

SPR  
MED  
MUL  
2012



# **THE UNIVERSITY OF ZAMBIA**

## **SCHOOL OF MEDICINE**

### **DEPARTMENT OF PHYSIOTHERAPY**

#### **RESEARCH REPORT**

**(PTY 540)**

**BY**

**SIBUSIKU MULIMA**

**(STUDENT ID: 27006387)**

### **“THE IMPACT OF LOWER LIMB AMPUTATION ON QUALITY OF LIFE AMONG DISABLED PATIENTS AT THE ORTHOPEDIC WORKSHOP, UNIVERSITY TEACHING HOSPITAL”**

A thesis submitted in partial fulfillment of the requirements for the degree of Bachelor of Science  
in the Department of Physiotherapy, School of Medicine, University of Zambia.

**Supervisor: Mr. Mulenga Davie**

**(Dip. PT, BSC.PT.Hons, MSC.PT)**

**(University Teaching Hospital)**

TABLE OF CONTENTS

Contents..... i

List of figures..... v

List of tables..... vi

Dedication..... vii

Declaration..... viii

Acknowledgements..... ix

Abbreviations..... x

Key words..... xi

Definition of terms..... xii

Abstract..... xiii

**CHAPTER ONE**

1.1 Introduction..... 1

1.2 Statement of the problem..... 3

1.3 Research question..... 4

1.4 Research objectives..... 4

1.5 Research hypotheses..... 4

**CHAPTER TWO**

2.0 Literature review..... 5

2.1 Introduction..... 5

2.2 Aetiology of lower limb amputation..... 5

2.3 Epidemiology of lower limb amputation..... 7

2.4 Prognosis..... 8

2.5 Functional and Physical impact.....	8
2.6 Psycho-emotional impact.....	9
2.7 Socio-economic impact.....	10
2.8 Satisfaction with the environment.....	10
2.9 Quality of life.....	11
<b>CHAPTER THREE</b>	
3.0 Methodology.....	12
3.1 Study setting.....	12
3.2 Study design.....	13
3.3 Study population.....	13
3.4 Sample size.....	13
3.5 Sampling method.....	14
3.6 Data collection instrument.....	14
3.6 Data collection procedure.....	15
3.7 Data analysis.....	15
3.8 Inclusion criteria.....	17
3.9 Exclusion criteria.....	17
3.10 Pilot study.....	17
3.11 Ethical consideration.....	18

## CHAPTER FOUR

4.0 Results.....	19
4.1 Demographic Data.....	20
4.2 Medical information.....	24
4.3 Quality of life.....	28

## CHAPTER FIVE

5.0 Discussion.....	34
5.1 Introduction.....	34
5.2 Factors influencing quality of life.....	35
5.3 Quality of life domains.....	44

## CHAPTER SIX

6.0 Conclusion, recommendations, limitations.....	47
6.1 Conclusion.....	47
6.2 Recommendations.....	48
6.3 Limitations.....	49
References.....	50

## APPENDICES

Appendix I: Budget.....	57
Appendix II: Work plan.....	58
Appendix III: Letter to research ethics committee.....	59
Appendix IV: Information sheet.....	60
Appendix V: Consent form.....	62
Appendix VI: Questionnaire.....	63

**LIST OF FIGURES**

Figure 1 Gender of participants.....	21
Figure 2 Residence of participants.....	22
Figure 3 Marital status of participants.....	22
Figure 4 Occupation of participants.....	23
Figure 5 Cause of amputation.....	24
Figure 6 Level of amputation.....	25
Figure 7 Presence of co-morbidities.....	26
Figure 8 Prosthesis use among participants.....	26
Figure 9 Satisfaction with mobility aids.....	27
Figure 10 Distribution of physical health.....	28
Figure 11 Distribution of psychological well-being.....	29
Figure 12 Distribution of social relationships.....	30
Figure 13 Distribution of satisfaction with the environment.....	31

**LIST OF TABLES**

Table 1 Variables, indicators and measure of scale of the WHOQOL-BREF..... 16

Table 2 Age groups of respondents..... 20

Table 3 Number of years passed since amputation..... 24

Table 4 Comparison between participants with poor and good QOL..... 32


## **DEDICATION**

This work is dedicated to my God who has given me strength and knowledge throughout the study and my loving father John Mulima Sibusiku (M.H.S.R.I.E.P).

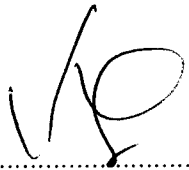
To my dear mother Naomi Maseko, my brothers and sisters who have sacrificed so much to see me through University. May God bless you abundantly. I love you so much.

**DECLARATION**

I, Sibusiku Mulima, being of a sound mind and having knowledge that presenting another author's works is a criminal offence, declare that this study is the result of my own investigations. The various sources and persons consulted and quoted having been clearly referenced and acknowledged.

Signed:..........

Date:.....11/05/12.....

Supervisor's signature:..........

Date:.....11/05/12.....

**ACKNOWLEDGEMENTS**

Firstly I would like to thank my Heavenly Father who in his constant love has continued to nest me in his arms and given me the grace to pursue a Bachelors of Science Degree in Physiotherapy, Lord you are faithful. I would also like to thank the following:

- My family- Mum, Pamela, Fred and Sharon, Muketoi, Maswabi, Christine and all my in-laws, nephews and nieces.
- My dear friends Chisola Kahona, Stella Kabengo, Evaracia Mbale, Sarah Chungu, Brian Chiluba and all my class mates.
- My supervisor Mr. D. Mulenga.
- All the lecturers and supervisors from the physiotherapy department, University of Zambia and University Teaching Hospital
- Mr Isaac Banda from the Medical Illustrations for editing and printing the work.

God abundantly bless you.

## ABBREVIATIONS

<b>AKA</b>	Above Knee Amputation
<b>BAK</b>	Below Knee Amputation
<b>CSO</b>	Central Statistics Office
<b>ICF</b>	International Classification of Functioning, Disability and Health
<b>LEA</b>	Lower Extremity Amputation
<b>LLA</b>	Lower Limb Amputation
<b>PVD</b>	Peripheral Vascular Disease
<b>QOL</b>	Quality of life
<b>SFD</b>	Special Fund for the Disabled
<b>SPSS</b>	Statistical Package for Social Sciences
<b>TKA</b>	Through Knee Amputation
<b>ULA</b>	Upper Limb Amputation
<b>UN</b>	United Nations
<b>UNZA</b>	University of Zambia
<b>UTH</b>	University Teaching Hospital
<b>WHO</b>	World Health Organisation

**KEY WORDS**

Disability

Quality of life

Lower limb amputation

**DEFINITION OF TERMS**

<b>Amputation</b>	-	Removal of a body extremity by trauma or surgery.
<b>Disability</b>	-	An umbrella term for impairments, activity limitations and participation.
<b>Quality of life</b>	-	Extent to which one’s usual or expected physical, emotional and social well-being is affected by a medical condition or its treatment.
<b>Lower limb amputation</b>	-	Complete loss/ablation of any part of the lower limb due to trauma or disease.

**ABSTRACT**

**Introduction:** Disability following Lower Limb Amputation (LLA) is permanent and generally has an impact on the functional, psychological and social status of the individual. Quality of Life (QOL) is a subjective and multidimensional concept involving physical, emotional, functional and social domains. The loss of a limb may have a considerable impact on every aspect of a patient’s QOL. Provision of better care for people with LLA begins with understanding the impact disability has on their QOL.

**Aim:** The primary aim of this study was to determine the impact of LLA on QOL among disabled patients receiving rehabilitation services at the University Teaching Hospital (U.T.H) orthopedic workshop.

**Objectives:** To establish the physical, psychological, social and environmental status of people with LLA, establish the factors influencing QOL in people with LLA and to establish the association between QOL status and demographic variables.

**Materials and methods:** The study utilized a non-interventional, descriptive study design using quantitative methods. Data was collected using a 26-item WHOQOL-BREF instrument. It was self-administered for respondents who had sufficient ability but researcher-assisted and researcher-administered for most participants. Data was analyzed using the SPSS version 17. Descriptive statistics were used to report the level of QOL.

**Results:** A total of 30 people participated in the study and the response rate was 100%. Among these, 60% were female and 40% were male. The age range of participants was 20-71 years with a mean and median age of 45 years. 53% were over the median age. The percentages of people with poor and good QOL were 60% and 40% respectively. Demographically participants who were younger than 45 years and employed had better QOL. Non-traumatic LLA, presence of co-

morbidities, non-prosthesis use and dissatisfaction with a mobility aid were associated with poor QOL ( $p$ -values $<0.05$ ). Participants with lower scores of physical, psychological, social and environmental satisfaction had poor QOL. Factors with significant associations ( $p$ -value $<0.05$ ) with QOL included: age, employment status, co-morbidities, prosthesis use and satisfaction with mobility aid. Physical health, psychological well-being, social relationships and environmental satisfaction also influenced QOL.

**Conclusion:** Generally, participants reported poor QOL. This was attributed to being female, being urban based, unemployed having a non-traumatic amputation and having a BKA (below knee amputation). Poor physical health predicted poor QOL due to old age, presence of co-morbidities and non use of prosthesis. Poor psychosocial well-being also predicted poor QOL due to shorter time passed since amputation, being unmarried and dissatisfaction with mobility aids. Participants dissatisfied with their environment had poor QOL. These factors predict outcome of QOL.

## **CHAPTER ONE**

### **1.0 INRODUCTION**

Disability is part of the human condition (Ferguson 2001). It brings about functional, psychological and social challenges that can influence the Quality of Life (QOL) of the disabled person (Khanna 2011). Furthermore, the International Classification of Functioning, Disability and Health (ICF) have defined disability as an umbrella term for impairments, activity limitations and participation restrictions (World Health Organization 2001).

It has been estimated by the United Nations (United Nations 2006) that 10% of the global population live with a disability. The major cause of disabilities include among other things infections, road traffic accidents, war, domestic violence as well as cancer. According to The WHO (2011), there are at least 81,200,000 people affected by some form of disability in Africa. Generally, middle and low income countries experience disability associated with preventable causes such as unintentional injuries (WHO 2008).

In Africa, the major cause of disability is poverty, war, toxic chemicals and malnutrition (WHO 2011) and the number of disabled people in Africa is rising due to conflict, malnutrition, natural disasters and HIV/AIDS.

Zambia with a total population of 14 million in Southern Africa has not been spared from disability issues. According to the central statistics office (CSO 2003), the common causes of disability in Zambia include; congenital deformities, disease and injuries of which disease is the most common cause of disability representing 38.9 percent of the total population of disabled people (CSO 2003). Of the total number of disabled people in Zambia, 52.8% are male and 47.2% female. The residential distribution indicates that 26% are in urban areas and 74% in rural areas. The physically handicapped form the largest proportion of the disabled

persons, these form 38.8% of the total disabled persons followed by partial sight (30.2%), mental disability (9%) and blindness (5.3%). A report by The Chronic Disease and Health Promotion, WHO (2011) shows that, amongst others, lower limb amputation (LLA) is one of the major causes of physical disability. According to unpublished data acquired from the University Teaching Hospital (U.T.H) orthopedic workshop, approximately 187 patients per year receive services from the centre, out of which 43% are people living with LLA.

LLA is a permanent surgical procedure that has important functional, psychological and social consequences (Geertzen, Martina&Rietman 2001). A study by Singh, Pithawa& Ravindranath (2004) shows that people with LLA form the greatest cases of physical disability with 88.95% of the total amputations. This predominance is attributed to the fact that mine blast injuries, frost and snake bite and peripheral vascular diseases (PVD) usually involve lower limbs. A limb amputation has an influence on several aspects of an individual's life such as; body image, self-care activities, mobility, psychosocial health, vocational, and non-vocational activities (Dajpratham, Suchat & Pranee 2011).

Quality of life (QOL) is a subjective and multidimensional concept (Schans, Geertzen, Schoppen & Pieter 2002). It is defined by Khanna (2011) as the extent to which one's usual or expected physical, emotional and social well-being are affected by a medical condition or its treatment. Dajpratham *et al.* (2011) found that QOL in people with LLA is decreased mainly due to mobility problems. It was also found that the ability to do daily activities is the most important determinant of QOL in a group of veterans with LLA. The study also reported that poor QOL is marked by limited social activities and relationships in those who had amputation due to vascular disease. Schans *et al.* (2002) found that QOL is determined by psycho-social and physical health.

## 1.1 STATEMENT OF THE PROBLEM

The quality of life among individuals with physical disabilities has greatly improved during the last two decades, partly as a result of well-planned intervention programs (United Nations Organization 2011). However, some individuals with physical disabilities do not cope well in their everyday life, no matter how long they have had the disability.

Like any physical disability, LLA presents with challenges to the disabled individual that interfere in ones daily life. The percentage of physically disabled people in Zambia is high as compared to other forms of disability (CSO 2003). LLA has important medical benefits but even so, the loss of a limb may have a significant impact on the patients QOL (Schans et al. 2002). This calls for greater and improved ways of treatment and management. Poor QOL has been recorded in various studies. People with disabilities face many challenges despite healthcare provision efforts in various parts of the world. These challenges range from physical to emotional and psychosocial matters and they affect the QOL in people with disabilities (Zidarov, Swaine & Gauththier 2009).

Many studies on QOL in people with LLA have been done but most of them are specified to a type of cause of amputation (Schans *et al.* 2002). This study gives a general picture of the impact of LLA on the QOL among disabled people receiving rehabilitation services at the U.T.H orthopedic workshop.

The results of this study may be important in identifying areas of potential improvement in the management of people with disabilities. A study by Zidarov *et al.* (2009) indicates that people with LLA who receive a well structured rehabilitation program report a fair satisfaction of QOL. Therefore, this study may give the opportunity to identify gaps in rehabilitation after LLA and address them in a patient centered manner, focusing on the needs

of individuals with LLA. The study may help identify if there are any aspects that need to be modified in the management and improvement of QOL of people with LLA.

**1.2 RESEARCH QUESTION**

What is the impact of lower limb amputation on quality of life among disabled patients at the U.T.H orthopedic workshop?

**1.3 OBJECTIVES**

**1.3.1 GENERAL OBJECTIVE**

To determine the impact of lower limb amputation on quality of life among disabled patients at the U.T.H Orthopedic workshop.

**1.3.2 SPECIFIC OBJECTIVES**

1. To establish the physical health, psychological well-being, social relationships and environmental satisfaction of people with LLA
2. To establish the factors influencing QOL in people with LLA
3. To establish the association between QOL status and demographic variables such as; age, gender and occupation

**1.4 RESEARCH HYPOTHESES**

**1.4.1 Null hypothesis**

The QOL among disabled patients with LLA at the U.T.H orthopedic workshop is good.

**1.4.2 Alternative hypothesis**

The QOL among disabled patients with LLA at the U.T.H orthopedic workshop is poor.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 INTRODUCTION

Amputation is often performed to salvage the limb following severe injury (e.g. war injury or road traffic accident), when there is tissue loss due to vascular occlusive disease, or to control infection (Engstrom & Van de ven 1999). Anatomical levels of LLA are as follows;

- Toe-ectomy: removal of a single or multiple toes.
  - Transmetatarsal: amputation through the shafts of the metatarsals.
  - Mid-tarsal (Chopart/ Lisfranc): amputation through the tarsal bones.
  - Through-ankle (Symes): ankle joint disarticulation
  - Below-knee amputation (BKA): amputation 11-12 cm distal to the knee.
  - Through knee amputation (TKA): knee joint disarticulation
  - Gritti-Stokes – of the femoral condyles
  - Mid-thigh/above knee- amputation (AKA): through the femur, 12 cm above the knee.
  - Hip disarticulation: femur disarticulation from the acetabulum
  - Hemipelvectomy (Hind quarter) - removing the lower limb and half of the pelvis.
- Hemipelvectomy is usually performed in malignancy (Porter 2003). The most frequent level of amputation is BKA (transtibial) followed in frequency by above the knee amputation (transfemoral) (Singh *et al.* 2004).

