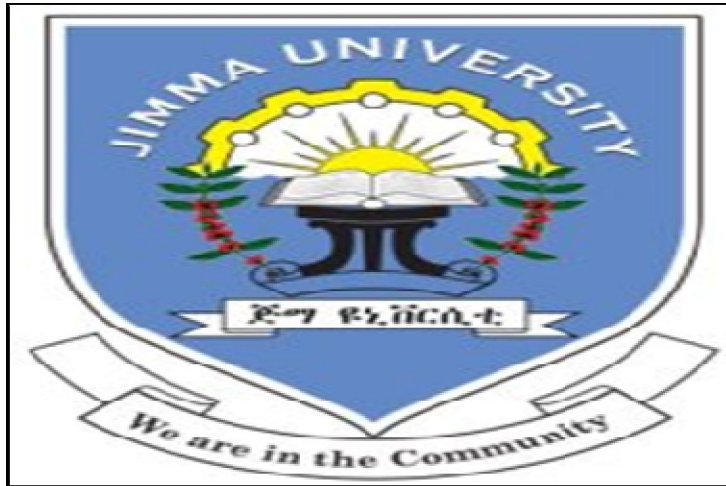


PREVALENCE, CAUSE AND COMPLICATION OF MAJOR LOWER LIMB AMPUTATION JUSH BETWEEN SEPT. 2013 TO Aug. 2015 G.C



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RESEARCH THESIS FOR THE PREPARATION OF A SENIOR THESIS TO BE 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

**JANUARY 2016
JIMMA, ETHIOPIA**

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ABSTRACT

Background: - Amputation could be described as the removal of a body extremity by surgery or trauma. If amputation is taken as a surgical measure, it is used to control pain or disease process in the affected limb. Major lower extremity amputation is a complete loss/ablation of any part of the lower limb, for any reason, in the following anatomical planes: in the transverse plane through or proximal to the tarsometatarsal joint.

Objective: - To assess prevalence, cause and complication of major lower limb amputation in JUSH from September 2013 to August 2015.

Methods: - Institutional based retrospective cross-sectional study design was used. The result commented by the advisors and presented to the surgery department and after final comment is corrected the result submitted to CBE office. Finally, after appraisal criticism the article might be published and used as baseline reference.

Budget: - To carry out the research it took a total of 5500 birr with 10% contingency.

Key words: - Amputation, major lower limb amputation.

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ABBREVIATIONS

JU – Jimma University
JUSH – Jimma University specialized hospital
OPD – out Patient Department
OR – Operation Room
ICU – Intensive Care Unit
Intra Op – Intra Operative
SSI – surgical site infections
AKA – above knee amputation
BKA – below knee amputation
TTA –trans-tibial amputation
TFA – trans-femoral amputation
DVT – deep vein thrombosis
PVD – peripheral vascular disease
HAP – hospital acquired pneumonia
MI – myocardial infarction
TBS - traditional bone setters

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Amputation could be described as the removal of a body extremity by surgery or trauma. If amputation is taken as a surgical measure, it is used to control pain or disease process in the affected limb. Major lower extremity amputation is a complete loss/ablation of any part of the lower limb, for any reason, in the following anatomical planes: in the transverse plane through or proximal to the tarsometatarsal joint (The Global Lower Extremity Amputation (LEA) Study Group, 2000).[1]

Amputation may involve a single limb (unilateral), both the upper or lower limbs (bilateral), or a combination of upper and lower limb amputations (multiple amputations). Amputation may be performed at various anatomical levels. Lower limb amputation may involve removal of one or more toes, part of the foot, ankle disarticulation (disarticulation is the amputation of a body part through a joint), transtibial (below the knee) amputation, knee disarticulation, transfemoral (above the knee) amputation, hip disarticulation and hemipelvectomy (removal of half of the pelvis). Upper limb amputation may involve the removal of one or more fingers, wrist disarticulation, below elbow amputation, elbow disarticulation, above elbow amputation, shoulder disarticulation and forequarter amputation (amputation of the arm, clavicle and scapula).[2]

