



**NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF PSYCHOLOGY**

**EXAMINING THE PSYCHOLOGICAL IMPACTS
OF A TRAUMATIC LOWER LIMB AMPUTATION
AMONG YOUNG ADULTS IN CAMEROON**

MSc. THESIS

EVELINE LIMBA NGWANE

**NICOSIA
JANUARY 2024**



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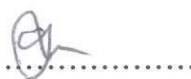
Supervisor

ASSIST. PROF. DR. GLORIA MANYERUKE

**NICOSIA
JANUARY, 2024**

Approval

We certify that we have read the thesis submitted by **EVELINE LIMBA NGWANE** titled “**Examining the psychological impacts of traumatic lower limb amputation among young adults in Cameroon** and that in our combined opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Educational Sciences.

Examining Committee	Name-Surname	Signature
Head of the Committee	Assoc. Prof. Dr. Ezgi Ulu.	
Committee Member	Assist. Prof. Dr Ayşe Buran.	
Supervisor	Assist. Prof. Dr. Gloria Manyeruke	

Approved by the Head of the Department

...06.../02.../24



Assoc. Prof. Dr. Ezgi Ulu

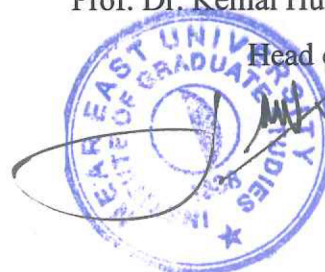
Head of Department

Approved by the Institute of Graduate Studies

...../20.....

Prof. Dr. Kemal Hüsnü Can Başer

Head of the Institute



Declaration

I hereby declare that all information, documents, analysis, and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of the Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

EVELINE LIMBA NGWANE

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Day/Month/Year

Acknowledgments

I want to thank the Almighty God for his abundant blessings of good health, protection, guidance, and knowledge upon my life and his substance for bringing me this far. It has not been an easy journey with all the hurdles and puddles, but by His grace, I emerged successfully. I am grateful to my supervisor, assistant Assis. Prof. Dr. Gloria Manyeruke for her support, guidance, encouragement, and input to ensure the realization of this research which is of excellent quality and is a huge success. Equally, I would like to extend my profound gratitude to the Limba and Masango family for their spiritual, financial, moral, and emotional support and tireless encouragement throughout my academic journey. I Love you all so much and God bless you immensely. I also wish to express my profound gratitude to Mr. Martin Eben Ebong for his spiritual, financial, material, and emotional support to ensure the successful completion of my research. I appreciate my colleagues in the Ministry of Social Affairs in Cameroon for their collaborative efforts in coordinating the data collection process which was a success. I say a big thanks to you all. Thanks to all my friends both national and international for their support throughout my research. Thanks to the HOD and the lecturers of the Department of Psychology, Near East University, North Cyprus for their availability and encouragement. I appreciate all respondents to my questionnaires while carrying out my research on “traumatic amputation” for their cooperativeness during the data collection process, God bless you all. For all those whom I cannot disclose their identification, I appreciate you all, and God should bless you abundantly.

EVELINE LIMBA NGWANE

Abstracts

EXAMINING THE PSYCHOLOGICAL IMPACTS OF A TRAUMATIC LOWER LIMB AMPUTATION AMONG YOUNG ADULTS IN CAMEROON.

Eveline Limba Ngwane

MSc. Department of Psychology

Assist. Prof. Dr. Gloria Manyeruke

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Amputation refers to the surgical removal of a limb or extremity, which could include a finger, toe, hand, foot, arm, or leg due to a medical illness or injury. The objective of this study is to examine the psychological impacts of traumatic lower limb amputation among young adults in Cameroon. A sample of 240 amputees were recruited using a purposive sampling technique. A structured questionnaire was used to collect data. The findings show a positive relationship between anxiety, and PTSD in the length of time since amputation. Moreover, depression, anxiety, PTSD, and self-esteem are said to correlate positively with the amputee's age at amputation. Depression and self-esteem are considered as predicting factors of PTSD. Furthermore, the findings reveal no significant differences between depression, anxiety, PTSD, and self-esteem according to the cause of amputation, regardless of the cause of amputation, all amputees go through the same emotional shock. Participants with ankle disarticulation, above-knee, pelvic, and hip disarticulation report more depression and PTSD than those with below-knee and ankle disarticulation. Also, bilateral amputation is shown to be associated with more negative effects than unilateral amputation. The participants reported an increased level of depression, anxiety, and PTSD due to phantom behavior. It is evidenced from the study that younger adults have higher levels of depression, anxiety PTSD, and low self-esteem as compared to older amputees. The findings of this study urge that care for amputees must include mental health practitioners like psychiatrists, psychologists, and social workers, to provide adequate support to this population. The patient may benefit from both psychotherapeutic treatments and pharmaceutical management options.