#### 2.2 AETIOLOGY OF LOWER LIMB AMPUTATION

LLA can be as a result of trauma, malignancy, disease or congenital anomaly (Kurichi *et al.* 2008). The three major causes are as follows.

### **2.2.1 DISEASES**

The major diseases that contribute to amputation are vascular diseases, diabetes and tumors. There are an estimated 285 million people with diabetes in the world (WHO 2011). In industrialized countries like the United States and Denmark, disease causes approximately 65% of all amputations performed each year (Kruper&Mathay 2008). The overall rates of amputation due to trauma or malignancy are decreasing while the incidence of disease related amputations is rising (Dillingham&Pezzin 2008). According to Carmona *et al.* (2005), amputations caused by disease are approximately eight times greater than the prevalence of traumatic lower limb amputations generally. Cancer related amputations are a rare cause for LLA (Dillingham&Pezzin 2008). A study by Eszter *et al.* (2010) indicates that prevalence of lower extremity disease, including PVD is twice as high in individuals with diabetes as in the general population and approximately one-third of people with diabetes over the age of 40 have lower extremity disease. Risks of LLA include; hypertension, coronary arterial disease and end stage renal failure (Abou-Zamzam *et al.* 2003). Cardiovascular conditions such as hypertension and high pack-years smoked were also found to be a risk factor for LLA (Moss&Klien 1999).

### **2.2.2 TRAUMA**

Trauma is a major cause of amputation around the world (Kruper&Mathay 2008). The number of people whose amputation is due to trauma varies from country to country. Traumatic incidences include, among others; accidents and other injuries (CSO 2003). Infected insect, animal and human bites and other wounds are an important cause of limb amputation, particularly in areas where antibiotics are not readily available. Inappropriate use of traditional medicines for these conditions may also increase infections that can lead to amputation (Kruper&Mathay 2008).

### 2.2.3 CONGENITAL MALFORMATION

Congenital malformation accounts for a small portion of reported amputations and in these cases a child is born with an abnormally shortened, malformed limb or no limb at all (Walter *et al.* 1998) . Depending on the extent of malformation the limb is surgically removed or the shortened limb is treated like an amputation and an artificial limb may be applied. Congenital amputation accounts for up to 3 % of reported limb loss (Gabbos 2006).

### 2.3 EPIDEMIOLOGY OF LOWER LIMB AMPUTATION

Worldwide prevalence of LLA is based on the cause from region to region and the estimates of amputation are difficult to obtain, mainly because amputation receives little attention and resources in countries where survival is low (Kurichi *et al.* 2008). In developing countries, trauma is the leading cause of amputation over PVD (Lento 2004). This is most likely because of the lower incidence of obesity and resultant diabetes in such countries as well as the higher exposure to mechanical equipment. In the United States, 30,000 to 40,000 amputations are performed annually and in some parts of Africa where there is violence and wars, trauma is the leading cause of LLA (Godlwana *et al.* 2008).

The mean age of amputation also varies with the cause. Javier *et al.* (2009) indicates that the mean age of amputation in diabetics is 68 and in non diabetics, 74. Calle-Pascual *et al.* (1997) indicated that more than 80% of lower limb amputees are over 65 and are retired from work.

In South Africa the general mean age at first amputation is 60 years (Godlwana *et al.* 2008). with traumatic LLA occurring at a younger age (mean age of 33 years old) as compared to PVD (Kubheka 1993).

Prevalence of amputation also varies based on gender differences. A study by Javier *et al.* (2009) indicates that the percentage of men amputated is more than that in women. The Global Lower Extremity (GLEA) study group (2000), reports that more than 10% of men with LLA are due to traumatic causes.

## **2.4 PROGNOSIS**

People who are amputated at an early age are more likely to walk, be independent in activities of daily living and end up using their prostheses (Kubheka 1993). Studies have shown that up to 50% of people who have had one leg amputated because of diabetes will lose the other within five years (Godlwana *et al.* 2008). Mortality is another concern in LLA. According to a study by Feinglass *et al.* (2001), thirty-day mortality rates range from 6.3 to 42.3 percent. Studies in the United States show one year survival following LLA to range from 50-80% depending on the amputation level (Aulivola *et al.* 2004).

Amputees who walk using prosthesis have a less stable gait. 3-5% of these people fall and break bones because of this instability. Although the fractures can be treated, about half of the amputees remain wheel chair bound (Godlwana *et al.* 1998). A study by Stineman *et al.* (2008) indicated that amputees who receive a single episode of specialized rehabilitation services can be expected to achieve good physical function.

## **2.5 FUNCTIONAL AND PHYSICAL IMPACT**

LLA results in pain, immobility, changes in perception of body image, and social function (Resnick *et al.* 2004). The anatomical level of amputation is one of the predicting factors of how mobility will be possible (Burger&Marincek 2007). Immobility, limitation of usual activity, pain/ discomfort and anxiety/depression brings about distress (Misajon *et al.* 2006).

The ability to perform daily activities such as going to the toilet, (un)dressing and washing decreases comfort and they have to be re-learned as soon as possible (Bosmans *et al.* 2007).

The effect on relationship with oneself is impacted upon. This may include not feeling confident about the new body image (Godlwana *et al.* 2008).

Poljak-Guberina *et al.* (2005) report that possibility of prosthesis use and patient's satisfaction is dependent on physical function and psychological well-being. Their study found that most patients who do not use prosthesis have poor functional and psychological outcome. Most prosthesis users are satisfied with their prosthesis and those who are not satisfied even with good quality prosthesis usually have emotional problems (Poljak-Guberina *et al.* 2005).

**2.6 PSYCHO-EMOTIONAL IMPACT**

An individual with an amputation is faced with a number of evolving physical and psychosocial challenges such as impairments in physical functioning, prosthesis use, pain, changes in employment status or occupation, and alterations in body image and self-concept (Cansever 2003). These changes challenge an individual's ability to maintain his/her emotional well-being. A study by Donald *et al.* (2002) shows that most adolescents with disabilities had low QOL scores and this was attributed to the emotional impact and slow adaptation to their disabilities.

Changes in body image also results in high anxiety and depression and also dissatisfaction with body image is associated with emotional distress (Fisher&Hanspal 1998). Time elapsed since amputation was a significant predictor of anxiety. The more recent the occurrence of amputation the more pronounced was the reported experience of anxiety (Desmond&Maclachlan 2005). A study by Zidarov *et al.* (2009) indicates that females have a

higher body image disturbance than males and people with AKA report poorer body image perception than those who have a BKA. Williams *et al.* (2011) conducted a study on incidence and depression in people with LLA. The clinical and demographic characteristics of the study concluded that, from the sampled population, most depressed people were younger, female, unmarried and unemployed.

## **2.7 SOCIO-ECONOMIC IMPACT**

The impact of amputation on the balance of interpersonal relationships and loss of status within the family and in society may surface (Bosmans *et al.* 2007). Occupation concerns may arise and unemployment is high in this group of people (Poljak-Guberina *et al.* 2005).

In a study by Zidarov *et al.* (2009) people with LLA consistently reported low scores of spirituality and are also worried about their position in the society in which they live. Concerns about inferiority, rejection, resentment and neglect by the family are common. Fear of losing a spouse, and spouse response is crucial in deciding about the operation. Concerns about getting married and losing respect from children are expressed (Godlwana *et al.* 2008).

## **2.8 SATISFACTION WITH THE ENVIRONMENT**

Environmental factors such as barriers in the community related to physical/structural environments may restrict participation in normal social roles for persons with lower extremity amputation (Kohler *et al.* 2009). Satisfaction with home environment, transport usage and accessibility of health assistance has been reported to have a significant impact on QOL of people with LLA. An environment which is wheelchair and disability friendly will allow for better functional outcomes. Levels of PVD are high in urban areas compared to rural areas. A study by Delasau *et al.* (2010) found that people in developing countries are more prone to disease related LLA due to change in lifestyle in terms of diet and habits such

as drinking alcohol and cigarette smoking. The study also found that participants from rural areas were not fully informed about what led to their amputation and this contributes to second amputations due to lack of knowledge on wound cleaning and availability of medical assistance.

## **2.9 QUALITY OF LIFE**

QOL is increasingly being recognized as an important outcome for rehabilitation programs and has been used to compare the efficacy of interventions or to compare amputees with other diseased populations (Richa *et al.* 2011). People with a LLA show significantly worse scores in studies involving QOL compared with population norms (Eiser *et al.* 2001). People with a LLA are mostly unsatisfied with their physical functioning and they tend to expect improvement before discharge and the few months that follow and if it is not observed, they tend to have resultant poor life practices which impact on their QOL (Zidarov *et al.* 2009).

## **CHAPTER THREE**

### **3.0 METHODOLOGY**

#### **3.1 STUDY SETTING**

The current study was conducted at one of the biggest hospitals in Zambia, UTH specifically the orthopedic workshop. U.T.H is located in the capital city of Zambia, Lusaka. The hospital provides a full range of primary, secondary, and tertiary health and medical services on both an inpatient and outpatient basis. The departments include; Anaesthesia, Internal Medicine, Obstetrics and Gynaecology, Paediatrics, Surgery, Community Medicine, Pathology, Radiology, Physiotherapy, Pharmacy and the Blood bank. Other Services in the Hospital include; School of Medicine offices, Medical library, Medical illustrations and the School of Nursing. U.T.H is the biggest referral centre in Zambia with a current bed space of approximately 1655 and 250 Baby cots. It is the principle medical training institution in the country for students in the school of medicine and other medical programs.

The U.T.H orthopedic workshop is a government owned orthopedic centre. The centre receives funding from the government and nongovernmental organizations (NGO) such as the Special Fund for the Disabled (SFD). The centre provides services such as; prosthesis and orthosis fitting, delivering of prosthesis and orthosis to distant parts of the country such as mines and refugee camps and also offers physiotherapy for new patients. According to unpublished data acquired from the University Teaching Hospital (U.T.H) orthopedic workshop the, centre receives approximately 187 patients per year of which 43% are patients with LLA.

### **3.2 STUDY DESIGN**

The study was a non-intervention, descriptive study using quantitative approach. This is an approach that generates numerical data and tends to favor research methods as it relies on physical characteristics rather than qualitative well-being of the participants (Mulenga 2011). Bryman (2006) describes quantitative research design as a systematic approach to investigations during which numerical data is collected and/or the researcher transforms what is collected or observed into numerical data. It often describes a situation or event. This is research which involves measuring or counting attributes (i.e. quantities). A quantitative approach is often concerned with finding evidence to either support or contradict an idea or hypothesis. A hypothesis is where a predicted answer to a research question is proposed (Bryman 2006).

### **3.3 STUDY POPULATION**

The current study captured 30 participants who were selected from the U.T.H orthopedic workshop. The study captured both female and male individuals with LLA. The age range of participants captured was 20-71 years. The study was conducted on people with LLA who were receiving rehabilitation services from the U.T.H orthopedic workshop within the time allowed that was allowed for data collection procedure.

### **3.4 SAMPLE SIZE**

According to Robert (2004), sample size is the number of study units that are used for a research or study. A sample size of 30 was used due to limited time.

### 3.5 SAMPLING METHOD

Sampling method is a way in which study units are selected. Convenient sampling was used due to limited time and resources during the study. Convenient sampling is a non probability sampling method which involves study units available at the time of research (Castillo 2009).

### 3.6 DATA COLLECTION INSTRUMENT

Data was collected using a WHOQOL-BREF questionnaire (page 64) which was modified by adding section A which captured demographic and medical information of the participants. Section B comprised of the WHOQOL-BREF instrument. It was self-administered for respondents who had sufficient ability (7% of the total respondents) but researcher-assisted (20%) and researcher-administered (73%) for most participants. The WHOQOL-BREF questionnaire is an instrument that was developed by the WHO beginning in 1992 to assess an international cross-culturally-comparable QOL (Dajpratham *et al.* 2011). The important aspects of QOL and ways of asking about QOL were drafted on the basis of statements made by patients with a range of diseases, by well people and by health professionals in a variety of cultures. The instrument was rigorously tested to assess its validity and reliability in many field centers and has been tested and compared in different populations and countries. The WHOQOL-BREF is composed of 26 items, which measure four domains, (i) physical health, (ii) psychological health, (iii) social relationships and (iv) environmental satisfaction. The total QOL in each domain and the total QOL are classified into “poor”, “fair” and “good” QOL according to the cut-off scores determined by the WHO. The instrument was chosen because it was appropriate for the study and contains dependable measurements of variables under study, these were; independent and dependant variables. An independent variable according to Pilot and Hughes (1991) is the presumed cause of an effect while the dependent variable is the presumed effect. The dependent variable in the current study was QOL. The

independent variables were: age, gender, occupation, level of amputation, co-morbidities, residence and time passed since amputation. Use of and satisfaction with prosthesis were also independent variables. Other independent variables were: physical health, psychological well-being, social relationships and environmental satisfaction.

**3.6 DATA COLLECTION PROCEDURE**

According to Pilot and Hughes (1991) data collection procedure is a process of gathering information needed to address a research problem. Permission from the University of Zambia research ethics committee and U.T.H was asked. Participants and medical personnel in charge were asked for permission to carry out the research. The participants gave consent by signing a consent form provided by the researcher. For capable participants (7%), they completed the questionnaires independently, 20% of the participants required minimal assistance in completing the questionnaires while 73% required maximum assistance in completing the questionnaires, the researcher was asking the questions and filling in the questionnaire while the participants answered the questions.

**3.7 DATA ANALYSIS**

Data analysis is defined as a process of carefully scrutinizing data by placing it in categories, calculating and applying statistical procedures (Pilot and Hughes, 1991). Data was analyzed quantitatively using the SPSS (statistical package for social sciences) version 17. Descriptive statistics were presented as frequencies, percentages, means and median while measures of spread were used in terms of standard deviation. One-way ANOVA and cross-tabulations were used to check for associations between demographic variables. A statistical significance of 0.05 at 95% confidence interval was used to test for hypothesis.

For the WHOQOL-BREF, individual scores in each domain were calculated using the cut-off scores shown in Table 1 below and from this, the total QOL score was also calculated by summing up the total score in each domain. The participants were divided into two groups for each domain and for the total QOL score as having poor QOL and good QOL according to the median split method. A Median split is a method for turning a continuous variable into a categorical one by finding the median of the continuous variable and any value below the median is put it the category “Low” and every value above it is labeled “High” (Aiken&West 1991).

Table1: Variables, indicators and measure of scale of the WHOQOL-BREF.