The global annual incidence of amputation ranges from 3 per 100,000 populations in Spain and Japan to 44 people per 100,000 in American Indian populations. [3] Approximately 40 to 60% of all lower extremity amputations are related to DM and in some areas it is as high as 70 to 90%. [4]. Incidence of lower limb amputation is also greater than the upper limb. [5] The inappropriate splintage of fractures by the TBS resulting in iatrogenic limb gangrene is an absolute indication for amputation. [6]

Limb amputation is considered the last resort when limb salvage is impossible or when the limb is dead or dying, viable but nonfunctional or endangering the patient's life. The loss of a limb by any individual, especially in developing countries where the prosthetic services are poor often

has profound economic, social and psychological effects on the patient and their family. Major limb amputations are essentially disfiguring operations that carry a fairly high perioperative mortality and morbidity and persons who have undergone amputations are often viewed as incomplete individuals.[7]

The multiple pathways that may lead to limb amputation include disease (e.g. diabetes, peripheral vascular disease, malignant tumors), traumatic injury (e.g. motor vehicle and industrial accidents) and congenital causes.[2]

Determining the appropriate level of amputation, requires an understanding of the trade-offs between increased function with a more distal level of amputation and a decreased complication rate with a more proximal level of amputation. In spite of the modern reconstructive attitude of creating a dynamic functional stump, the most distal level consistent with primary wound healing, the site of the disease and blood supply of the limb ultimately dictates the level at which successful amputation may be performed.[5]

1.2 STATEMENT OF THE PROBLEM

Major limb amputation is reported to be a major problem but preventable public health problem that is associated with profound economic, social and psychological effects on the patient and family especially in developing countries where the prosthetic services are poor. [7]

Average annual admissions receiving major amputation in the years 1996 to 2005 were 41,275(53.2% were females). Individuals undergoing major amputation were older (72.2 years) than those that had open or endovascular procedures performed. The number of major amputations fell significantly between 1996 and 2005, by an estimated 6.4% per year ($P < 0.05$). Rates of decrease were more dramatic in the above 75 age group than in the younger age groups.[8]

The number of lower extremity amputations performed in the United States annually has remained fairly steady between 30,000 and 40,000 over the last 15 years. Likewise, it remains a common surgical procedure undertaken in developing countries. Frequently, it is the treatment of choice for a devastating injury to the lower extremity where reconstruction may be a long and costly undertaking that leads to the preservation of a functionally unsatisfactory extremity. This is more so in Africa where there are very few facilities and skilled hands for such limb reconstruction coupled with the delay in presentation of most patients to the Hospital, as well as the menace of traditional bone-setters' gangrene . However, amputation can often eliminate a painful limb, bring relief to the patient and also allow rehabilitation of the patient to the status of a functional prosthetic ambulator. The loss of a limb by any individual, especially in developing countries where the prosthetic services are poor has profound economic, social and psychological effects on the patient and family. [9]

1.3SIGNIFICANCE OF THE STUDY

Information on the prevalence, causes and complication of major limb amputation cases is critical for the improvement of quality care. However, very limited studies have tried to determine prevalence, causes and complication of major limb amputation cases in Ethiopia in general and in study area in particular. Therefore, the aim of this study is to generate information that explains prevalence, causes and complication of major limb amputation cases admitted to JUSH.

The results of the study will be used by health personnel, health service managers and policy makers for best reference for study prevalence, causes and complication of major limb amputation cases in hospital. The findings will also be used by researchers as baseline information to conduct large scale study using stronger study designs.

Studies on the prevalence, cause and postoperative complications of lower limb amputation is scanty in Ethiopia and unavailable in the study area. Therefore; this study aims at providing information regarding the prevalence, cause and complications of major lower limb amputation performed for patients who are admitted to JUSH from September 2013 to august 2015.