Keywords: Psychological impact, Lower limb, Trauma, Amputation, Young adults.

Özet

KAMERUN'DA GENÇ ERİŞKİNLER ARASINDA TRAVMATİK ALT EKSTREMİTE AMPÜTASYONUNUN PSİKOLOJİK ETKİLERİNİN İNCELENMESİ.

Eveline Limba Ngwane

Yüksek Lisans Psikoloji Bölümü

Yard. Doç.Dr.Gloria Manyeruke

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Ampütasyon, tıbbi bir hastalık veya yaralanma nedeniyle parmak, ayak parmağı, el, ayak, kol veya bacağı içerebilecek bir uzuv veya ekstremitenin cerrahi olarak çıkarılması anlamına gelir. Bu çalışmanın amacı Kamerun'daki genç yetişkinlerde travmatik alt ekstremitte amputasyonunun psikolojik etkilerini incelemektir. Amaçlı örnekleme tekniği kullanılarak 240 amputeden oluşan bir örnekten veriler toplanmıştır. Veri toplamak için yapılandırılmış bir anket kullanılmıştır. Bulgular amputasyondan bu yana geçen süre içerisinde kaygı ile TSSB arasında pozitif bir ilişki olduğunu göstermektedir. Dahası, depresyon, anksiyete, travma sonrası stres bozukluğu ve özgüvenin ampute kişinin amputasyon yaşıyla pozitif yönde ilişkili olduğu söylenmektedir. Depresyon ve benlik saygısının TSSB'yi öngören faktörler olduğu düşünülmektedir. Ayrıca bulgular amputasyon nedenine göre depresyon, anksiyete, TSSB ve benlik saygısı arasında anlamlı bir fark olmadığını, amputasyonun nedeni ne olursa olsun tüm ampute bireylerin aynı duygusal şoku yaşadığını ortaya koymaktadır. Ayak bileği dezartikülasyonu, diz üstü, pelvik ve kalça dezartikülasyonu olan katılımcılar, diz altı ve ayak bileği dezartikülasyonu olanlara göre daha fazla depresyon ve TSSB bildirmektedir. Ayrıca iki taraflı amputasyonun tek taraflı amputasyona göre daha olumsuz etkilerle ilişkili olduğu gösterilmiştir. Katılımcılar hayalet davranışlar nedeniyle artan depresyon, anksiyete ve TSSB düzeylerini bildirmiştir. Çalışma, genç yetişkinlerin daha yaşlı ampute kişilerle karşılaştırıldığında daha yüksek düzeyde depresyon, anksiyete, TSSB ve düşük özgüvene sahip olduğunu kanıtlamaktadır. Bu çalışmanın bulguları, bu popülasyona yeterli desteğin sağlanması için ampute bakımının psikiyatristler, psikologlar ve sosyal hizmet uzmanları gibi ruh sağlığı uygulayıcılarını da içermesi gerektiğini ileri

sürmektedir. Hasta hem psikoterapötik tedavilerden hem de farmasötik yönetim seçeneklerinden yararlanabilir.

Anahtar Kelimeler: Psikolojik etki, Alt ekstremité, Travma, Ampütasyon, Genç yetişkinler.

Table of Contents

Approval	1
Declaration	2
Acknowledgments	3
Abstracts	4
Özet	5
Table of Contents	7
List of Tables	10
List of Abbreviations	11

CHAPTER I

Introduction.....	12
Statement of the Problem.....	14
Purpose of the Study.....	16
Research Questions.....	16
Significance of the Study.....	17
Limitations	18
Definition of Terms.....	19

CHAPTER II

Literature Review.....	20
Theoretical Background.....	20
Causes Associated with Amputation.....	20
Amputations resulting from injuries.....	21
Amputations resulting from diseases.....	22
Consequences of a Traumatic Lower Limb Amputation	23
Emotional consequences associated with a traumatic lower Limb amputation..	24
Depression and traumatic lower limb amputation.....	24
Depression and the James-Lange theory.....	26

Anxiety and traumatic lower limb amputation.	26
Post-Traumatic Stress Disorder (PTSD) and Traumatic Lower Limb Amputation.	29
Self-Esteem and Traumatic Lower Limb Amputation	31
Physical Consequences Linked to a Severe Lower Extremity Amputation.	33
Theoretical Cases of Phantom Limb Pain and Traumatic Lower Limb Amputation.	35
The Gate or Central Theory.	35
Peripheral Theory.	36
Psychological theory.	36
Social Consequences Associated with a Traumatic Lower Limb Amputation ..	37
Financial Consequences Linked to a Traumatic Lower Limb Amputation.	41
Assistance for individuals dealing with a distressing amputation of the lower lim b.	43
The Pendulating: A Grounded Theory, Associated with A Traumatic Lower Limb Amputation.	46
Preventive Measures for a Traumatic Lower Limb Amputation.	46
Related Studies.	48