VARIABLE	DOMAIN	INDICATOR	MEASURE OF SCALE
Independent	Physical	Poor	7-16
		Fair	17-26
		Good	27-35
	Psychological	Poor	6-14
		Fair	15-22
		Good	23-30
	Social	Poor	3-7
		Fair	8-11
		Good	12-15
	Environmental	Poor	8-18
		Fair	19-29
		Good	30-40
Dependent	Quality of Life	Poor	26-60
		Fair	61-95
		Good	96-130

### **3.8 INCLUSION CRITERIA**

The study included participants;

- with LLA
- who are between 18-72 years

### **3.9 EXCLUSION CRITERIA**

The study excluded people;

- with Upper Limb Amputation (ULA)
- who are less than 18 years of age
- who are above 72 years of age

### **3.10 PILOT STUDY**

A pilot study is a small scale preliminary study conducted before the main research, in order to check the feasibility or to improve the design of the research (Teijlingen et al, 2001). A pilot study of 5 participants who fitted the above mentioned criteria from the Zambia Italian Orthopaedic Hospital (ZIOH) was conducted. Necessary changes were made to the questionnaire after the pilot study was conducted.

### **3.11 ETHICAL CONSIDERATION**

Permission to carry out the research was asked from the University of Zambia (UNZA) research ethics committee.

The researcher also obtained permission from U.T.H physiotherapy department and U.T.H Orthopaedic workshop.

The participants were given information about what the research involved and they were fully informed about any benefits or risks. They were also informed that the exercise was voluntary and they were at liberty to withdraw at any point during the exercise. Full consent was obtained from the participants before any information relevant to the study was acquired from them by signing a consent form provided by the researcher. The participants were assured of confidentiality of any information they gave out. The participants were assured of anonymity by the use of codes or numbers and not names. Privacy of the participant was respected by interviewing one participant at a time and conducting the interviews in a well enclosed area.

## **CHAPTER FOUR**

### **RESULTS**

#### **4.0 INTRODUCTION**

This chapter presents the findings of the research that was undertaken to evaluate the impact of lower limb amputation on quality of life of disabled patients receiving rehabilitation services at the U.T.H orthopedic workshop. Of the 30 participants interviewed (n=30), 12 participants were male and 18 were female. The age distribution of the participants interviewed was 20 years to 71years with a mean age of 45 years old. The majority of participants had poor QOL (n=18, 60%). Results of this study have been presented in two sections. Section A contains results on demographic and medical information of the interviewed participants and section B contains results of the participants' physical health, psychological well-being, social relationships, satisfaction with the environment and their QOL.

SECTION A

4.1 DEMOGRAPHIC DATA

4.1.1 Age distribution

Table 2: Age groups of respondents in the study

	Range	Frequency	Percent (%)
Age	18-28	5	16.7
	29-39	6	20.0
	40-50	9	30.0
	51-61	4	13.3
	62-72	6	20.0
	Total	30	100.0

The total number of participants (n=30) interviewed at the U.T.H orthopedic workshop were in the age range of 20 to 71, with the greatest number of participants being between 40-50 years. The least number of participants are in the range of 51-61 years. The mean age of participants was 45 years and the median age was 45 years with a standard deviation of 1.365. Female: (n=18, 60%)

4.1.2 Gender distribution

Figure 1: Gender of participants expressed in percentages.

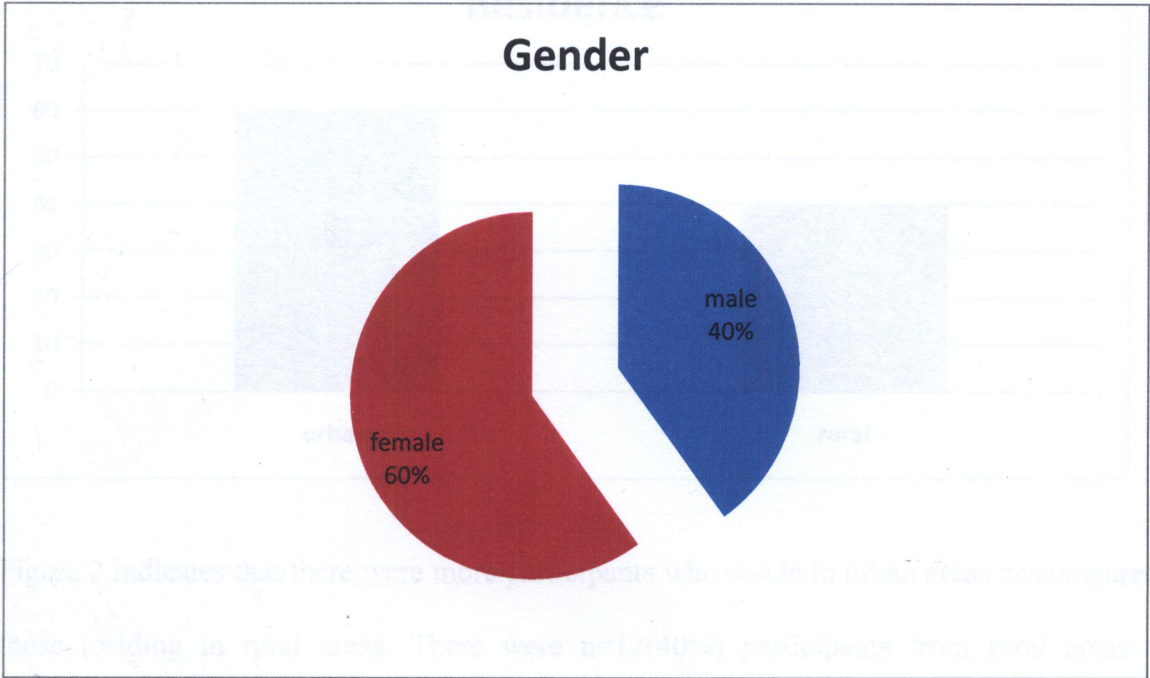


Figure 1 indicates that there were more female participants as compared to male participants.

Gender distribution from the total number of 30 participants was as follows;

- Male: (n=12, 40%)
- Female: (n=18, 60%)

4.1.3 Distribution of area of residence

Figure 2: Residence of participants expressed in percentages.

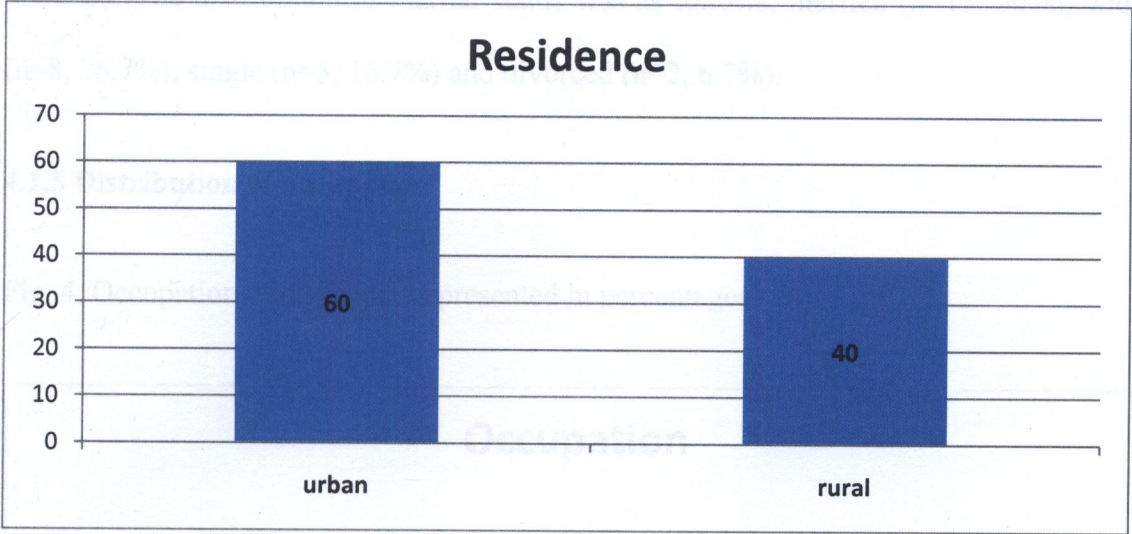
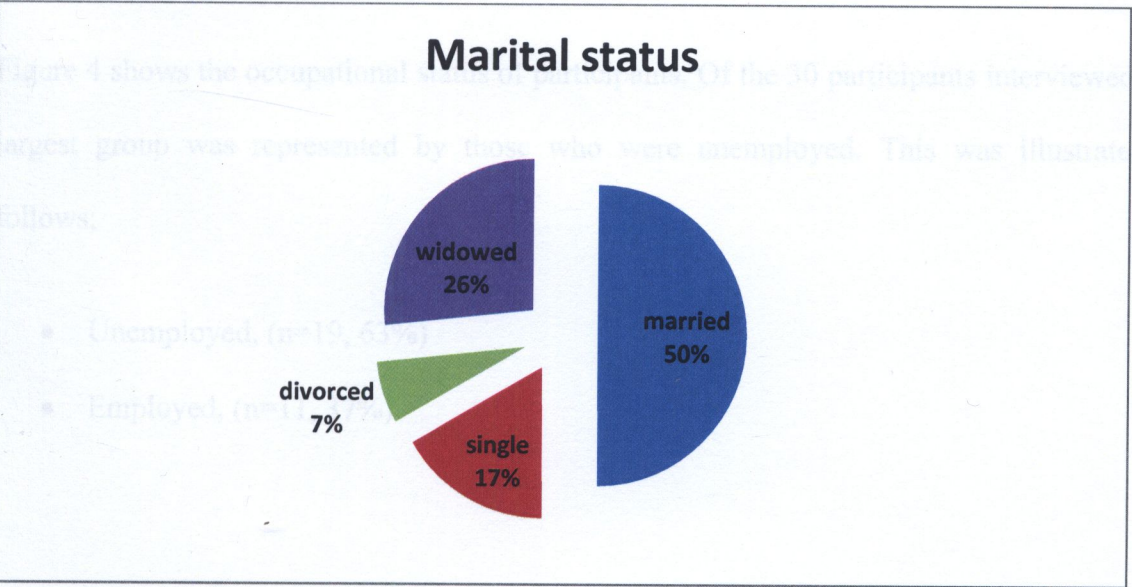


Figure 2 indicates that there were more participants who reside in urban areas as compared to those residing in rural areas. There were n=12(40%) participants from rural areas and n=18(60%) participants from urban areas.

4.1.4 Distribution of marital status

Figure 3: Marital status of participants expressed in percentages.



From a total of 30 participants (n=30), the largest number of participants were married, followed by those who were widowed, single and the least number of participants were divorced. The distribution of marital status was as follows; married (n=15, 50%), widowed (n=8, 26.7%), single (n=5, 16.7%) and divorced (n=2, 6.7%).

4.1.5 Distribution of occupation

Fig. 4: Occupation of participants presented in percentages

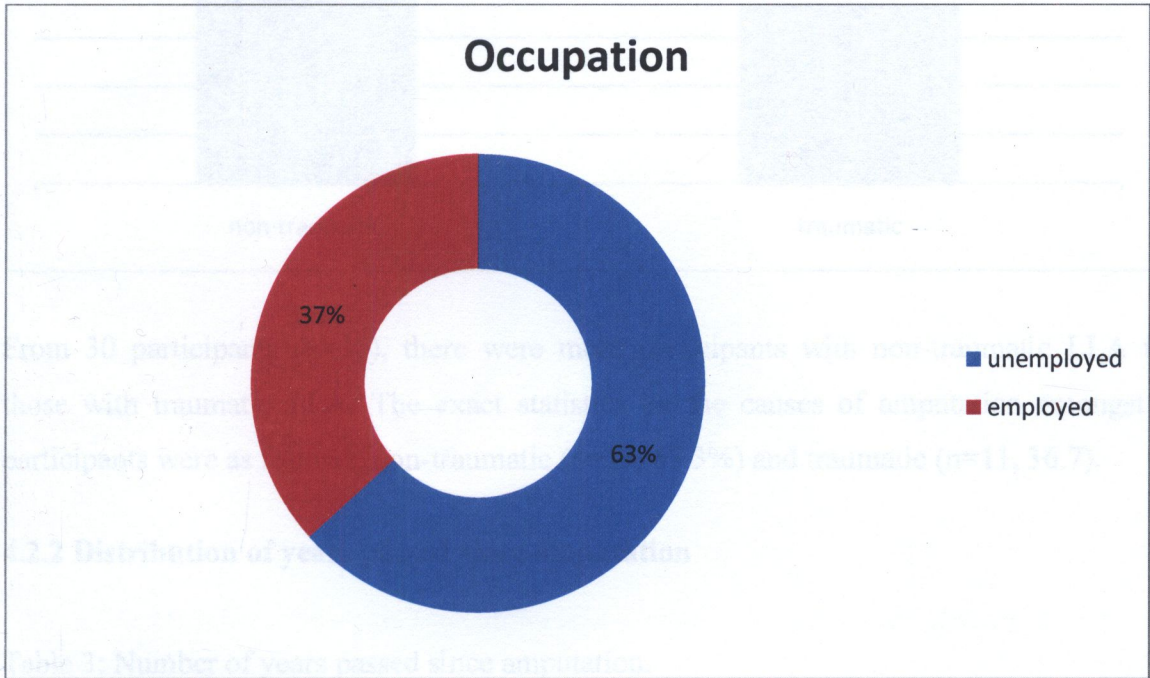


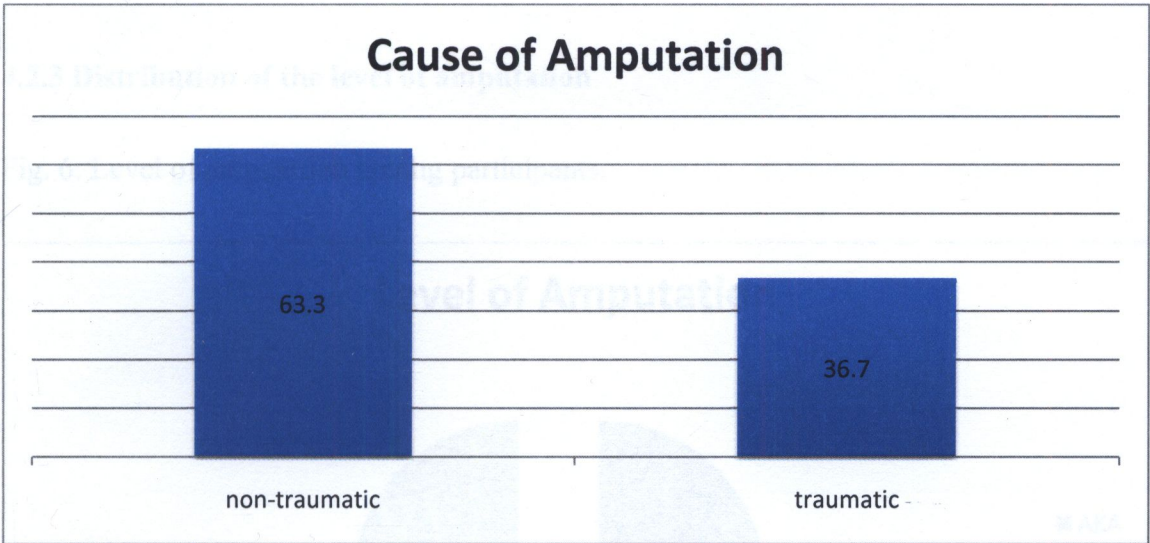
Figure 4 shows the occupational status of participants. Of the 30 participants interviewed, the largest group was represented by those who were unemployed. This was illustrated as follows;

- Unemployed, (n=19, 63%)
- Employed, (n=11, 37%)

4.2 MEDICAL INFORMATION

4.2.1 Cause of amputation

Fig.5 Cause of amputation expressed in percentage (%).