CHAPTER TWO: LITERATURE REVIEW

Amputation is the removal of one or more parts of the body and can be as a result of unprecedented havoc or natural disasters; like accidents, earthquakes of major intensity, terrorism and war, or carried out due to medical reasons with the motive to improve health outcomes and quality of life of patients. [1]

Attempts at quantifying the incidence of lower extremity amputations have been made and a number of encouraging studies have been published showing significant improvements in the incidence of lower extremity amputations. However, in order to accurately assess the impact of new healthcare measures and interventions, accurate data regarding the extent and depth of the problem are needed to both direct service provision and act as a baseline from which change can be measured. We have sought to review the current literature for contemporary data on the incidence of lower extremity amputation and to examine variation in these parameters worldwide. [10]

It is estimated that 1.2 million individuals are living with an amputation; and that 185,000 are performed each year worldwide. [1]

The global annual incidence of amputation ranges from 3 per 100,000 populations in Spain and Japan to 44 people per 100,000 in American Indian populations. However, a recent 2011 review suggests global ranges of 6 to 31 per 100,000 in Italian and German populations respectively.[3]

According to newest statistics in the USA, about 1.7 million people live with amputations and the number has increased in recent years. It is estimated that 25-27 in 100,000 of the German population have undergone amputation. Data from Nigeria is sparse, but Onuba et al reported that 0.38% of all orthopedic operations were amputations. Thanni reported 1.6 per 100,000 as the estimated prevalence of extremity amputation in Nigeria. It is important to note that there are no national data. [5]

Using a standard protocol for data collection, the Global Lower Extremity Amputation Study Group (Unwin, 2000) assessed the incidence of lower limb amputation in ten different locations worldwide and reported marked differences among test sites in their annual rates of lower limb amputation.[7]

Comparison of all-cause amputation rates during the 1995-1997 period, revealed lowest age-adjusted rates of first major lower limb amputation in Madrid, Spain (0.5 per 100,000 women, 2.8 per 100,000 men) while highest rates were reported in the Navajo region of the United States (22.4 per 100,000 women, 43.9 per 100,000 men) . Internationally, men are more likely than women to undergo amputation and there is an age-related increase in lower limb amputation secondary to dysvascular disease (2, 7).

Population-based studies have consistently found that African Americans, as compared with non-Hispanic whites, have more than twice the likelihood of undergoing a major (above- or below-knee) lower extremity amputation. African American patients hospitalized for complications of peripheral arterial disease (PAD) also have significantly lower rates of potentially limb-saving lower extremity bypass surgery or angioplasty. Racial disparities in PAD thus mirror findings on racial differences in coronary artery disease treatment. [11]

In Nigeria, below knee amputation (BKA) is the leading level of amputation. This is followed by above knee amputations (AKA) giving an AKA/BKA ratio 1:2 in Nigeria. [5]

Amputations are usually the result of complications of diabetes, peripheral arterial disease, trauma, and malignant tumors; and are often complicated by infection. Diabetes complications are commonly acknowledged as the leading cause of the global amputation burden and contribute to between 25% (in Italy and Japan) and 90% (in American Indians) of all amputations. In the UK and Europe diabetes accounts for around 40 - 64% of amputations. Peripheral arterial disease is a contributing cause for between 16 – 100% of global amputations, and a primary cause (without diabetes or non-diabetes) for 18 – 58% of amputations in the UK

and European countries. Amputations related to trauma result in between 0– 57% of all global amputations and trauma appears to be the primary cause of 2- 13% of UK and European amputations. Finally, malignant tumours are a contributing cause of up to 14% of amputations and a primary cause of between 2 – 3% of amputations in the UK and Europe. Infections contribute to anywhere between 4 -100% of all amputations; however infections are typically preceded by the above conditions. [3]

Limb gangrene arising from trauma as well as traditional bone setters (TBS) intervention were the leading indications for limb amputations in Nigeria in 60% of cases. The inappropriate splintage of fractures by the TBS resulting in iatrogenic limb gangrene is an absolute indication for amputation. Other local reports recorded bone. Tumour, uncommon indications include burn contractures vascular insufficiency, congenital anomalies, chronic osteomyelitis (complicating TBS treatment of open fractures). Most amputee patients in developed countries are older than 60 years of age, and 80-90% of lower limb amputations are performed as a result of vascular problems. Indications differ a little in other parts of Africa. Sepsis was reported to be the commonest indication in Sudan, Trauma in Tanzania and several parts of east Africa and diabetic foot gangrene in Ghana. [5]