CHAPTER III

Methodology	52
Research Design.	52
Population, participants, and sampling	52
Data Collection Tools/Materials	55
Demographic Variable	55
The Patient Health Questionnaire-Depression Scale (PHQ-9)	55
Scale for Generalized Anxiety Disorder (GAD-7).	56
The rating scale for Post-Traumatic Stress Disorder (PTSD-5).	56
The Rosenberg Self-Esteem Scale (RSES)	57
Data Collection	57
Procedure:	57

Data Analysis Procedures	58
Research Plan and Process	59

CHAPTER IV

Results And Conversations	61
---------------------------------	----

CHAPTER V

Discussion	71
------------------	----

CHAPTER VI

Conclusion and Recommendation.	79
Conclusion.	79
Recommendation for Future Research.....	80
Recommendation for Health Professionals in Charge of Caring for Amputees.	80
Recommendation for the Government.	80
References.....	82
APPENDICES	98

List of Tables

Table 1. Participant's Socio-Demographic Characteristics in the Study (n=240)	53
Table 2. The Categorization of Depression, Anxiety, PTSD, and Self-Esteem Levels of Study Participants	54
Table 3. Normality Table	58
Table 4. Research plan.	59
Table 5. Spearman's-Brown correlation relationship between depression, Anxiety, PTSD, Self-Esteem, Year and Age at amputation	61
Table 6. Hierarchical Regression Analysis for Variables Predicting PTSD Scores .	62
Table 7. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to Cause of Amputation.....	63
Table 8. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to amputee's level of Amputation	64
Table 9. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to amputee's laterality	65
Table 10. Differences in Depression, Anxiety, PTSD, and Self-Esteem according to the type of prostheses used by amputees.....	66
Table 11. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to Pain from Prosthesis.....	66
Table 12. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to Phantom Behaviour.	67
Table 13. Differences in amputee's Depression, Anxiety, PTSD, and Self-Esteem scores according to Economic Status	68
Table 14. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to amputee's place of Residence	69
Table 15. Comparison of amputee's Depression, Anxiety, PTSD, and Self-Esteem scores according to Region of Origin	70

List of Abbreviations

TRNC: Turkish Republic of North Cyprus

MNE: Ministry of National Education

APHA: America Public Health Association

ACA: Amputees Coalition Association

APRPLDCAM: Association For the Promotion of the Rights of People Living with Disability

CDCP: Center for Disease Control and Prevention

ICPPD: International Convention for the Protection of persons with disability

ICD: International Classification of Diseases

ICED: International Center for Evidence in Disability

ICFDH: International Classification of Functioning Disability and Health.

L4LA: Limb4Life Association

LLA: Lower Limb Amputation

MINAS: Ministry of Social Affairs

NCR: National Rehabilitation Canter

NIMH: National Institute of Mental Health

PL: Prosthetic Limb

SPSS: Statistical Package for the Social Science

SPPRDP: Service for the Protection and Promotion of the Rights of Disabled Persons,
MINAS

ULA: Upper Limb Amputation

UNFPA: United Nations Population Fund.

UDHR: Universal Declaration of Human Rights

WHO: World Health Organization

WHO: World Health Organization

CHAPTER I

Introduction

Amputation is not a new phenomenon, but it remains a significant economic and social issue plaguing the world today despite being in the new era of advanced medical intervention (Maloney et al., 2022; Handwerk, 2022; Terry, 2022, Rosca et al., 2020). Amputation refers to the surgical procedure of eliminating a limb or extremities, such as a finger, toe, hand, foot, arm, or leg, as a result of a medical condition or an injury (WHO, 2022; Boakye, 2022). An individual who has undergone amputation is commonly known as an amputee (IPA guide, 2023). Some amputees get artificial limbs called prosthetics that allow them to regain some of the mobility and functions they enjoyed before the amputation of their limb. (Heiligenberg et al., 2018).

The issue of amputation poses an alarming concern since individuals experiencing amputation may suffer more stress and undesirable feelings of despair, sadness, grief, anger outburst, isolation, loneliness, and regret, which might disrupt their future (Frizzi & Prebianchi, 2018; Howard et al., 2023; Hood, 2023; Celerio et al., 2017). Consequently, in cases where there is no emotional support, some amputees may endure severe dissatisfaction, and develop anxiety, stress, and depression, which may drastically decline their self-esteem. And suicide attempts are also associated with the psychological problem experienced by amputees (Phelps, 2020; Ertl et al., 2018).