From 30 participants (n=30), there were more participants with non-traumatic LLA than those with traumatic LLA. The exact statistics on the causes of amputation amongst the participants were as follows; non-traumatic (n=19, 63.3%) and traumatic (n=11, 36.7%).

4.2.2 Distribution of years passed since amputation

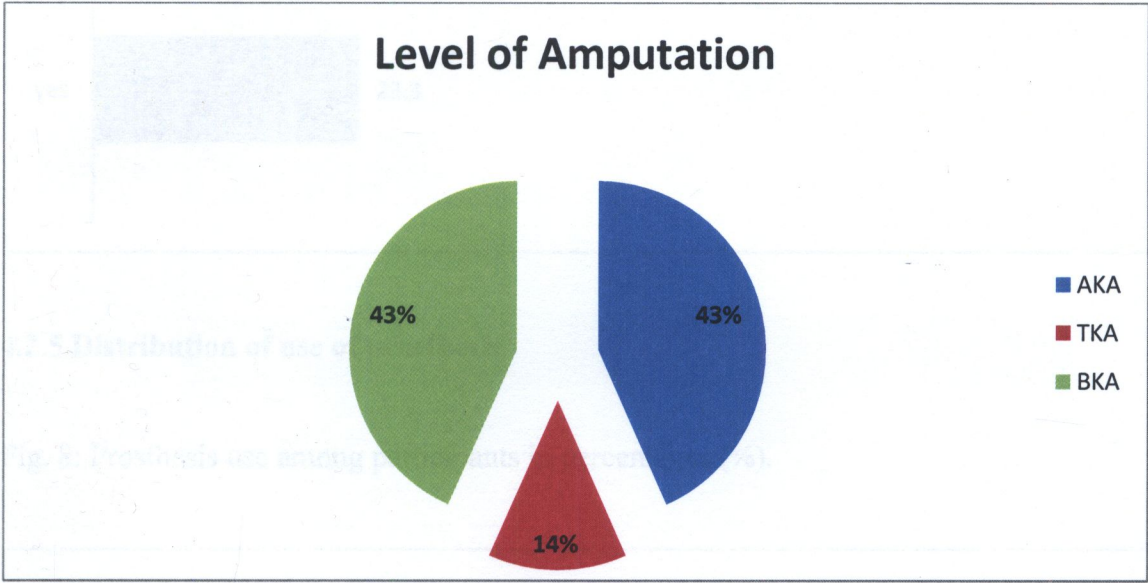
Table 3: Number of years passed since amputation.

Time passed(years)	Frequency	Percent (%)
< 2	6	20.0
2-4	7	23.3
5-7	4	13.3
8-10	2	6.7
>10	11	36.7
Total	30	100

From the above table (table 4.2), more than 10 years passed since amputation in the majority of participants (n=11, 36.7%) while the minority of participants were in the groups of 8-10 years passed (n=2, 6.7%). The mean years passed since amputation was 8 years with a standard deviation of 1.621.

4.2.3 Distribution of the level of amputation

Fig. 6: Level of amputation among participants.



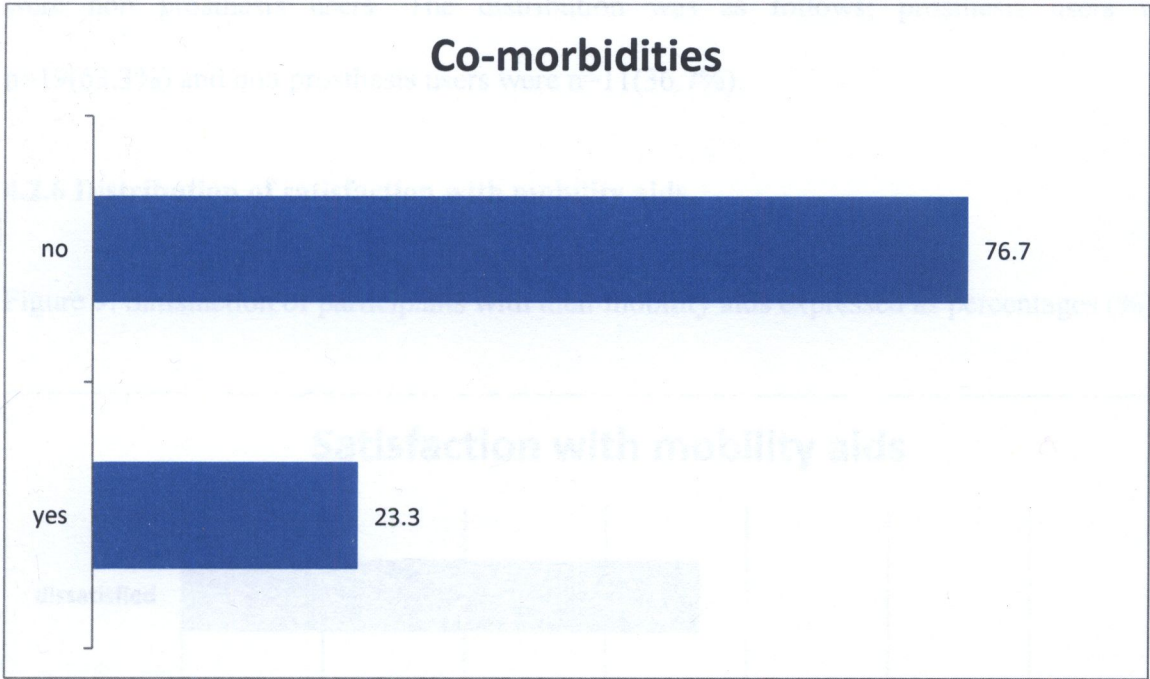
AKA=Above knee amputation, BKA=Below knee amputation, TKA=Through knee amputation

Participants with AKA were n=13(43%) and those with BKA were n=13(43%). Participants with TKA formed the smallest group and were n=4(14%).

4.2.4 Presence of co-morbidities

Participants were either answering ‘yes’ or ‘no’ to the presence of co-morbidities. Figure 4.7 illustrates that a majority of participants answered ‘no’ to the presence of co-morbidities, therefore, did not have co-morbidities while the minority had co-morbidities. The distribution was as follows; those with co-morbidities (n=7, 23.3%) and those without co-morbidities (n=23, 76.7%).

Fig. 7: Presence of other medical conditions of the participants in percentages (%).



4.2.5 Distribution of use of prosthesis

Fig. 8: Prosthesis use among participants in percentages (%).

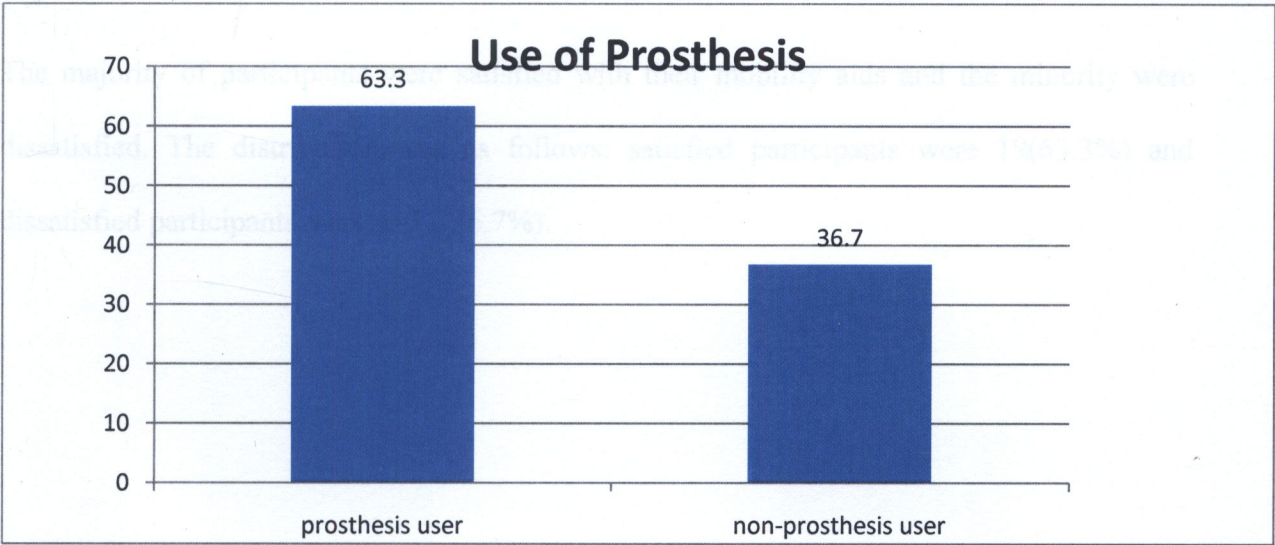
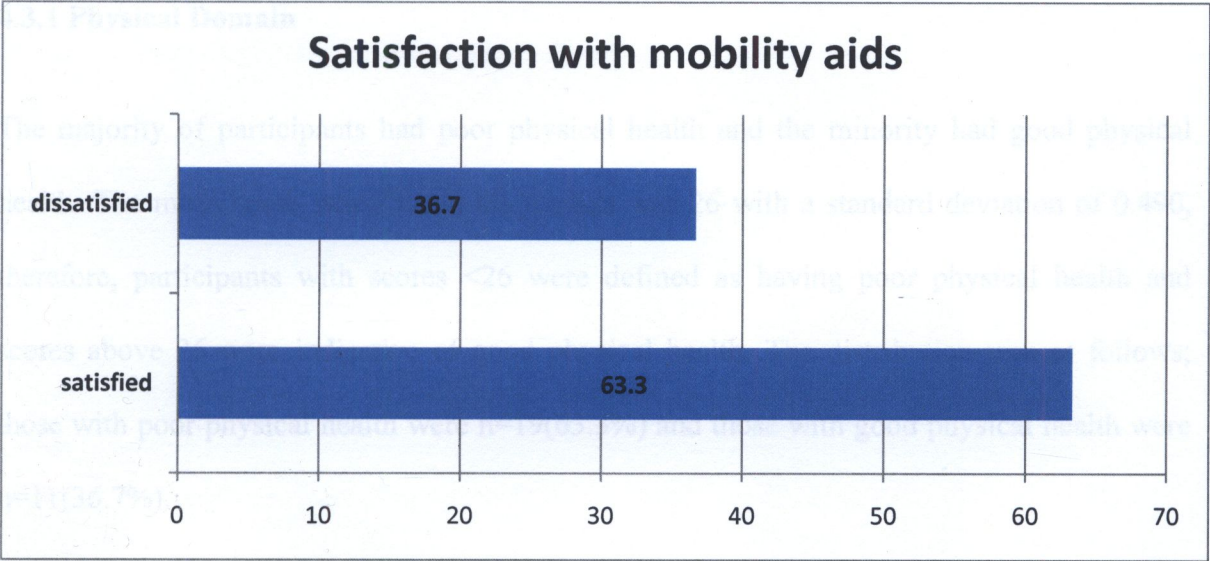


Figure 8 illustrates that the majority of participants were prosthesis users and the minority were non prosthesis users. The distribution was as follows; prosthesis users were n=19(63.3%) and non prosthesis users were n=11(36.7%).

4.2.6 Distribution of satisfaction with mobility aids.

Figure 9: Satisfaction of participants with their mobility aids expressed as percentages (%).



The majority of participants were satisfied with their mobility aids and the minority were dissatisfied. The distribution was as follows; satisfied participants were 19(63.3%) and dissatisfied participants were n=11(36.7%).

SECTION B Psychological Domains

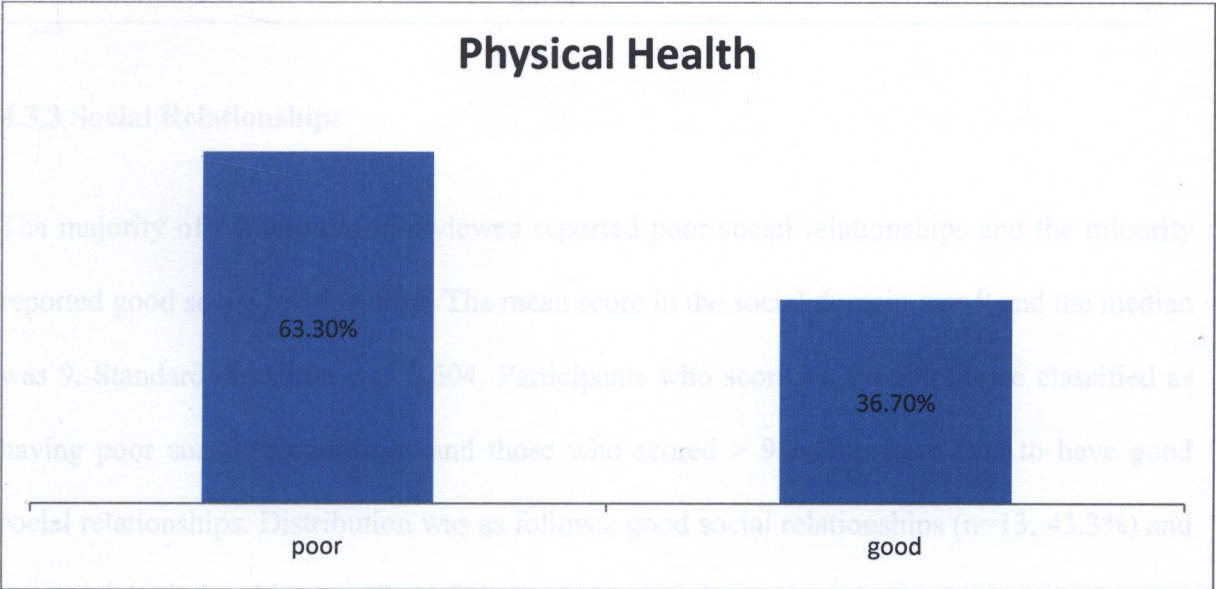
4.3 QUALITY OF LIFE

This section includes results of the participants' scores in the four domains which are; physical, psychological, social and environmental. Scores of their QOL were cross tabulated with demographic variables, medical information and scores of the four domains.

4.3.1 Physical Domain

The majority of participants had poor physical health and the minority had good physical health. The mean score was 23 and the median was 26 with a standard deviation of 0.490, therefore, participants with scores <26 were defined as having poor physical health and scores above 26 were indicative of good physical health. The distribution was as follows; those with poor physical health were n=19(63.3%) and those with good physical health were n=11(36.7%).