In sub-Saharan Africa, tumours and trauma are often reported to be the leading causes. With increasing incidence of cardiovascular risk factors, however, a corresponding rise in vascular amputations is largely expected. In Kenya, rates of vascular amputations vary between 25% and 56%. Diabetes mellitus is an established risk factor in peripheral vascular disease (PVD), and in Trinidad and the Caribbean, for instance, diabetic foot complications are the leading cause of lower limb amputation. [12]

In Ethiopia, vascular disease, apart from diabetes, is less common and amputation is often the only available treatment for the late results of trauma; mainly for late complications, for gangrene of various causes, for tumours and for chronic infections. Many of these amputations could be avoided using public health measures designed to reduce the number of road traffic accidents and industrial injuries, and by improved medical care. [13]

Limb amputation is not only a loss of physical integrity, but it also deeply affects individuals' mental and social well-being and is a significant problem, especially for the youth and working population. [4]

The loss of a limb by any individual, especially in developing countries where the prosthetic services are poor often has profound economic, social and psychological effects on the patient and their family. Major limb amputations are essentially disfiguring operations that carry a fairly high preoperative mortality and morbidity and persons who have undergone amputations are often viewed as incomplete individuals. [7]

The mortality rate associated with amputation in Nigeria ranges from 8% - 11% due to septicemias and diabetic complications, 9% and 11% were reported in East Africa and Ivory Coast respectively. Other reported complications include stump sepsis, stump oedema, blisters, wound dehiscence, ulceration, contractures, chronic osteomyelitis of the bony stump and phantom limb syndrome. [5]

Stump sepsis is the commonest reported complication in Nigeria. The risk of postoperative wound infection is often increased by pre-operative conditions of the limb in addition to other co-morbidities the patient may have. Diabetes foot gangrene with ascending sepsis, gangrene with sepsis from TBS treatment of limb injuries increases the risk of postoperative wound infection. This could involve flap necrosis in some cases. Pre-operative antibiotics administration as highlighted earlier is mandatory. [5]

There is a wide variation in the incidence as well as prevalence of major lower limb amputations worldwide. Causes of amputation vary between and within countries depending on ethnic background and socioeconomic status. The risk of postoperative complication is often depends on the pre-operative conditions of the limb in addition to other co-morbidities the patient may have.[2]

CHAPTER THREE: OBJECTIVES

3.1 GENERAL OBJECTIVE

To assess prevalence, cause and complication of major lower limb amputation in JUSH from September, 2013 to August, 2015.

3.2 SPECIFIC OBJECTIVE

To determine prevalence of major lower limb amputation in JUSH from September, 2013 to August, 2015.

To assess cause of major lower limb amputation in JUSH from September, 2013 to August 30, 2015.

To assess complications of major lower limb amputation in JUSH from September, 2013 to August, 2015.

CHAPTER FOUR: METHODS AND MATERIALS

4.1 STUDY AREA AND PERIOD

The study conducted in Jimma University Specialized Hospital (JUSH) surgery ward from September 1, 2013 – August 30, 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. 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. Department of surgery have three wards {two general surgical wards and one orthopedics ward} and: one emergency OPD, one cold OPD and one referral clinic; and three operating tables. It has five consultant general surgeons, one cardiothoracic surgeon and residents from year I – IV.

4.2 STUDY DESIGN

Institutional based retrospective cross-sectional study design was used in JUSH from September, 2013 to August, 2015.

4.3 POPULATION

4.3.1 SOURCE POPULATION

All patients admitted to surgical wards and undergo for any amputation to operation room, JUSH from September 1, 2013 – August 30, 2015.

4.3.2 STUDY POPULATION

Those patients who were admitted and undergo major lower extremity amputation and re-amputations for specific indications.

4.4 SAMPLE SIZE DETERMINATION

All patients who were admitted surgical ward and undergo major lower extremity amputation and re-amputations for specific indications.

4.5 SAMPLING TECHNIQUE

None probability convenience sampling was used.