Amputation has a substantial effect on the amputee's life (NCFPTSD, 2023; Akoe et al., 2019; Fleming et al., 2022). Despite overcoming the tremendous surgical and recovery stages, some amputees may be triggered by memories and thoughts of flashbacks, nightmares, and phobia of the past traumatic event that caused the amputation (Amputees Coalition, 2023; NCFPTSD, 2023). The amputee may experience post-traumatic stress disorder as a result of this situation, which can eventually lead to instances of anxiety and depression. (WHO; 2022; NCFPTSD, 2023).

Traumatic amputations may be devastating for people who need to rely on their strength and bravery to survive (Phair et al., 2018; Cheng et al., 2019; Ashok & Harsha, 2020). When individuals experience disappointment and frustration from being amputated, this interferes with their learning ability and their employment status

(Henson, 2020; Fleming et al., 2022). If care is not taken, they may develop feelings of anxiety which may lead to depression and later on a decline in the amputee's self-esteem (Ramjaun, 2019; Pechman & colleagues 2019).

Moreover, individuals faced with traumatic limb amputation are not emotionally or mentally equipped for such surgical intervention. Unlike those with non-traumatic amputation, as a result, they have more difficulties accepting amputation and adapting to life after the procedure which may result in stress associated with depression (Nuray et al., 2020; Pechman & colleagues 2019). Consequently, they engage in behaviors that are harmful to themselves, their families, and society, such as wrath, grief, arrogance, aggressiveness, rudeness, and troublesomeness (Simsek et al., 2020; Fleming et al., 2022).

Amputation also has an impact on the amputee's identity and self-esteem (Biosclair & Mandall, 2021; Ertl et al., 2018). Feelings of anxiety and despair may be prompted by the perceived stigma and prejudice that amputees occasionally experience in society (Nuray et al., 2020; Simsek et al., 2020). This problem may be associated with non-participating in decision-making, and non-appointment to a duty post. (Jo et al., 2021; Tutak, 2020). The frequency of stigmatization is associated with a decline in the individual's self-esteem. An outcome of this could be an increased occurrence of anxiety and depression, as noted by Phelps, 2020; Gebrellassie et al., 2018; Lazzarini et al., 2012) This may result in a high level of anxiety and depression (Phelps, 2020; Gebrellassie et al., 2018; Lazzarini et al., 2012).

In addition, most amputees are been devalued, misrepresented, and stereotyped in society and by their peer groups because of their amputation (Derrick, 2018; Frizzi & Prebianchi, 2018). Stigma can have a wide range of social and economic consequences for individuals, their families, and the community as a whole (Xiuqun 2019; Frizzi et al., 2022). Notwithstanding, this condition might affect the individual's coping ability while interacting with peers, collaborating with colleagues, and in challenging circumstances at home with families and friends (Xiuqun 2019; Alessa et al., 2022). Consequently, the amputee may suffer from psychological distress such as loneliness, isolation, and social phobia which may later on lead to anxiety and depression. (Alessa et al., 2022; Freyja et al 2019).

Amputation also causes individuals to question their self-image and self-worth, especially in situations where they lose employment due to amputation (Wise 2017, Phelps, 2020). Unemployment lowers their financial status drastically alters their

lifestyles, careers, and recreational activities, and prevents them from establishing and maintaining relationships with others (Contessa et al., 2023; Kuschmider et al., 2021). As such, it may result in a state of stress, depression, and a decline in the individual's self-esteem (Wise 2017).

Despite medical intervention and drugs to relieve pain and prevent infection following amputation, the individual struggles with acceptance and coping techniques (WHO, 2022; Amputees Coalition, 2023). Depression, anxiety, anxiety, and stress can lead to the deterioration of individual quality of life, including social interactions, interpersonal connections, self-confidence, and occupational performance (Mohammed, et al. 2020; Hasha et al., 2020). Traumatic amputation is a serious and difficult issue that affects millions of people globally (WHO, 2022; Amputees Coalition 2023). While the experience of lower limb extremity can be unpleasant and difficult, individuals having the disability can live full and meaningful lives by increasing awareness of the repercussions of lower limb amputation (Jasmin 2013; Radhi & colleagues, 2020).

This research aims to examine the psychological impacts of traumatic lower limb amputation among young adults in Cameroon.

Statement of the Problem.