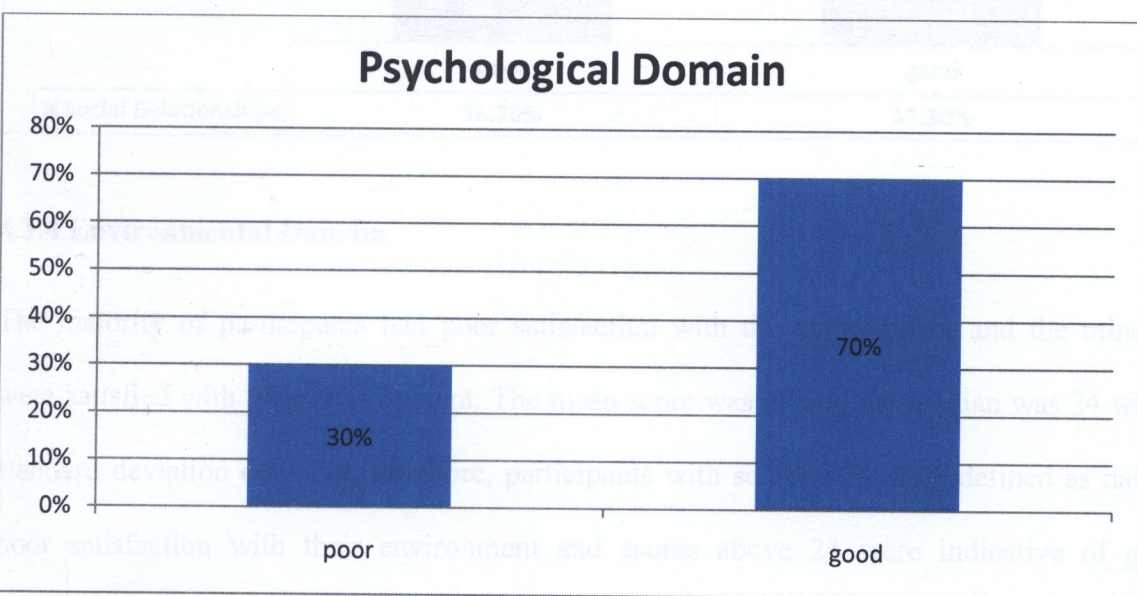
Figure 10: Distribution of physical health expressed in percentages (%).



### 4.3.2 Psychological Domain

Of the thirty participants interviewed, the majority reported good psychological well-being while the minority reported poor psychological well-being. The mean score was 20 and the median was 26. A standard deviation of 0.466 was found. Participants who scored <26 points were defined as having poor psychological well-being and those with scores above 26 were defined as having good psychological well-being.

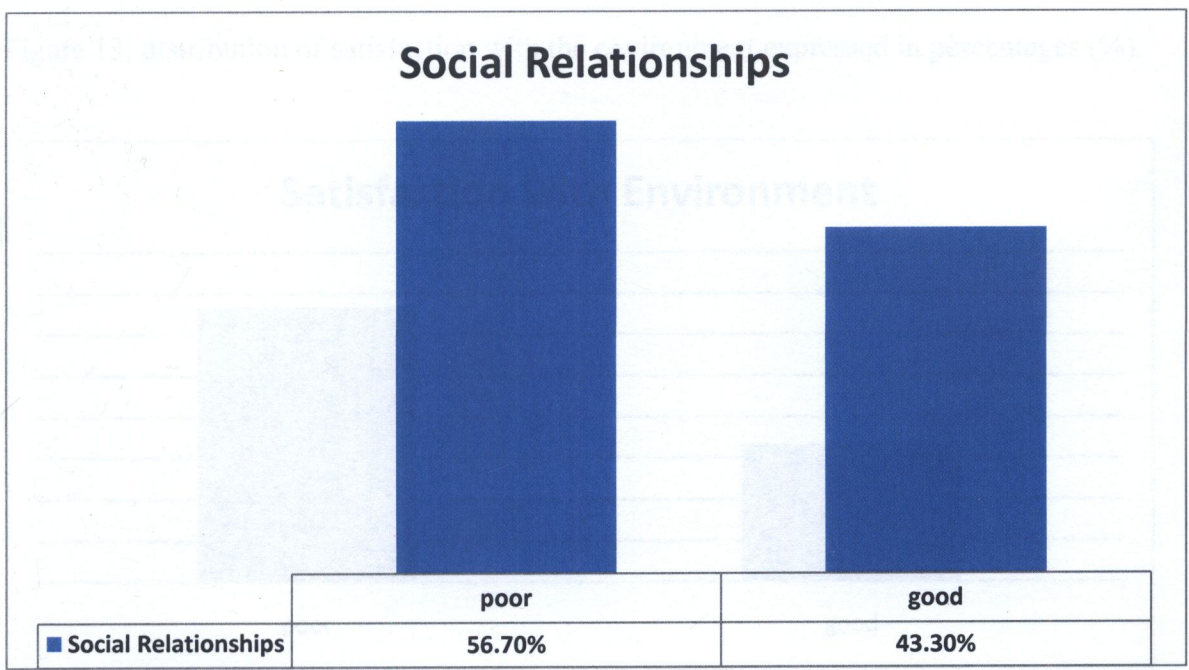
Figure 11: Distribution of psychological well-being



### 4.3.3 Social Relationships

The majority of participants interviewed reported poor social relationships and the minority reported good social relationships. The mean score in the social domain was 9 and the median was 9. Standard deviation was 0.504. Participants who scored < 9 points were classified as having poor social relationships and those who scored > 9 points were said to have good social relationships. Distribution was as follows; good social relationships (n=13, 43.3%) and poor social relationships (n=17, 56.7%).

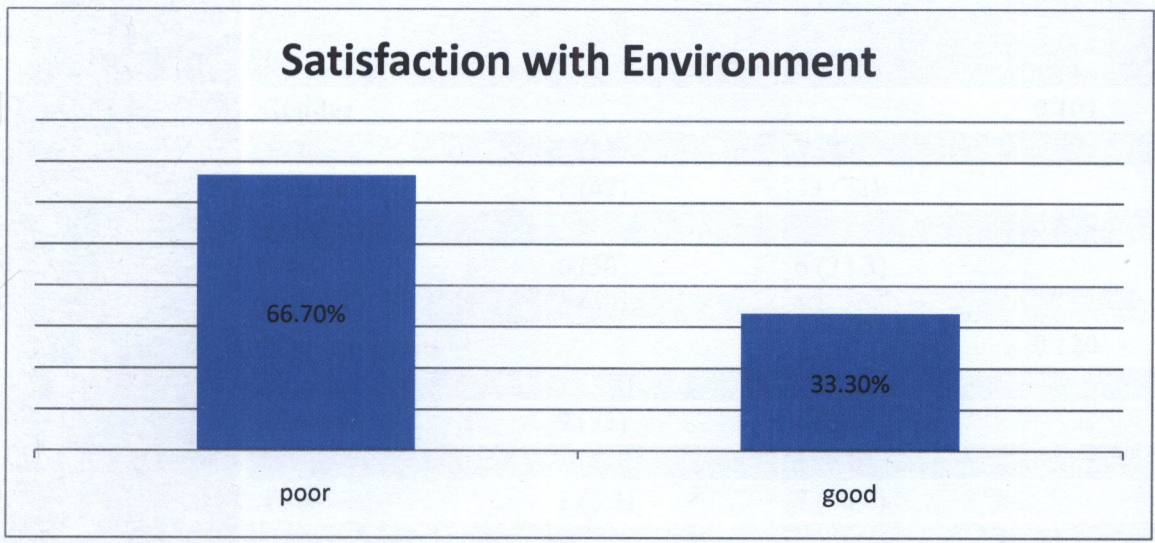
Figure 12: distribution of social relationships expressed in percentages (%).



4.3.4 Environmental Domain

The majority of participants had poor satisfaction with the environment and the minority were satisfied with their environment. The mean score was 22 and the median was 24 with a standard deviation of 0.479, therefore, participants with scores <24 were defined as having poor satisfaction with their environment and scores above 24 were indicative of good satisfaction with the environment. The distribution was as follows; those with poor satisfaction were n=20(66.7%) and those with good satisfaction were n=10(33.3%).

Figure 13: distribution of satisfaction with the environment expressed in percentages (%).



4.3.4 Quality of life variables

Of the 30 participants interviewed, the number of people with a lower limb amputation reporting good, fair and poor quality of life was; 11 (37%), 13 (43%) and 6 (20%) respectively. The mean QOL score was 80, the median score was 78 and the standard deviation was 0.498. Participants with QOL score below 78 were defined as having poor QOL and those with scores above 78 were defined as having good QOL. There was a significant association between QOL and the participants' age, occupation, cause of amputation, presence of co-morbidities, prosthesis use and satisfaction with mobility aids. Gender, residence, years passed since amputation and level of amputation did not show a significant association with the participants' QOL. Physical health, psychological well-being, social relationships and environmental satisfaction showed a significant association with QOL. The average scores of people with good QOL in each domain were higher than the average scores of participants with poor QOL. This is shown in Table 4.

Table 4: Comparison between participants with poor and good QOL

VARIABLES		Good%	Poor%	p-value
		(n=12)	(n=18)	
DEMOGRAPHIC INFORMATION	Age	39	48	0.025*
	Gender			0.101
	Male	7 (58)	5 (28)	
	Female	5 (42)	13 (72)	
	Residence			0.379
	Rural	6 (50)	6 (33.3)	
	Urban	6 (50)	12 (66.7)	
	Marital Status			0.120
	Single	1 (8.3)	4 (22.2)	
	Married	9 (75)	6 (33.3)	
	Divorced	1 (8.3)	1 (5.6)	
	Widowed	1 (8.3)	7 (38.9)	
	Occupation			0.000*
	Unemployed	3 (25)	16 (88.9)	
	Employed	9 (75)	2 (11.1)	
MEDICAL INFORMATION	Cause of amputation			0.049*
	Non-traumatic	5 (41.7)	14 (77.8)	
	Traumatic	7 (58.3)	4 (22.2)	
	Years passed since amputation	9	7	0.634
	Amputation Level			0.764
	AKA	6 (50)	7 (38.9)	
	TKA	1 (8.3)	3 (16.7)	
	BKA	5 (41.7)	8 (44.4)	
	Co-morbidities			0.035*
	Present	1 (8.3)	6 (33.3)	
	Absent	11 (91.7)	12 (66.7)	
	Prosthesis use			0.007*
	Prosthesis users	11 (91.7)	8 (44.4)	
	Non-users	1 (8.3)	10 (55.6)	
	Satisfaction with mobility aids			0.007*
	Satisfied	11 (91.7)	8 (44.4)	
	Dissatisfied	1 (8.3)	10 (55.6)	
DOMAINS	Physical Health	30	19	0.000*
	Psychological state	25	17	0.002*
	Social well-being	12	7	0.000*
	Environmental satisfaction	31	16	0.000*

The relationship between variables is significant at p-value < 0.05. \* denotes a significance.

Using a chi-square distribution test, a chi-square value of 0.6 and a degree of freedom of 1 was found. QOL had a p-value of ( $p=0.50$ ), this proves that the null hypothesis which stated that QOL among disabled patients with LLA at the U.T.H orthopedic workshop is good, was wrong.

### 4.3 CONCLUSION

The above findings show better QOL was associated with; participants with traumatic LLA, persons with more years passed since amputation, individuals with AKA, absence of co-morbidities, prosthesis users and satisfaction with mobility aids. Being younger in age, being male, being married and being in formal employment were also predictors of good QOL. High scores in a domain (physical, psychological, social, environmental) were associated with good overall QOL while low scores were associated with poor QOL. Results of the above findings are discussed in Chapter Five.

## **CHAPTER FIVE**

### **5.0 DICUSSION**

#### **5.1 INTRODUCTION**

This chapter discusses the findings of a study conducted to evaluate the impact of lower limb amputation on the quality of life of disabled patients at the U.T.H Orthopedic workshop.

Lower limb amputation (LLA) is complete salvage of the limb performed for a variety of reasons that range from disease to trauma (Spichler *et al.* 2001). It affects one's physical function, social function, psychological well-being and general health (Eiser *et al.* 2001). Everyday physical function decreases with increasing age and co-morbidities for both males and females following LLA (Eiser *et al.* 2001). Reduced physical function also occurs in patients with; high anatomical level of LLA, poor psychosocial state and poor mobility in the environment (Taylor *et al.* 2005). Limited mobility may have a greater negative impact on QOL than any other distinct disease (Groessler *et al.* 2007).

#### **5.2 FACTORS INFLUENCING QUALITY OF LIFE**

##### **5.2.1. Age and Gender**

In the current study, it was found that there was a significant relationship between age and QOL of the participants ( $p\text{-value}=0.025$ ); therefore, the age of a person with a LLA has an influence on the QOL. The mean age of lower limb amputees was 45 years and the median age was 45 years. 53% of participants were over the median age. This implies that the majority of amputees were older. This is consistent with findings by Harker *et al.* (2006). In their study, it was found that the incidence of LLA increased steeply with increasing age with most amputations occurring in patients aged 60 years and above. However, their study was

done in a different geographic location and had a larger study population. Another study by Pohjolainen&Alaranta (2004) reported a sharp increase in the incidence of amputation with increasing age. In the current study, the mean age of lower limb amputees reporting good QOL and poor QOL was 39 years and 48 years respectively. This means that younger lower limb amputees reported good QOL while older amputees reported poor QOL. A study by Fairley *et al.* (2004) indicates that poor QOL in older patients is common and is attributed to the many biological changes that occur as one ages. In their study, it was found that over 50% of participants had undergone a LLA due to diabetes and other vascular co-morbidities that are associated with old age.

A study by Fairley *et al.* (2004) found that QOL in elderly patients with LLA was affected by the presence of co-morbidities, reduced physical function and reduced funding resources compared to younger patients with LLA. In the current study, there is a significant association between age of participants and presence of other medical conditions (p-value=0.000). The majority (56%) of participants over the median age reported the presence of other medical conditions. Therefore, the presence of other medical conditions has a great influence on overall QOL in older patients with LLA. A study by Hanley *et al.* (2007) found that a majority of older people complain of physical ailments and are more susceptible to acute and chronic body pains. In the current study, the effect of body pain on an individual's QOL was assessed in the physical domain of the WHOQOL-BREF. A significant association between a participants age and physical satisfaction was found (p-value=0.040). This meant that a participants' satisfaction with physical well-being was affected by age. It was found that 81% of participants over the median age reported poor satisfaction with their physical status. This indicates that a majority of older patients were not satisfied with their physical status. This is in line with a study by Meier (2004) which indicates that poor physical function leads to poor QOL in geriatric lower limb amputees.

In the current study there was a significant association between age of the participants and their occupational status (p-value=0.017). A majority (88%) of participants over 45 years were unemployed. Fairley *et al.* (2004) reported that older patients present with poor QOL due to lack of finances and this was attributed to the lack of stable employment.

The incidence of LLA is similar in females and males in some regions and higher in females compared to males in other regions although the overall global incidence is higher in males than females (GLEA 2000). A study by Pohjolainen&Alaranta (2004) found that there were no significant differences in incidence of LLA between males and females. In the current study, the majority of participants were female (60%) but the degree of dominance varied according to the age distribution of participants. The majority of younger amputees were male. Men dominated in age groups younger than 45 with a proportion of 57% whereas women were in majority among participants over 45 with 75%.