4.6 VARIABLES

4.6.1 INDEPENDENT VARIABLE

- Socio-demographic information (Age, Sex, Address)

4.6.2 DEPENDENT VARIABLES

- Prevalence of major lower limb amputation
- Causes of lower limb amputations
- Postoperative complications of major lower limb amputations

4.7 DATA COLLECTION TECHNIQUE

First, the theatre operation and ward admission records was reviewed to develop lists of major lower limb amputation cases or patients presented and operated during the study period. Then, using the patient's card number on the operation or admission record, patient's card was sought from the hospital's card office or room. Finally, data was collected from patient's card, operation record and admission record using checklist developed for this purpose.

4.8 DATA PROCESSING AND ANALYSIS

The collected data was 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 result was presented with graphs, tables and narratives based on the nature of data. Chi-square test was done to identify association between variables and p-value of < 0.05 was used to declare existence of statistically significant association between variables.

4.9 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 was disseminated to concerned bodies only.

4.10 DATA QUALITY ASSURANCE

Cautious matching of information on operation notebook 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.

4.11 LIMITATIONS OF THE STUDY

Since the study was retrospective the recording might be incomplete or charts might be lost. The study will be conducted in a tertiary and teaching hospital so it may not be a representative of the general population.

4.12 DATA DISSIMINATION PLAN

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

4.13 OPERATIONAL DEFINITIONS

Amputation: - described as the removal of a body extremity by surgery or trauma

Upper limb amputation: - described as the removal of upper body extremity by surgery or trauma.

Lower limb amputation: - described as the removal of lower body extremity by surgery or trauma.

Major lower limb amputation: - is a complete loss/ablation of any part of the lower limb, for any reason, in the following anatomical planes: in the transverse plane through or proximal to the tarsometatarsal joint.

CHAPTER FIVE: RESULT

A total of sixty two cases of amputation were retrieved in 24 months period from Sep 2013 to Aug 2015 .from this male accounts 40 (64.5%) and female accounts 22 (35.5%) with male to female ratio of 1:2. The mean age was 40 and range 64 (6-70). (as seen in table 1)

Table 1- distribution of major lower limb amputation by age and sex over 24 months from Sep 2013 to Aug 2015 at JUSH.

		Sex		Total
		male	female	
Age group	1-18	3	3	6
	19-70	37	19	56
Total		40	22	62

More than half of the patients come from rural area 36 (58.1%) and urban 26 (41.9%). The pre hospital intervention accounted traditional 19(30.6%), intervention in other health facility 30(48.4%) and no intervention at all 13(21.0%). (as seen in table 2)

Table 2: - distribution of major lower limb amputation by pre hospital intervention over 24 months from Sep 2013 to Aug 2015 at JUSH

		Frequency	Percent
	traditional intervention	19	30.6
	intervention in other health facility	30	48.4
	no intervention at all	13	21.0
	Total	62	100.0

Among the 62 patients who lost their limbs most of their duration of symptoms prior to operation was after two weeks 43(69.4%) between 1 day and two weeks accounted for 11(17.7%) and within 1 day constituted 8(12.9%). (as seen in table 3)

Table 3: showing the frequency of duration of symptoms prior to operation of major lower limb amputation over 24 months from Sep 2013 to Aug 2015 at JUSH

		Frequency	Percent
Duration of symptoms	<=1 day	8	12.9
	1- 15 days	11	17.7
	15 days <	43	69.4
	Total	62	100.0