According to estimates, approximately 57.7 million individuals worldwide have undergone amputation. The United States alone conducts roughly 185,000 amputations annually, and it is projected that by 2050, around 3.6 million people will be living with a missing limb (WHO, 2022; Amputees Coalition, 2023). In Cameroon, an estimated of about 826 cases of lower limb amputation were reported (WHO, 2019; Tamfu et al., 2023). About 17 percent are found in rural areas, and slightly about 35 percent of amputees are found in urban areas (Alegbeleye, 2020; Tamfu et al., 2023). As a consequence of the amputation, individuals who have undergone amputation experience various social and psychological difficulties. (Yamben et al., 2022; Tchokote et al., 2023; Sarah, et al., 2023). According to a growing body of national and international studies, amputation is associated with several risks such as health issues, social and emotional distress (WHO, 2022; Amputees Coalition, 2023; Touevi-koko, 2023).

In Cameroon, lower limb amputation has also been reported to cause psychological distress for amputees (Horgan & MacLachlan, 2004). Individuals with

amputation are stigmatized, devalued, marginalized, and excluded from the society. This situation puts them in a state of depression, anxiety, PTSD, and a decline in their self-esteem. (Sweet, 2020; Elsgenawy, 2023). Amputations are perceived as intentional acts and even justifiable. Individuals who have undergone amputations are regarded as objects of fascination, a result of a mishap while walking, and a cautionary example for the rest of society. (Sahu 2017; Rosca, 2021). In Cameroon, amputees are locally named: *moto ma iyende*, *epassa moto*, or *ebwoa*, meaning half person. Boakye et al., (2022) noted that, when amputated individuals are excluded from decision-making, they perceive the rejection as a result of their incurable disability. This reaction also hurts the individual's well-being (Potok, 2023).

Amputees experience a high rate of depression when their rights are not respected. (Amputee Coalition, 2023; WHO, 2022) This causes behavior and attitude modification. As a strategy to fight for their rights, they adopt behaviors such as anger, aggression, arrogance, rudeness, disrespectfulness, and brutality as a means of self-defence and coping strategy (Potok, 2023). Their dysfunctional actions create a sense of isolation from the community, leading to heightened levels of stress, anxiety, and depression. Consequently, society becomes apprehensive and loses towards matters that pertain to these individuals. (Behera et al., 2021; Abouammoh et al., 2021; Canbolat et al., 2022).

Amputation is associated with poor health conditions (Turner et al., 2021). It is important to mention that individuals who undergo amputation may experience complications after surgery, including persistent pain in the remaining limb, sensation of a nonexistent limb, swelling, tightness, and reopening of the wound. This problem causes individuals to develop a lifetime phobia of re-amputation (Wong et al., 2021; Karaali et al., 2020).

Amputation is also linked to increased chances of divorce. (Rene, 2020). The number rises even higher when the disability affects the woman. When the balance in a marriage or relationship shifts drastically toward one person, feelings of guilt, resentment, and anger predictably emerge and dissolve the relationship. Severe depression and post-traumatic stress disorder (PTSD) are linked to the act of divorce. (Rahim et al., 2022). Celeiro et al., (2017) noticed that amputation is associated with stress and depression due to dependency. Amputees in their early stage of amputation find it difficult to carry out their daily functions as usual. In the course of adaptation to their new state of life, they have no choice other than to depend on their families

and friends (Boakye et al., 2022). When the dependency becomes monotonous, it results in complaints by their helpers. This situation arouses thoughts and anxiety in the amputee which might later be associated with depression (Diego, 2019).

Individuals with unplanned amputation have greater rates of suicidal thoughts than their counterparts with planned amputation (Vazquez et al., 2018). Individuals with lower limb disabilities may view suicide as a way to resolve the challenges they encounter and are more likely to engage in suicidal behaviors (Ogedegbe et al., 2021; Tchente et al., 2015; (Hogan et al., 2022). Suicidal thoughts among amputees arise in situations when they are unable to accept their status. Benjamin et al., (2019) stated that a loss of function is synonymous with a loss of employment. Amputees have problems reintegrating into the labour force after amputation. To be re-employed, they must obtain specialized training for their new function, which is prohibitively costly, and they are stressed as a result of this predicament (Roopa, 2016).

Considering the increase in stigmatization, rejection, divorce, unemployment, vulnerability, reliance, segregation, suicidal attempts, and branding that impact amputee's lives, it is important to examine the well-being of this population. The objective of the present research is to examine how depression, anxiety, PTSD, and self-esteem are interconnected as the psychological consequences experienced by young adults in Cameroon who have undergone a traumatic amputation of the lower limb.

Purpose of the Study.

This research investigates how depression, anxiety, post-traumatic stress disorder, and self-esteem are related in a group of individuals who have experienced traumatic amputation in their lower limbs

Research Questions.