Gender is one sociodemographic factor that could be associated with outcome following amputation. In terms of QOL, most studies have found no difference in factors affecting QOL between men and women (Williamson&Walters 2002). However, a study by Hawamdeh *et al.* (2008) reveals that females suffer from more reactive depression and anxiety symptoms than males. This result is similar to those of previous studies performed by Kashani *et al.* (1998), O'Toole *et al.* (1994) and Pezzin *et al.* (2000), which reported that women are more likely to experience depression and to perform more poorly on a measure that includes an assessment of emotional adaptability to LLA. This may influence their overall QOL. In the current study, female participants reported poor QOL compared to male participants. A study by Zidarov *et al.* (2009) shows a significant relationship between gender and body image anxiety. In their study, females reported higher body image concerns than males. This is associated with psychological problems that sometimes result in physical deterioration. In the

current study, psychological status and satisfaction was assessed in the psychological domain of the WHOQOL-BREF. The total number of participants who reported poor psychological well-being was n=9 (30%) of which 23% were female and 7% were male. This shows that more females with LLA have poor psychological satisfaction compared to males and this brings about poor QOL. Another factor leading to poor QOL in females is the satisfaction of physical status and function in terms of mobility. The current study shows a significant association between gender and physical status of participants (p-value=0.046). Therefore, gender of participants had an effect on physical satisfaction. A majority of participants with poor physical satisfaction were female (n=14, 74%). Though most studies show no association between gender and physical function in terms of mobility after amputation, a study by Mackenzie et al. (2008) showed significance in walking ability and gender. In their study, it was recorded that males had a superior walking ability compared to females; this influenced a better outcome of QOL in males than females.

### **5.2.2 Residence**

Very few studies have been done to compare the prevalence of LLA and QOL in rural and urban settlers. However, in the current study participants coming from urban and rural areas were 60% and 40% respectively. A majority of urban based participants had poor QOL (n=12, 66.7%) and an equal distribution of poor and good QOL existed among rural based participants (n=6, 50% each). A study by Pendsy (2010) found that the prevalence of LLA in urban areas was twice that in rural areas because of the presence of lifestyle morbidities among urban patients. The current study found a significant association between residence of patients and presence of co-morbidities (p-value=0.035). This indicated that area of residence had an influence on presence of co-morbidities. The majority of participants with co-

morbidities were urban settlers (n=8, 89%). Therefore, poor QOL in urban settlers was attributed to the presence of co-morbidities.

A study by Abdul-Satter (2007) found that QOL was influenced by physical pain and mobility status. In his study, more amputees who were not satisfied with their physical health were urban based and this was due to the high activity levels in urban areas compared to rural areas. Meatherall *et al.* (2005) found that most urban based amputees had high frequency use of mobility aids outside the home compared to rural based amputees leading to high prevalence rates of body pains and poor QOL. Even though no significant association was found between residence and physical health of participants in the current study (p-value>0.05), a majority of urban settlers reported poor physical health (n=13, 72%). However, Qamar *et al.* (2011) found that poor QOL in rural amputees was due to lack of information on preventive and management measures and inaccessibility to good health care. In the current study, satisfaction with health services and availability of information were assessed under the environmental domain of the WHOQOL-BREF. Though there was no significant association between residence and satisfaction with the environment (p-value>0.005), the majority of participants from rural areas reported poor environmental satisfaction (n=7, 58%). Therefore, the 50% of rural participants with poor QOL was attributed to poor environmental satisfaction. However, poor overall QOL was highest among urban settlers due to the high rate of co-morbidities and physical dissatisfaction compared to rural settlers.

### **5.2.3 Marital status**

In the current study, distribution of marital status among participants was; married, widowed, single and divorced with 50%, 26.7%, 16.7% and 6.7% respectively. Godlwana *et al.* (2008) found that prevalence of LLA due to morbidity was highest in single, divorced and widowed

patients compared to married amputees. The current study found a significant association between marital status and presence of co-morbidities ( $p\text{-value}=0.014$ ) therefore, marital status has an influence on presence of other medical conditions and is a predictor of QOL in lower limb amputees. A majority of widowed participants had co-morbidities and reported poor QOL ( $n=7$ , 88%). A majority of married participants reported good QOL ( $n=9$ , 60%). Most single participants reported poor QOL ( $n=4$ , 80%) and the divorced had an equal distribution between poor ( $n=1$ , 50%) and good QOL ( $n=1$ , 50%). Remes *et al.* (2010) found that the outcome of QOL in lower limb amputees is influenced by companionship from a spouse and social support from family and friends. In their study, they found that amputees with lower QOL scores were unmarried and had poor social support. In the current study, social support of participants was assessed in the social domain of the WHOQOL-BREF. There was no significant association between marital status and social satisfaction ( $p\text{-value}>0.05$ ) and this could have been due to the small sample size used ( $n=30$ ). However, a majority of participants who reported good social satisfaction were married ( $n=10$ , 77%) and the minority were unmarried (single, divorced and widowed representing  $n=1$ , 7.7% each). Being unmarried (single, divorced or widowed) was a predictor of poor QOL and this was attributed to the high prevalence of co-morbidities and poor social relationships.

### **5.2.3 Occupation**

The number of unemployed participants in the current study was high ( $n=19$ , 63%) while those employed were fewer ( $n=11$ , 37%). Poljak-Guberina *et al.* (2005) states that levels of unemployment are high among lower limb amputees and predict their overall QOL. In the current study a significant association between QOL and status of occupation was found ( $p\text{-value}=0.000$ ). This indicates that status of occupation of participants had a great influence on their QOL. A majority of unemployed individuals had poor QOL ( $n=16$ , 84%) and a majority

of employed participants had good QOL (n=9, 82%). This is in line with a study by Dajpratham *et al.* (2011) who found that lower limb amputees who were not employed reported poor QOL compared to employed amputees.

A study by Burger&Marincek (2007) found that physical health was a predictor of employment status in amputees. They reported that patients who had good physical health were employed compared to those who had poor physical health and this was not only attributed to their mobility status but age, gender and co-morbidities as well. In their study, patients who were older, female and had more co-morbidities were unemployed therefore reported poor QOL. The current study found a significant association between the occupation of participants and physical satisfaction (p-value=0.000). A majority of unemployed participants reported poor physical satisfaction (n=17, 89%) and a majority of employed participants reported good physical satisfaction (n=9, 82%). A significant relationship was found between occupation and; age of the participant (p-value=0.000), gender (p-value=0.000) and presence of co-morbidities (p-value=0.005). A majority of unemployed patients were over 45 years old (n=14, 88%) and female (n=16, 84%). All the participants with other medical conditions were unemployed (n=9, 100%). Therefore, unemployment in lower limb amputees was a predictor of poor QOL due to the following factors; poor physical health, old age, being female and presence of co-morbidities.

#### **5.2.4 Cause of Amputation**

The present study found that 43% of the participants were amputated due to disease and 37% were due to trauma. The minority of the participants were amputated due to other causes such as snake bite (16.7%). Congenital amputation accounted for 3.3% of the total participants. Therefore, non-traumatic LLA (disease, congenital and snake bite) accounted for 63%. In a

similar study by Carmona *et al.* (2005) it was reported that the overall rates of non-traumatic LLA are greater than traumatic LLA.

There was no significant association found between QOL and cause of amputation in the current study, however, a majority of participants with non-traumatic LLA reported poor QOL (n= 14, 74%) and a majority of participants with traumatic amputations had good QOL (n=7, 64%). The majority of participants with non-traumatic LLA were unemployed (n=16, 84%) and older than 45 years (n=14, 87.5%). In a similar study by Calle-Pascual *et al.* (1997) it was observed that QOL was related to the cause of amputation. In their study, it was also found that a majority of patients with non-traumatic LLA had poor QOL compared to those with traumatic LLA. This was attributed to the fact that most patients with non-traumatic amputations; had other co-morbidities, were older and unemployed and, these factors influenced their QOL negatively. Therefore, most participants with non-traumatic LLA had poor QOL compared to those with traumatic LLA and this was attributed to; unemployment, old age and presence of co-morbidities in most non-traumatic lower limb amputees. On the contrary, Hawamdeh *et al.* (2008) reported that patients with traumatic LLA had poor QOL compared to those with non-traumatic LLA because patients with traumatic LLA had less time to prepare psychologically before surgery.

#### **5.2.4 Time passed since Amputation**

From the 30 participants interviewed, the current study found that the least years passed since amputation among participants was 1year and most years passed were 25years. The mean was 8 years. The mean years passed among participants who reported good QOL was 9years while the mean for those reporting poor QOL was 7years. This indicates that lower limb amputees who had longer years passed since amputation had good QOL and those with less years passed had poor QOL. This is similar to a study by Dajpratham *et al.* (2011) who found

that amputees with good QOL had a significantly longer time since amputation compared to other groups.

### 5.2.5 Level of Amputation

Globally, the most frequent level of amputation is BKA followed in frequency by AKA (Krupe&Mathay 2008). The present study recorded higher frequencies in AKA and BKA. The least frequency was in TKA; 43.3% AKA, 43.3% BKA and 13.3% TKA from the 30 participants interviewed. 53.8% of AKA, 75% of TKA and 61.5% of BKA had poor QOL while 46.2% of AKA, 25% of TKA and 38.5% of BKA had good QOL. Therefore, the larger percentage of poor QOL was among participants with TKA and the larger percentage of good QOL was among participants with AKA. This indicated that most participants with TKA had poor QOL compared to participants with AKA and BKA and participants with AKA had better QOL compared to other groups. Therefore, the majority of participants with good QOL had AKA and the majority with poor QOL had TKA. However, a study by Papazafiropoulou *et al.* (2009) found a significant association between QOL and level of amputation and reported that higher anatomical levels of amputation are associated with poor QOL. Burger&Marincek also found that higher levels of amputation were related to poor QOL. These findings are contrary to findings of the current study and the researcher attributed this to the small sample size used (n=30).

### 5.2.6 Co-morbidities

The current study found a significant association between QOL and presence of co-morbidities (p-value=0.035). A total number 9 participants (30%) of the 30 participants interviewed had co-morbidities and from these, n=8 (89%) reported poor QOL. The majority of participants without co-morbidities had good QOL (n=11, 52.4). This is similar to findings

by Burger&Marincek (2007) who reported that presence of co-morbidities had a negative impact on factors influencing QOL in a large number of lower limb amputees, therefore negatively affecting QOL as well. Aulivola *et al.* (2004) also reported that poor QOL was predicted by co-morbid conditions in a majority of amputees. Therefore, presence of co-morbidities in participants of the present study was a negative indicator on QOL.

### **5.2.7 Mobility Aids**

Of the 30 participants interviewed in the present study, n=19 (63.3%) were prosthesis users and n=11, (36.7%) were non-prosthesis users. Among the prosthesis users, n=16 (84.2%) were satisfied with their prosthesis and n=3 (15.8%) were not satisfied. A majority of non-prosthesis users were not satisfied with their mobility aids (n=8, 72.7%) and a minority were satisfied (n=3, 27.3%). There was a significant association between QOL and prosthesis use (p-value=0.007). Therefore, prosthesis use had an impact on overall QOL. The majority of prosthesis users reported good QOL (n=11, 58%) while the majority of non-prosthesis users reported poor QOL (n=10, 91%). There was also a significant association between QOL and satisfaction with mobility aid (p-value=0.007). A majority of participants who were satisfied with their mobility aids reported good QOL (n=11, 58%) while those who were not satisfied reported poor QOL (n=10, 91%). This is in line with a study by Poljak-Guberina *et al.* (2005) who found a significant association between QOL, prosthesis use and satisfaction. In their study, the majority of patients were prosthesis users and out of these, a large number were satisfied with their prosthesis. These reported a better QOL compared to other groups. Another study by Amosun *et al.* (2005) found that prosthesis users who were satisfied with their mobility aids had higher QOL scores compared to unsatisfied prosthesis users. Therefore, prosthesis use and satisfaction with mobility aids is a contributing factor to good QOL.

## **5.3 QUALITY OF LIFE DOMAINS**

### **5.3.1 Physical Health**

Physical health had a significant association with QOL among the thirty participants interviewed in the present study ( $p\text{-value}=0.000$ ). A large number of participants had low scores in the physical health domain ( $n=19$ , 63%) and of these,  $n=18$ (95%) reported poor QOL while all the participants with high scores in the physical domain ( $n=11$ , 100%) reported a good QOL. This means that physical health was a direct predictor of QOL in that, poor physical health was associated with poor QOL and good physical health with good QOL. Bosman's *et al.* (2007) found that there was a significant association between physical well-being and QOL in lower limb amputees. In their study, patients with low scores in physical function had poor QOL compared to other groups. Similar results were found by Remes *et al.* (2010) who found that QOL in lower limb amputees was poorer compared to non-amputees and this was attributed to their poor physical health. On the contrary, a study by Callaghan *et al.* (2003) found no significant association between physical health and QOL. This study was however comparing mental and physical health as predictors of QOL.

### **5.3.2 Psychological well-being**

A study by Rybarczyk *et al.* (2005) found that high levels of anxiety, depression and altered self-identity had a negative impact on an amputee's psychological well-being and QOL. Engstrom&Van de Ven (1999) also found that poor QOL was associated with high levels of anxiety and depression in lower limb amputees. Their findings are similar to findings of the current study in which a significant association between psychological well-being of the participants and their QOL was found ( $p\text{-value}=0.002$ ). The participants' levels of anxiety, depression and self image were assessed in the psychological domain of the WHOQOL-

BREF. A majority of participants had high scores in the psychological domain (n=21, 70%) and of these, n=12(57%) reported good QOL while all the participants with low scores in the psychological domain (n=9, 100%) reported a poor QOL. This signifies that QOL was influenced by psychological well-being. Participants with poor psychological well-being had poor QOL and those with good psychological well-being had good QOL. Kamel (2000) also concluded that poor psychological well-being is associated with poor QOL.

### **5.3.3 Social Relationships**

Findings of the current study indicated that a significant association existed between social relationships and QOL of the participants (p-value=0.000). This indicated that QOL was influenced by state of social relationships of the participants. A larger percentage of participants had poor social relationships (n=17, 57%) and a lesser percentage had good social relationships (n=13, 43%). Among those with poor social relationships, a large percentage (n=15, 88%) had poor QOL. A larger percentage of people with good social relationships had good QOL (n=10, 77%). This is in line with a study by Fusetti *et al.* (2001) who found that poor QOL was marked by poor social activities and relationships. Dajpratham *et al.* (2011) found that good social relationships in lower limb amputees brought about good QOL. This implies that good social relationships have a positive impact on QOL in lower limb amputees.

### 5.3.4 Satisfaction with the Environment

The current study found a significant association between environmental satisfaction and QOL among the interviewed participants ( $p\text{-value}=0.000$ ). A majority of the participants had poor environmental satisfaction ( $n=20$ , 66.7%) and the minority had good environmental satisfaction ( $n=10$ , 33%). Of the ones with poor satisfaction, a larger percentage had poor QOL ( $n=18$ , 90%) while all participants who had good satisfaction had good QOL ( $n=10$ , 100%). A study by Taleporos&McCabe (2002) found a significant association between environmental satisfaction and QOL. In their study, patients with good QOL reported better environmental satisfaction compared to other groups. In the current study, people who were satisfied with their environments had good QOL while those who were not satisfied with their environments had poor QOL. Therefore, environmental satisfaction is a predictor of QOL.

### 5.3.4 Quality of life

In the current study, 60% ( $n=18$ ) of the participants reported poor QOL and 40% ( $n=12$ ) reported good QOL. Therefore, the majority of participants had poor QOL. This is in line with a study done by Tennvall&Apelqvist (2000) who found that a majority of people with LLA reported lower scores of QOL than people without amputations. Therefore, they concluded that people with LLA have poor QOL. Eiser *et al.* (2001) reported that people with LLA showed significantly worse scores of QOL compared to population norms because they were dissatisfied with their physical functioning. However, Bosman's *et al.* (2007) reported that the majority of people with LLA reported a high subjective well-being. The study by Eiser *et al.* (2001) compared people with LLA with normal people, hence the significant difference while the study by Bosmans *et al.* (2007) only reported on people with LLA. This implies that the latter study could have found high QOL scores but not higher than the normal population. Therefore, overall QOL in people with LLA was poor.

