hospital: analysis of quality of care. Emergencias. 2011;23:430–436.

9. Triin jakobson, Juri Karajagin, post opertative complication and mortality after major gastrointestinal surgery, Tartu university hospital, Tartu, Estonia.2013

10.Ben-Tovim D, Woodman R, Harrison JE, Pointer S, Hakendorf P, Hen-ley G. Measuring and reporting mortality in hospital patients. Can-berra: Australian: Institute of Health and Welfare; 2009. Cat. No. HSE 69.

11.Bradshaw D, Pillay-Van WV, Laubscher R, Nojilana B, Groenewald P, Nannan N, Metcalf C. Cause of death statistics for South Africa: Challenges and possibilities for improvement. 2010. (Burden of Disease Research Unit).

12. Asrat Agalu Abejew, Alemneh siemeneh tamir. Retrospective analysis of mortality in tertiary care hospital in southeast Ethiopia. 2014

13. O'Leary DP, Hardwick RH, Costford E et al (1997) Does hospital mortality rate reflect quality of care on the surgical unit? Ann Royal Coll Surg Engl 79:46–48

14.Bilut H. Bekele A, In-patient surgical mortality in Tikur Anbessa Hospital: a five-year review, Addis Abeba , Ethiopia.2009.

15. Wasim Hayat, Fraz Fahim. mortality analysis of a surgical unit. South surgical ward, mayo hospital. Lahore 2002.

16. Seyoum N. Bilut H. review of morbidity and mortality among patient admitted to surgical intensive care unit at tikur anbesa specialized teaching university, Ethiopia.2014

ANNEX I

DATA EXTRACTION CHECK LIST

Jimma University department of surgery checklist for retrospective analysis of mortality patterns in the surgical wards from September 2012 to December 2015.

Part one: - Socio-demographic data

1. Age _____

Sex: ☐ M ☐ F

2. Address : ☐ Urban ☐ Rural

Date of admission ☐ Date of death ☐

Part two: - Pre-hospital condition

5. Co-morbidities ☐ Yes ☐ No

If yes, mention: ☐ Diabetes ☐ Hypertension ☐ Asthma ☐ Others

6. The time interval between the onsets of symptoms to hospital presentation_____

Part three: - Post admission condition

7. Clinical condition

- ☐ Acute abdomen
- ☐ Trauma
  - ☐ Head
  - ☐ Thoracic
  - ☐ Abdominal
  - ☐ Other
- ☐ Infection
- ☐ Malignancies
- ☐ Burn
- ☐ Others_____ (specify)

8. Type of management

▭ Operative ▭ Conservative

9. Type of surgery (based on timing/schedule)

▭ Emergency ▭ Elective Date ▭

10. Who conducted the procedure? ▭ Surgeon ▭ Resident

Type of anesthesia: ▭ General ▭ Regional

11. Complication

▭ Yes ▭ No

12. If yes to Q. 12, what kind of complication?

☐ Hematoma/ bleeding

☐ Sepsis

☐ Others (Specify).....

13. When did death occur?

☐ Intra op

☐ Post op

☐ During conservative

14. Possible cause of death

☐ Respiratory Failure

☐ Circulatory failure

☐ Severe sepsis

☐ Anemia