Based on the problems used in this study, the following research questions were developed.

1. Is there a relationship between depression, anxiety, PTSD, and self-esteem, year, and age at amputation?
2. Does depression, anxiety, and self-esteem predict PTSD among amputees?
3. Are there significant differences between depression, anxiety, PTSD, and self-esteem according to the cause of amputation?
4. Are there significant differences between depression, anxiety, PTSD, and self-esteem according to the level of amputation?
5. Are there significant differences between depression, anxiety, PTSD, and self-esteem according to the laterality of amputation?
6. Are there significant differences between depression, anxiety, PTSD, and self-esteem according to the type of prosthesis used by amputees?
7. Is there a relationship between depression, anxiety, PTSD, and self-esteem based on pain caused by the prosthesis?
8. Are there significant differences between depression, anxiety, PTSD, and self-esteem according to phantom behavior?
9. Are there significant differences between depression, anxiety, PTSD, and self-esteem according to demographic factors such as economic level, place of residence, and region of origin?

Significance of the Study.

Studies have been conducted on this particular topic in Cameroon and the rest of the world. In Cameroon related studies on amputations were conducted only with inmate patients and through consultation of files of past amputation cases (Alegbeleye, 2020; Tangnyin et al., 2020; Chunteng et al., 2022). The studies were mostly conducted in hospitals in the Central and North West Regions (Tangnyin et al., 2020). Elderly adults were mostly used and the sample sizes were small. Studies mainly focus on the care, risk, complications of amputation, and also the epidemiology of amputation. In the rest of the world, the study periods were limited to six months after amputation. Demographic variables such as marital status, religion, and cause of amputation, were not studied. Retrospective and observational prospective methods were the most used in the studies (Noblet et al., 2019; Rosca et al., 2021; Alessa et al., 2022; Lucas et al., 2014; Sing et al., 2007).

The present study uses a bigger sample size of young adults and includes the ten regions of Cameroon. The current study will benefit amputated individuals by educating them on the psychological factors that can impact amputees. It further provides the Ministry of Social Affairs with information regarding the psychological aspects that could negatively impact the well-being and mental state of an individual who has undergone amputation. The current study will be beneficial to the Ministry of Public Health in that, they will acquire knowledge of the psychological factors that may impact the lives of amputees this can raise awareness of the need for specialists, such as psychologists, social workers, etc., in the intervention team during the treatment plan. In society, the outcomes of this research will have valuable implications because psychology is currently playing a significant role in science and technology. Additionally, the amputee's family and colleagues will gain knowledge regarding the factors that may influence the amputee's mental well-being. Equipped with this knowledge, they will be able to support the individual in their new circumstances. Lastly, for researchers, this study will aid in identifying crucial areas in the research process that have been previously unexplored.

Limitations

- Using a structured questionnaire possibly confines the respondents to pick their answers from the provided options, unlike some participants who could have more ideas to contribute to the study if it were an open-ended question.
- During data collection in West Cameroon, the ongoing civil war, lack of electricity, government prohibition, and volatile life conditions hindered the use of electronic Google forms.
- Some amputees were unreachable because they were not present in the rehabilitation centers during data collection. As a result, this reduced our population sample size. Further research is needed on a more open population in neighborhoods and rehabilitation centers to have a bigger sample.

Definition of Terms

Psychological Impacts. Refers to the emotional response, whether positive or negative, that is prompted by various environmental or biological factors within the social context of an individual (Karthikeyan, 2022).

Lower Limb. It is the bodily portion that encompasses the leg, ankle, and foot. (Cluett et al., 2022).

Trauma. Represents an emotional reaction to a distressing incident, such as an accident, sexual assault, or natural calamity (APA, 2023).

Amputation. it is the medical procedure or occurrence of losing a body part, such as a toe, finger, hand, arm, or leg, as a result of illness or injury (Dunkin, 2022).

CHAPTER II

Literature Review

In this present study, the literature review is divided into two parts: the theoretical framework and relevant previous studies. The review encompasses an examination of different factors leading to amputation, the consequences it brings, the assistance provided to amputees, and measures taken for the prevention of lower limb amputation.

Theoretical Background

Limb salvage, a surgical method that has been practiced since ancient times according to Hippocrates, is presently performed to treat limb damage as a result of various injuries or illnesses (Asirdizer et al., 2022; Milagros, 2020). More amputations occur among men than women because men are the most engaged in professions that can lead to injuries such as driving, operating machines, building construction, and combat (Maciver, 2023). The age range mostly affected by amputation is 18 to 45 years because the individuals are more likely to be of working age, be in education, and have responsibilities such as independent children. (WHO, 2022; Maciver, 2023; Jonas et al., 2021). Amputating the lower limb extremity can be performed at various levels, including below-knee amputation, knee disarticulation, ankle disarticulation, above-knee amputation, hip disarticulation, and pelvic amputation (WHO, 2022; Jaimie, 2022).