## CHAPTER SIX

### 6.0 Conclusion, Recommendations and limitations

#### 6.1 Conclusion

Achieving good QOL in people with LLA is an important and desirable goal in rehabilitation care. Predictors of QOL are useful in identifying how healthcare may be improved for people with limb loss. The current study was conducted to evaluate the impact of LLA on QOL among disabled patients receiving rehabilitation services at the U.T.H orthopedic workshop. Participants in the study were generally urban settlers and were elderly. The majority were female. Lack of employment was found to impact negatively on QOL in lower limb amputees as well as non-traumatic LLA and presence of co-morbidities. Participants who were unmarried reported poor QOL compared to married participants. Another factor affecting QOL was the number of years passed since amputation. Longer years passed since amputation was associated with good QOL. Participants who were not using prosthesis for mobility also reported poor QOL compared to prosthesis users and dissatisfaction with a mobility aid was found to have a negative impact on QOL. Findings of the study suggest that QOL in lower limb amputees is poor. These findings are similar with a study by Zidarov *et al.* (2009) who reported that lower limb amputees have poor scores of QOL. Sujold *et al.* (2002) also reported poor QOL in lower limb amputees. Zidarov *et al.* (2009) attributed their results to poor physical health and poor rehabilitation care while Sujold *et al.* (2002) attributed their result to poor psycho-social outcome in lower limb amputees. In the current study, physical health, psychological well-being, social relationships and satisfaction with the environment were directly associated with QOL. Participants with poor physical health, psychological well-being, social relationships and satisfaction with the environment had poor QOL. Although rehabilitation process at U.T.H is mainly focused on the physical functioning

including prosthetic use, findings of the study underscore the importance of also focusing care on environmental and psychosocial issues such as financial needs, access to good health services and adaptation to amputation during the rehabilitation process. This holistic approach should enhance the QOL of persons with LLA.

## **6.2 Recommendations**

- More research on LLA should be carried out to determine their QOL before and after surgery. QOL before surgery was not investigated in the current study but the researcher feels it is important because it provides specific insight to the change in QOL and lays a foundation for rehabilitation specific to the patient
- A national survey should be carried out covering statistics on disability prevalence and record keeping should be improved
- In the researcher's personal experience at U.T.H, it was found that amputees do not have pre-operative physiotherapy. This should be introduced and well followed because pre-operative state predicts post-operative state in amputees
- Team work among health professionals must be encouraged. Physiotherapists and prosthetists must be involved in the assessment and diagnosis of people who are due for amputation. This will help in providing a holistic rehabilitation process
- An amputation unit must be introduced at U.T.H which should comprise of proper beds, conveniences and equipment for treatment and rehabilitation before the patient is discharged
- The researcher discovered that most non-prosthesis users delayed in having prosthesis due to lack of finances therefore, orthopedic equipment must be subsidized.
- The Ministry of Health should liaise on with other relevant government ministries in providing government assistance for amputees. Such as continuing of education.

provision of orthopedic equipment, employment, health education and intensive counseling in all areas including rural areas

- Improve public facilities including transport to cater for amputees
- The government should look into training more people in the field of prosthesis and orthotics. Each province must have an orthopedic workshop to reduce transport expenses for amputees living in distant areas
- Social activities and physical training such as sports programs and peer support groups of amputees must be encouraged

### **6.3 Limitations**

- Time to conduct the study was not enough therefore a smaller sample size was used
- Finances to conduct a larger study were limited therefore, a small sample size was used

## REFERENCES

- Abdul-Satter (2007), 'Amputation-related back pain: prevalence, associated risk factors and correlation with functional disability', *Egypt Rheumatol Rehab*, Vol. 34, No. 2.
- Abou-Zamzam, AM, Teruya, TH, Killen, D & Ballard, JL (2003), 'Major lower extremity amputation in an academic vascular center: annals of vascular surgery', *International Journal of Vascular Surgery*, vol. 17(1), pp. 86-90.
- Abu-Qamar Z & Wilson A (2011), *Foot care within the Jordanian healthcare system: a qualitative inquiry of patient's perspectives*, Department of Adult Health Nursing, Faculty of Nursing, Mu'tah University, Al-Karak, Jordan.
- Aiken&West (1991), *Multipl'es regression testing&interpreting interactions*, Wordpress admin, California U.S.A.
- Amosun SL, Mutimura E, Frantz JM, (2005), 'Health promotion needs of physically disabled individuals with lower limb amputation in Rwanda', *Disability and Rehabilitation*, 27(14): 837-847
- Aulivola, B, Hile, CN, Hamdan, AD, Sheahan, MG & Veraldi, JR (2004), 'Major lower extremity amputation: outcome of a modern series', *Archives of Surgery*, vol.139 (4), pp. 395-399.
- Bosmans, JC, Suurmeijer, BM, Hulsink, M, Schans Van der, CP, Geertzen, HB & Dijkstra,P (2007), 'Amputation, phantom pain and subjective well-being: a qualitative study', *International Journal of Rehabilitation Research*, vol. 30(1), pp. 1-8.
- Bryman, A (2006), 'Integrating quantitative and qualitative research, how is it done?', *Qualitative research* vol. 6 (1), pp 97-113.
- Burger, H & Marincek, C (2007), 'Return to work after lower limb amputation', *Disability and Rehabilitation*, vol.29 (17), pp. 1323-1329.
- Callaghan B.G, Condie M.E, Ruta D.A (2003), 'A post-discharge quality of life outcome measure for lower limb amputees: test-retest reliability and construct validity', *Clinical Rehabilitation* 2003; 17: 858-864.
- Calle-Pascual, AL, Redondo, MJ, Ballesteros, M, Martinez-Salinas, MA, Diaz, JA, De Matis, P, Calle, JR, Gil, E, Jimenez, M, Serrano, FJ, Martinez-Alvarez, PJ & Maranes, JP (1997), 'Nontraumatic lower extremity amputations in diabetic and non-diabetic subjects in Madrid, Spain', *Diabetes & Metabolism*, vol. 23, pp. 519-523.

Cansever, A (2003), 'Depression in men with traumatic lower part amputation: a comparison to men with surgical lower part amputation', *Military Medicine*, vol. 168 (2), pp. 106–110.

Carmona, GA, Hoffmeyer, P, Herrmann, FR, Vaucher, J, Tschopp, O & Lacraz, A (2005), 'Major lower limb amputations in the elderly observed over ten years: the role of diabetes and peripheral arterial disease', *Diabetes and Metabolism*, vol. 31(5), pp. 449-454.

Castillo D.G, MacKenzie, M.J. Bosse, R.C. Smith, L.X. Webb and J.F. Kellam (2009), Functional outcomes following trauma-related lower-extremity amputation. *J Bone Joint Surg*

Central Statistics Office (2003), *Census report (2000)*, Desktop publishing unit- CSO, Lusaka, Zambia.

Dajpratham Piyapat, Suchat Tantiriramai & Pranee Lukkanapichonchut (2011), 'Health related quality of life among the Thai people with unilateral lower limb amputation', *Journal of the Medical Association Thai*. Volume 94 (2)

Delasau I, Van Rij A, Heslop B, Malami J (2010). *The Impact of Amputation On Diabetic Patient In Fiji*, Fiji School of Medicine Suva, Fiji Islands.

Desmond, DM & Maclachlan, M (2005), 'Coping strategies as predictors of psychosocial adaptation in a sample of elderly veterans with acquired lower limb amputation', *Social Science & Medicine*, vol.62, pp. 208-216.

Dillingham. TR & Pezzin, LE (2008), 'Rehabilitation setting and associated mortality and medical stability among persons with amputations', *Archives of Physical Medicine and Rehabilitation*, vol. 89(6), pp.1038-1045.

Donald Patrick, L Todd Edwards, C & Tari Topolski, D (2002), 'Quality of life of adolescents with perceived disabilities', *Journal of Pediatric Psychology*, vol. 28, issue4.

Eiser, C, Darlington, ASE, Stride, CB & Grimer, R (2001), 'Quality of life implications as a consequence of surgery: limb salvage, primary and secondary amputation', *Sarcoma*, vol. 5, pp.189-195.

Engstrom, B & Van de Ven, C (1999), *Therapy for amputees*, 3rd edition, Churchill Livingstone.

Eszter Panna Vamos, Alex Bottle, Azeem Majeed & Christopher Millett (2010), 'Trends in lower extremity amputations in people with and without diabetes in England, 1996–2005', *Diabetes Research and Clinical Practice*, vol 87, issue 2, pp. 275-282.

Fairley M, Muchnic P, Carroll K, Melissa W, Frank G (2004), *Geriatric amputees: enhancing quality of life*, Kaiser Permanente and the Harbor UCLA Medical Center, Los Angeles, California.

Feinglass, J, Pearce, WH, Martin, GJ, Gibbs, J, Cowper, D & Sorensen, M (2001), 'Postoperative and late survival outcomes after major amputation: findings from the department of veterans affairs national surgical quality improvement program', *Surgery*, vol.130 (1), pp. 21-29.

Ferguson, PM (2001), *Handbook of disability studies*, Thousand Oaks, Sage.

Fisher, K & Hanspal, R (1998), 'Body image and patients with amputations: does the prosthesis maintain the balance', *International Journal of Rehabilitation Research*, vol. 21, pp. 355-363.

Fusetti C, Senechaud C, Merlini M (2001), 'Quality of life of vascular disease patients following amputation', *Ann Chir*. 126: 434-9.

Gabbos, PG (2006), 'Modified technique for the surgical treatment of congenital constriction bands of the arms and legs of infants and children', *Orthopedics*, vol. 29(5), pp. 401-410.

Geertzen, JH Martina, JD & Rietman, HS (2001), 'Lower limb amputation part 2: rehabilitation, 10 year literature review', *Prosthetics Orthotics International*, vol. 25, pp. 14–20.

Godlwana, L Nadasan, T Puckree, T (2008), 'Global trends in incidence of lower limb amputation: a review of the literature', *South African Journal of Physiotherapy*, vol.64 (1), pp. 8-11.

Groessl EL, Kaplan RM, Rejeski J, Katula JA, King Abby, Frierson G, Glynn NW, Hsu FC, Walkup M, Pahor M, (2007), 'Health –related quality of life in older adults at risk for disability', *American Journal of Preventive Medicine*, 33(3): 214-218.

Hanley MA, Jensen MP, Smith DG, Ehde DM, Thomas Edwards W, Robinson LR, (2007), 'Preamputation pain and acute pain predict chronic pain after lower extremity amputation, 8(2): 102 109

Harker J, Callam M, Canavan R (2006), *Wound healing complications associated with lower limb amputation*, Royal Oldham Hospital, Pennine Acute Hospitals NHS Trust, Manchester, UK.

Hawamdeh M, Yasmin S, Alaa I (2008), 'Assessment of anxiety and depression after lower limb amputation in Jordanian patients', *Neuropsychiatr Dis Treat*. 2008 June; 4(3): 627–633.

Javier Aragón-Sánchez, Amos García-Rojas Jose,L, Lázaro-Martínez, Yurena Quintana-Marrero, Manuel Maynar-Moliner, Martín Rabellino, J, Hernández-Herrero & Juan Cabrera Galván (2009),

‘Epidemiology of diabetes-related lower extremity amputations in Gran Canaria, Canary Islands (Spain)’, *Diabetes Research and Clinical Practice*, Vol. 86, issue 1, pp. 6-8.

Kamel EH (2000), ‘The thoughts and feelings of patients submitted to an amputation of a limb about the operation: Thesis (unpublished)’, Medical University of Southern Africa

Kashani JH, Frank RG, Kashani SR, Wonderlich SA, Reid MA, Ried C (1998) ‘Depression among amputees’, *Journal of Clinical Psychiatry*, 44 (7):256-58

Khanna Dinesh (2011), *Health related quality of life and functional disability*, David Geffen School of Medicine, UCLA.

Kohler F, Cieza A, Stucki G (2009), ‘Developing Core Sets for persons following amputation based on the International Classification of Functioning, Disability and Health as a way to specify functioning’. *Prosthet Orthot Int.* 33(2):117-129.

Kruper Greg & Mathay Pat (2008), *Orthotics and Prosthetics*, The Range of Motion Project, Hickory Hills, USA.

Kubheka BA. (1993), *An evaluation of community based rehabilitative care given to amputated patients living in the suburban areas north of Durban*, University of KwaZulu-Natal libraries, South Africa.

Kurichi Jibby, E, Barbara, E & Margaret Stineman, E (2008), *Amputation*, Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Philadelphia.

Lento Paul, MD (2004), *Trauma and other causes of amputation*, Disaboom press, U.S.A.

Meatherall, Mark R. Garrett, Joseph Kaufert, Bruce D. Martin, Monica W. Fricke, Amarjit S. Arneja, Frank Duerksen, Joshua Koulack, Hank M. Fong, J. Neil Simonsen, Lindsay E. Nicolle, Elly Trepman, John M. Embil (2005), ‘Disability and quality of life in Canadian aboriginal and non-aboriginal diabetic lower-extremity amputees’, *Archives of Physical Medicine and Rehabilitation* Volume 86, Issue 8, Pages 1594-1602.

Meier (2004), *Geriatric amputees: enhancing quality of life*, Amputee Services of America, Thornton, Colorado.

Misajon R, Manderson L, Pallant JF, Omar Z, Bennet E, Rahim RBA (2006), ‘Impact, distress and HRQoL among Malaysian men and women with a mobility impairment, Health and quality of life outcomes’, *BioMed Central*.

Moss, SE & Klien, R (1999), 'The 14-year incidence of lower extremity amputations in a diabetic population', *Diabetes Care*, vol. 22(6), pp. 951-959.

Mulenga Davie (2011), 'The health related quality of life of refugees with disabilities in Zambia ', Thesis (unpublished), University of Western Cape, South Africa.

O'Toole DM, Goldberg RT, Ryan B (1994), 'Functional changes in vascular amputee patients: Evaluation by Barthel Index PULSES Profile and ESCROW Scale', *Arch Phys Med Rehabil.*;66:508–11.

Papazafizopoulou A, Tentolouris N, Soldatos R-P, Liapis CD, Dounis E, Kostakis AG, Bastounis E, Katsilambros N, (2009), 'Mortality in Diabetic and nondiabetic amputations performed from 1996 to 2005 in a tertiary hospital population: a 3 year follow-up study', *Journal of Diabetes and its Complications*, 23:7-11

Pendsey Sharad (2010), 'Clinical Profile of Diabetic Foot in India', *International Journal of Lower Extremity Wounds* 2010 9: 180

Pezzin LE, Dillingham TR, MacKenzie EJ (2000), 'Rehabilitation and long-term outcome of persons with trauma-related amputations', *Arch Phys Med Rehabil.*81:292–300.

Pilot D.F and Hughes B.P, (1991), *Nursing principles and methods*, Lipincolt company Philadelphia

Pohjolainen T & Alaranta H (2004), 'Lower limb amputations in Southern Finland 1984-1985', *Prosthetics and Orthotics International*, volume 12:9-18.

Poljak-Guberina, R, Zivkovic, O, Muljadic, A, Guberina, M & Bernt-Zivkovic, T (2005), 'The amputees and quality of life', *Collegium Antropologicum*, vol.29(2), pp.603-609.