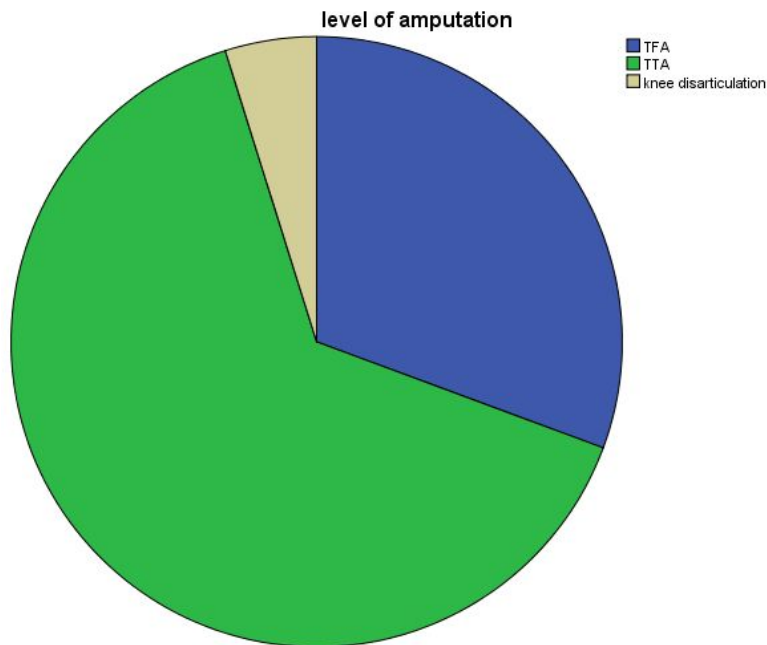
Infection was the most common indication for lower limb amputation (38.7%) the second leading indication for lower limb amputation was tumor (21.0%), trauma accounted (16.1%) peripheral vascular disease and diabetic foot gangrene accounted 8.1% and 11.3% respectively. others like electrical burn accounted 4.8%. (as seen in table 4)

Table 4: distribution of major lower limb amputation by indication of amputation over 24 months from Sep 2013 to Aug 2015 at JUSH

		Frequency	Percent
Indications	Pvd	5	8.1
	Trauma	10	16.1
	Infection	24	38.7
	Tumor	13	21.0
	diabetic foot gangrene	7	11.3
	Others	3	4.8
	Total	62	100.0

TTA were the leading level of amputation 54.5%, the second leading level of amputation was TFA accounted 30.6% and knee articulation were responsible for 4.8% of level of amputation. (as seen in figure 1)

Figure 1: pie chart showing the frequency of major lower limb amputation by level of amputation over 24 months from Sep 2013 to Aug 2015 at JUSH



Infection for indication of amputation was much more common in age group 19–70 years 17.7%. While trauma for indication of amputation were in lower age group 4.8%. (as seen in table 5)

Table 5: comparing indication of amputation with respect to age of patients of major lower limb amputation over 24 months from Sep 2013 to Aug 2015 at JUSH

		indication for amputation						Total
		pvd	trauma	infection	tumor	diabetic foot gangrene	others	
Age in years	1-18	0	3	1	2	0	0	6
	19-70	5	8	22	11	7	3	56
Total		5	11	23	13	7	3	62

Among 62 lower limb amputated patients due to infection, pre hospital intervention traditionally accounted for 15 (24.1%). 8 (12.9%) of cases who amputated due to trauma directed came to our hospital without any intervention at all. (as seen in table 6)

Table 6: comparing pre hospital intervention with respect to indication of amputation of major lower limb amputation over 24 months from Sep 2013 to Aug 2015 at JUSH

		indication for amputation						Total
		pvd	trauma	infection	tumor	diabetic foot gangrene	others	
pre hospital intervention	traditional intervention	0	2	15	2	0	0	19
	intervention in other health facility	5	1	5	10	7	2	30
	no intervention at all	0	8	3	1	0	1	13
Total		5	11	23	13	7	3	62

Out of 62 lower limb amputated patients 51.6% developed complication. From surgical immediate post-operative complication 37.1% of cases manifested surgical site infection. And from medical complication DVT accounted for 9.7%. (as seen in table 7)

Table 7: showing frequency of total complication, surgical immediate post-operative and medical complication of major lower limb amputation over 24 months from Sep 2013 to Aug 2015 at JUSH

		Frequency	Percent
Complications	Yes	32	51.6
	No	30	48.4
	Total	62	100
Surgical immediate post- operative complication	Hematoma/bleeding	1	1.6
	SSI	23	37.1
	Stump necrosis	6	9.7
	Total	30	48.4
Medical complication	HAP	1	1.6
	DVT	6	9.7
	Death	6	9.7
	Total	13	21.0

CHAPTER SIX: DISCUSSION

Since it was first described by Hippocrates in 460–377 BC, limb amputation has been a common surgical procedure performed by orthopedic, general, vascular and trauma surgeons for therapeutic reasons to serve patient's life. However, it is often associated with profound economic, social and psychological effects on patient and their family (6.8). As amputation indications and patterns vary between hospitals in a country and between countries, this study was undertaken to describe our experiences on major limb amputations in a larger tertiary care teaching hospital and compare the findings with similar studies conducted in other parts of the world with a view to highlighting the

Variations in the pattern and indications for amputations. This would enable meaningful preventive measures to be proffered.