Causes Associated with Amputation.

Amputation is classified into two categories: traumatic and non-traumatic amputation (WHO, 2022, Zepeda, 2022). The main difference between traumatic and nontraumatic amputation lies in the cause of the amputation. Traumatic amputations occur due to injuries that harm blood vessels, usually resulting from car accidents, gunshot wounds, accidents involving mechanical equipment, or tool accidents. Impaired blood flow is the primary cause of the necessity for a

non-traumatic amputation (Nall et al., 2022; Zepeda, 2022). Patients with severe vascular disease, diabetes, infections, or certain malignancies are the most likely to require a non-traumatic amputation (WHO, 2022; Azura, 2018).

Amputation surgeries prevent the spread of infection to other parts of your limb or body (WHO, 2023; Zepeda, 2022). Amputations are performed both urgently and willingly to relieve pain, permit independence, and restore function (Moore, 2023). Furthermore, amputation is performed to preserve functional length and usable sensitivities prevent symptomatic neuromas, prevent adjusted joint contractures, offer early prosthetic fitting, and return the patient to work and recreation as soon as feasible (Simcha, 2022). Injury, such as a serious burn or an accident, or cancer in a limb are two other reasons you could need this operation (Gebrellassie et al., 2018). Amputation may also be performed in cases of severe infections that do not respond to medications or other treatments (Dunkin, 2022). Individuals who have had an amputation may require a prosthetic limb following surgery to correct the problem (Molina et al., 2022; Hugh, 2023). Prosthetics are becoming lightweight and highly functional for amputees to maintain a busy lifestyle after amputation (Gebrellassie et al., 2018). The main causes of amputations include injuries and diseases.

Amputations resulting from injuries.

According to the World Health Organization (2022), injuries are one of the causes that are linked to traumatic lower limb amputation. They reported that road traffic accidents, farming accidents, accidents at work, burns military injuries, or electrocution are the most common types of injuries that lead to a traumatic amputation (WHO 2022; Moore, 2023; Mc Nicolas et al., 2022). Salo et al. (2020) found that the most prevalent cause of injuries is due to insufficient or inadequate information put at the disposal of the population. In addition to this, Johnson. (2020) mentioned that road accident is known as the major cause of traumatic injuries that lead to amputation. Consequently, the cause can be equated to bad roads, non-respect of driving code, reckless driving, and excess speed. Statistically, traumatic injuries account for more than 45% of all amputations (WHO, 2022; Jonas et al., 2021). Notwithstanding, if the proper protocols are put in place, such as rehabilitation of roads, installation of traffic devices, reinforcement of training, etc., the majority of

limb amputations caused by accidents could be avoided (Pasco et al., 2021; Moore, 2023; Mc Nicolas et al., 2022). In situations such as a car or sports, accidents where amputation is necessary, there is typically, limited time to process the reality of losing a limb. The immediate focus is on preserving the individual's life, making limb amputation an urgent and potentially life-saving measure (Boisclair et al., 2021; WHO, 2022; Mc Nicolas et al., 2022). Pasco et al. (2021) found out that, in situations of traumatic injuries that necessitate amputation in cases where the injured individual is unconscious and incapable of decision-making, a responsible party, be it a friend or a family member is required to make decisions on their behalf (Moore, 2023). In addition, when an accident results in limb amputation, psychological and emotional recovery are just as vital as physical therapy (Cassi et al., 2022; Moore, 2023; Hood, 2023). These incidents are very severe and, if not treated correctly, can result in long-term damage to the victim's mental health (Bay, 2021; Mc Nicolas et al., 2022; Pasco et al., 2021; Salo et al., 2020).

Amputations resulting from diseases.

Peripheral Artery Disease (PAD) is a leading cause of limb amputation, with prevalence supported by (WHO, 2022; Pearland et al., 2022). This condition, commonly referred to as poor circulation, involves the hardening of arteries, compromising blood flow, and posing a significant risk of amputation. (WHO, 2022; Azura, 2018; Zepeda, 2022). When blood flow is inadequate, the cells in the limb do not receive enough oxygen from the circulation, causing tissue to decay and making the individual vulnerable to amputation (Zepeda, 2022; Azura, 2018). Furthermore, diabetes is another illness that results in limb amputation (WHO, 2022; Zepeda, 2022; Pagan et al., 2023). Noe et al., (2023) found out that diabetes, like PAD, causes amputations because it affects blood flow and brings the individual's limbs to an unmanageable state that will necessitate amputation as the last resort.