Porter Stuart (2003), *Tidy's Physiotherapy*, 12th edition, Butterworth Heinemann publishers, United Kingdom

Remes L, Rautava P, Isoaho R, Biancari F, Poljolainen T (2010), *Survival and quality of life among patients with severe lower extremity peripheral arterial disease*, University of Turku, Finland.

Resnick, HE, Carter, EA, Lindsay, R, Henly, SJ, Ness, FK, Welty, TK, Lee, ET & Howard, BV (2004), 'Relations of all lower-extremity amputation to all-cause and cardiovascular disease mortality in American Indians', *Diabetes Care*, vol.27(6), pp.1286-129.

Richa Sinha, Wim, JA, Van den Heuve, Perianayagam Arokiasamy (2011), 'Factors affecting quality of life in lower limb amputees', *Journal of Prosthetics and Orthotics International*, vol. 35, no.1, pp. 90-96.

Robert Gailey, Kerry Allen, Julie Castles, Jennifer Kucharik, Mariah Roeder (2004), 'Review of secondary physical conditions associated with lower-limb amputation and long-term prosthesis use', *JRRD*, Volume 45, number 1.

Rybarczyk BD, Nyenhuis DL, Nicholas JJ, Cash SM, Kaiser J (2005), 'Body image, perceived social stigma, and the prediction of psychosocial adjustment to leg amputation'. *Rehabil Psychol*. Vol. 40: 95-110.

Schans van der Cees, P, Jan, H, Geertzen, B, Tanneke Schoppen & Pieter Dijkstra, U (2002), *Phantom pain and health-related quality of life in lower limb amputees*, University of Groningen, Netherlands.

Singh Brig, G, Pithawa, AK & Ravindranath, G (2004), *study of the disabled treated at artificial limb centre*. ALC, Pune, India.

Spichler ERS, Spichler D, Lessa I, Costa e Forti A, Franco LJ, LaPorte ER, (2001), 'Capture-recapture method to estimate lower-extremity amputation rates in Rio de Janeiro, Brazil, Pan American', *Journal of Public Health*, 10(5): 334-340

Stineman, MG, Kwong, PL, Kurichi, JE, Prvu-Bettger, JA, Vogel, WB & Maislin, G (2008), 'The effectiveness of inpatient rehabilitation in the acute postoperative phase of care after transtibial or transfemoral amputation: study of an integrated health care delivery system', *Archives of Physical Medicine and Rehabilitation*, vol 89(10), pp.1863-1872.

Sujold A, Delucia R, Buchegger, I, Terzi Z, Behluli Z&Bajrami C (2002), 'Lower limb amputation', *Physical Medical Rehabilitation Clinic*:20(3):320-370.

Taleporos G&McCabe MP (2002), 'Body image and physical disability—personal perspectives'. *Social Science Med*: 54: 971-80.

Taylor SM, Kalbaugh CA, Blackhusrt DW, Hamontree SE, Cull DL, Messich HS, Robertson RT, Langan EM, York JW, Carsten CG, Snyder BA, Jackson MR, Youkey JR (2005), ' Preoperative clinical factors predict postoperative functional outcomes after major lower limb amputation: An analysis of 553 consecutive patients', *Journal of Vascular Surgery*, 42(2):227-234

Tennvall GR&Apelqvist J, (2000), 'Health –related quality of life in patients with diabetes mellitus and foot ulcers', *Journal of Diabetes and its Complications*, 14:235-241

The Global Lower Extremity Amputation (GLEA) Study Group (2000), 'Epidemiology of lower extremity amputation in centers in Europe, North America and East Asia', *British Journal of Surgery*, vol 87(3), pp.328-37.

United Nations Organization (2011), *Convention on the rights of persons with disabilities*, UN press, New York, USA.

Walter Jr, JH, Goss, LR & Lazzara, AT (1998), 'Amniotic band syndrome', *Journal of Foot and Ankle surgery*, Department of Orthopedics Pennsylvania College of Podiatric Medicine, Philadelphia 19107, USA.

Williams, H, Lisa, H, Donald Miller, R, Graeme Fincke, Jean-Philippe Lafrance, Ruth Etzioni, Charles Maynard, Gregory Raugi, J & Gayle, E (2011), 'Depression and incident lower limb amputations in veterans with diabetes', *Journal of Diabetes and its Complications*. vol 25, issue 3, pp. 175-182 .

Williamson G.M & Walters A.S (2002), 'Sexual satisfaction predicts quality of life: a study of adult amputees'. *Sex Disabil*, 16, pp. 103–115.

World Health Organisation (2011), *Chronic disease and health promotion report*. WHO press, Geneva, Switzerland.

World Health Organisation (2001), *International classification of functioning disability and health*. WHO press, Geneva, Switzerland.

World Health Organisation (2011), *World report on disability and the regional office for Africa*, WHO press, Geneva, Switzerland.

World Health Organization (2008), *Global burden of disease update (2004)*, World Health Organization press, Geneva, Switzerland.

Zidarov, D, Swaine, B & Gauththier-Gagnon, C (2009), 'Quality of life of persons with lower limb amputation during rehabilitation and at 3-months follow up', *Archives of Physical Medicine and Rehabilitation*, vol. 90(4), pp. 634-645.

## APPENDIX I

### BUDGET

ITEM	QUANTITY	UNIT COST (ZMK)	COST (ZMK)
A4 BOND PAPER	03 REAM	30,000	90,000
NOTE BOOK	01	8000	8000
PENS & PENCILS	10	1000	10,000
ERASERS	02	2000	4000
RING FOLDERS	03	25,000	75,000
STAPLER	01	30,000	30,000
STAPLES	1 PACKET	5000	5000
TIP-EX	02	10,000	20,000
PRINTING SERVICES	-	-	300,000
PHOTOCOPYING SERVICES	-	-	200,000
FLASH DISKET	02	100,000	200,000
PERFORATOR	01	30,000	30,000
PROPOSAL DRAFTING	-	-	350,000
DATA ENTRY	-	-	100,000
DATA ANALYSIS	-	-	200,000
PRE-TESTING	-	-	100,000
REPORT WRITING AND BINDING	-	-	400,000
<b>TOTAL AMOUNT</b>			<b>2,122,000</b>

APPENDIX II

WORK PLAN

Activity	September	October	November	December	January	February	March
Research proposal writing							
Submission of proposal							
Data collection							
Data analysis							
Typing report draft							
Typing report							
Submission of report							

## **APPENDIX III**

### **LETTER TO RESEARCH ETHICS COMMITTEE**

Biomedical Research Ethics Committee,  
The University of Zambia  
P.O Box 50110,

**Lusaka**

The University of Zambia  
School of Medicine,  
P.O Box 50110,

**Lusaka.**

The Head of Department,  
Department of Physiotherapy.

#### **RE: PERMISSION TO CONDUCT A RESEARCH PROJECT**

I am a fifth year physiotherapy student at the University of Zambia, Ridgeway campus and pursuing a Bachelor of Science Degree in physiotherapy. As partial fulfillment of the degree program, I am required to carry out a research in an area of my interest that will add to the body of knowledge.

The research topic is; 'The impact of lower limb amputation on the quality of life among disabled patients at the U.T.H orthopedic workshop.

I hereby apply for the approval to carry out the research.

Yours faithfully,

**Sibusiku Mulima. (Student number: 27006387)**

## **APPENDIX IV**

### **INFORMATION SHEET**

Dear participant,

I am a fifth year Physiotherapy student at the University of Zambia, Ridgeway Campus pursuing a Bachelor of Science Degree in Physiotherapy. As partial fulfillment of the degree program at the University of Zambia, students are required to carry out a research in their area of interest that will be of benefit to the provision of health care and also add to the body of knowledge. The aim of this study is to evaluate the impact of lower limb amputation on the quality of life among disabled patients at the University Teaching Hospital (UTH) orthopedic workshop from December 2011-January 2012.

Your taking part in this study is purely voluntary and the information that will be given shall be handled with strict confidence. Be informed that participating or not participating in this study will not affect your right to seek medical attention at U.T.H.

Note that the study is purely academic.

I am requesting for your permission to be allowed to ask you questions that would meet the requirements of my study.

For any questions contact me or the secretary of the Research Ethics Committee

Your support and corporation will be greatly appreciated.

Research Ethics Committee,

University of Zambia,

P.O. Box 50110,

Lusaka

Sibusiku Mulima

5<sup>th</sup> year student

The University of Zambia

School of Medicine

Department of Physiotherapy

Ridgeway campus

Tel 0977451977

**APPENDIX V**

**CONSENT FORM**

Having read and understood the contents of the information sheet, I hereby wish to participate in the study.

Name of participant

Signature..... Date.....

Signature of witness..... Date.....

Signature of the researcher..... Date.....

## APPENDIX VI

### QUESTIONNAIRE

PARTICIPANT NUMBER \_\_\_\_\_

ADDRESS OF PARTICIPANT \_\_\_\_\_

Instructions: This questionnaire has two sections. The questionnaire may be participant administered, interviewer assisted or interviewer administered. Please mark (X) or tick as appropriate.

### SECTION A

#### 1.1 DEMOGRAPHIC DETAILS

1.1.1 Age: 18-28 ☐

29-39 ☐

40-50 ☐

51-61 ☐

62-72 ☐

1.1.2 Gender: Male ☐ Female ☐

1.1.3 Marital status: ☐ Single ☐ Married ☐

☐ Widowed ☐ Divorced ☐

1.1.4 Occupation: Unemployed ☐ Employed ☐

1.2 MEDICAL INFORMATION

1.2.1 What was the reason for your amputation?

Disease ☐ Trauma ☐ Congenital ☐  
Other ☐ specify \_\_\_\_\_

1.2.2 When were you amputated?

Less than 2 years ago ☐  
2-4years ago ☐  
5-7years ago ☐  
8-10years ago ☐  
More than 10years ago ☐

1.2.3 What amputation do you have? (RA)

Hind quarter	<input type="checkbox"/>	Syme's	<input type="checkbox"/>
Hip disarticulation	<input type="checkbox"/>	Lisfranc's	<input type="checkbox"/>
AKA	<input type="checkbox"/>	Transmetatarsal	<input type="checkbox"/>
TKA	<input type="checkbox"/>	Toe-ectomy	<input type="checkbox"/>
BKA	<input type="checkbox"/>		

1.2.4 Do you have any other medical conditions?

Yes ☐ No ☐

1.2.5 Do you use a lower limb prosthesis for mobility?

Yes ☐ No ☐

1.2.6 Are you satisfied with the mobility aid you are using (prosthesis, crutches, walking stick, wheelchair)?

Yes ☐ No ☐

SECTION B- WHOQOL-BREF

The following questions ask how you feel about your quality of life, health, or other areas of your life. Please choose the answer that appears most appropriate. If you are unsure about which response to give to a question, the first response you think of is often the best one. Please keep in mind your standards, hopes, pleasures and concerns. Think about your life in the last four weeks.

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?					

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?					

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?					

4.	How much do you need any medical treatment to function in your daily life?					
5.	How much do you enjoy life?					
6.	To what extent do you feel your life to be meaningful ?					

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate ?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?					
11.	Are you able to accept your bodily appearance?					
12.	Have you enough money to meet your needs?					
13.	How available to you is the information that you need in your day-to-day life?					
14.	To what extent do you have the opportunity for leisure activities?					

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?					

		Very dissatisfied	Dissatisfie d	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?					
17.	How satisfied are you with your ability to perform your daily living activities?					
18.	How satisfied are you with your capacity for work?					
19.	How satisfied are you with yourself?					
20.	How satisfied are you with your personal relationships?					
21.	How satisfied are you with your sex life?					
22.	How satisfied are you with the support you get from your friends?					

23.	How satisfied are you with the conditions of your living place?					
24.	How satisfied are you with your access to health services?					
25.	How satisfied are you with your transport?					

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?					

Do you have any comments about the assessment?

---



---



THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067  
Telegrams: UNZA, LUSAKA  
Telex: UNZALU ZA 44370  
Fax: + 260-1-250753  
E-mail: unzarec@unza.zm  
Assurance No. FWA00000338  
IRB000001131 of IORG0000774

Ridgeway Campus  
P.O. Box 50110  
Lusaka, Zambia

4<sup>th</sup> January, 2012.

Your Ref: 016-01-12.

Ms Mulima Sibusiku,  
School of Medicine,  
Department of Physiotherapy,  
Lusaka.

Dear Ms Sibusiku,

**RE: RE-SUBMITTED RESEARCH PROPOSAL: "A STUDY TO DETERMINE THE IMPACT OF LOWER LIMB AMPUTATION ON HEALTH RELATED QUALITY OF LIFE AMONG PATIENTS WITH DISABILITIES RECEIVING REHABILITATION SERVICES AT THE ORTHOPAEDIC WORKSHOP, UNIVERSITY TEACHING HOSPITAL"**

The above-mentioned research proposal was re-submitted to the Biomedical Research Ethics Committee with recommended changes. The proposal is approved.

**CONDITIONS:**

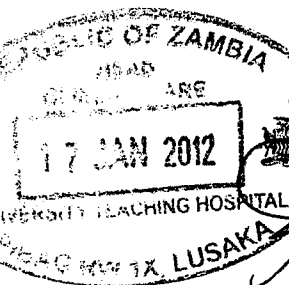
- This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.
- If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a detailed progress report of your study to this Committee every six months and a final copy of your report at the end of the study.
- Any serious adverse events must be reported at once to this Committee.
- Please note that when your approval expires you may need to request for renewal. The request should be accompanied by a Progress Report (Progress Report Forms can be obtained from the Secretariat).
- Ensure that a final copy of the results is submitted to this Committee.

Yours sincerely,

  
Dr. J.C. Munthali  
CHAIRPERSON

Date of approval: 04 January, 2012

Date of expiry: 03 January, 2013



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF MEDICINE**

**DEPARTMENT OF PHYSIOTHERAPY**

Telephone: 257938  
Telegrams: UNZA, LUSAKA  
Telex: UNZALU ZA 44370  
Fax: + 260-211-257938

Dean's Office  
P.O. Box 50110  
Lusaka, Zambia

12<sup>th</sup> January, 2012.

The Senior Medical Superintendent,  
University Teaching Hospital,  
P/Bag RW 1X,  
**Lusaka.**

Dear Sir,

**RE: REQUEST FOR PERMISSION TO ALLOW MULIMA SIBUSIKU  
COLLECT DATA FOR HER STUDY**

Reference is made to the subject above.

We write to introduce to you our above named 5<sup>th</sup> year student pursuing a Bachelor of Science in physiotherapy. Mulima is required to carryout a Research Project in partial fulfillment of the requirements for the award of the Bachelor of Science Degree.

Her proposed study is: **"To evaluate the impact of lower limb amputation on quality of life among disabled patients receiving rehabilitation services at U.T.H Orthopaedic Workshop."**

We are therefore seeking permission from your office to enable her collect data from the Orthopaedic Workshop and the Department of Physiotherapy. We would like to request that she be allowed to access data related to her research. The data collected will be for academic purposes only and will be treated as confidential.

Thanking you for your constant support.

Yours faithfully,

Dr Esther Munalula-Nkandu

**BSc PT (Hons), MSc, PgD R/Ethics, MA Bioethics, PhD  
HEAD - DEPARTMENT OF PHYSIOTHERAPY**

\*Property of UNZA Library



3 3729 00483 4615