The results show that the rate of major lower limb amputation in men (64.5%) is relatively higher than women (35.5%). Similarly, in other studies, the rate of major lower limb amputations is apparent in men more than women, but this rate in our study was slightly smaller than the mentioned studies (3, 5).

Infection was the main indication of amputation and accounted for 24 patients (38.7%) patients, followed by Tumor which accounted for 13 patients (21.0%). Similar reports were published from other African and developing countries like Sudan and Nigeria.(4,14)

Study done in Nigeria reported that Limb gangrene arising from trauma as well as traditional bone setters (TBS) intervention were the leading indications for limb amputations in Nigeria in 60% of cases. The inappropriate splintage of fractures by the TBS resulting in iatrogenic limb gangrene is an absolute indication for amputation. In this study also traditional intervention were responsible for 19 (30.6%) major lower limb amputation. (4)

In this study, below knee amputation (BKA) is the leading level of amputation 54.5% of cases. This is followed by above knee amputations (AKA) 30.6% cases. Such pattern also reported in Nigeria and sudan. (4,14)

In this study, SSI is the commonest reported complication which accounted 37.1% cases. The mortality rate associated with major lower limb amputation constituted 9.7% .Other reported complications include stump sepsis 9.7%, DVT 9.7% and bleeding 1.6% cases. Approximately similar finding were recorded on mortality rate (9.5%) in Nigeria.(4)

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

Infection, Trauma, gangrene resulting from diabetes and traditional intervention are the leading indications for amputation. The majority of these indications are potentially preventable through provision of health education, early presentations and adequate treatment of these conditions. Good diabetic control and early recognition and management of risk factors for foot complications, measures on prevention of road traffic crashes and community health education to encourage early presentation to hospital will reduce the number of patients undergoing major limb amputations in this region and subsequently reduce the number of amputee. There is need for government to increase public enlightenment on road safety precautions, establish and equip more trauma centres and specialized diabetic foot clinics.

Generally, Identification of these preventable causes and introducing effective measures to correct them would prevent disability, promote development and productivity of the family and community, and thus contribute to the poverty reduction of our country. This demands increased awareness and activity from all those concerned including the Government, as well as an improvement in the economic state of the Country.

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Annex one

QUESTIONNAIRE

Department of Surgery Questionnaire designed to generate data on prevalence, causes and immediate postoperative complications of major lower extremity amputations in patients admitted to surgical ward of JUSH from September 2013 to August 2015

Sociodemographic distribution

1. Card number
2. Date of admission..... and Date of discharge.....
3. Age
4. Sex
 - A, male
 - B, female
5. Place of residence
 - A, Urban
 - B, Rural

Clinical history

Pre hospital interventions

- A, Traditional interventions
- B, Interventions in other health facility
- C, No intervention at all

5 Duration of symptoms prior to operation

- A, within 24 hours
- B, between 24 hours and two weeks
- C, after two weeks

6 Indication for amputation

- A, PVD
- B, Trauma
- C, Infection
- D, Tumors
- E, Diabetic foot gangrene
- F, Others (Specify)

7 Level of amputation

- A, TFA (Unilateral/ bilateral)
- B, TTA (Unilateral/ bilateral)
- C, Knee disarticulation (Unilateral/ bilateral)
- D, Additional procedures (Specify.....)

Complications

Any diagnosed postoperative complications (can be more than one)

A, yes

B, no

If yes: What postoperative complications during hospital stay (can be more than one)

A. Surgical complications

1, Hematoma/ bleeding

2, SSI

3, Stump necrosis

4, Others (Specify..)

B. Medical complications

1, MI

2, HAP

3, DVT

4, Stroke

5, Death

6, Others (Specify..)

Duration of hospital stays after procedure in days.....

Thank you for your time

Name of data collector _____

sign _____

Date completed _____