Vascular disease complications account for around 54% of all surgical amputations (WHO, 2022). Consequently, diabetic patients may have cramping in their legs as well as discomfort in their thighs, calves, or buttocks (Zepeda, 2022; Neo et al., 2023). Pearland et al. (2022) mentioned that diabetic patients may have difficulty

detecting indicators of impaired circulation in some circumstances which may result in amputation in the future. Cancer is another cause associated with amputation (WHO, 2022; Behroozian et al., 2020; Zepeda, 2022; Azura, 2018). Although less prevalent, some types of cancer can cause lower limb amputation such as sarcoma (WHO, 2022; Kirilova et al., 2021; Houdek, 2022). Although cancer-related amputations are performed to prevent the spread of the disease, they constitute a minor proportion, less than 2%, of all amputations, according to the World Health Organization (WHO, 2022). However, the situation becomes more critical when sarcomas attack the bones and soft tissues in the limbs. In such cases, if the cancer proves to be extremely aggressive or extensive, amputation may be necessary as it becomes challenging to completely remove the tumour. Consequently, if the cancer does not recur in time, it could spread to the nerves and blood vessels which will lead to the amputation of the limb to save the victim's life. (WHO, 2022; Behroozian et al., 2020; Pagan et al., 2023; Azura, 2018; Zepeda, 2022).

Consequences of a Traumatic Lower Limb Amputation

Amputation, both during the surgery and in the aftermath, is a stressful procedure that is seen as a threat to one's bodily integrity (WHO, 2022). It can lead to physical pain and initiate or worsen a series of disharmonies that affect the patient's well-being (Khan et al., 2018; Clappers 2013; Chen et al., 2005). The the decision to amputate a limb is difficult for medical professionals, the patient, and their family, as it instills fear of losing a visible part of one's body and generates a genuine feeling of disintegration (WHO, 2022 Khan et al., 2018; Bergo, 2022; Prebianchi, 2018). Although amputations are necessary to save a life, they significantly impact the patient's daily life, especially in terms of psychological interactions (WHO, 2022; Chen et al., 2005). Physical disability resulting from amputation can lead to despair, sadness, uneasiness, worry, loss of self-esteem, stigma, isolation, and acceptance of one's weakness (WHO, 2022). The consequences of a traumatic lower limb amputation can be categorized as emotional, physical, health-related, social, and financial (Prebianchi, 2018; Ladlow et al., 2023).

Emotional consequences associated with a traumatic lower Limb amputation.

According to the World Health Organization (WHO), an amputation of a limb can have significant psychological effects. People who have undergone amputations may experience emotions such as grief and bereavement, similar to the feelings associated with the loss of a loved one. (Perkins et al., 2012; WHO, 2022; Ertl et al., 2018). The psychological impact of amputation can be attributed to three main factors: the loss of sensation and function in the amputated limb, as well as changes in one's body image and how others perceive it (WHO, 2022). Ertl et al. (2018) have also highlighted these factors. It is common for individuals to have negative thoughts and emotions about an amputation particularly those who undergo emergency amputations without enough time for psychological preparation. (Clasper et al., 2013; Simsek et al., 2020; Perkins et al., 2012). Post-amputation, individuals often experience depression, anxiety, post-traumatic stress disorder, self-esteem issues, denial, and grief (WHO, 2022; Rankin et al., 2021; Clasper et al., 2013).

Depression and traumatic lower limb amputation.

The loss of a limb can have severe psychological and emotional consequences, not only for the person affected but also for their loved ones, including family, friends, and colleagues (WHO, 2022; Sahu et al., 2016). Traumatic amputation, in particular, can lead to the development of depression, which is a common side effect both in the initial stages of the injury and later on (Phelps, 2020; Ertl et al., 2018). Depression is a mood disorder characterized by persistent feelings of sadness and a lack of interest (WHO, 2022). It significantly impacts the emotions, thoughts, and behaviors of individuals who have had their limbs amputated (WHO, 2022; Perkins et al., 2012).

Depression can lead to various emotional and physical issues such as feeling sad, crying frequently, and having a sense of emptiness or hopelessness. It can also result in angry outbursts, irritability, or frustration, as well as a loss of interest or enjoyment in regular activities (WHO, 2022; Phelps, 2020; Varayil et al., 2023). Additionally, individuals with amputation may experience sleep problems, fatigue, lack of energy, reduced appetite, weight loss, or an increased appetite and weight gain (Varayil et al., 2023). Furthermore, common symptoms of depression among

amputees include anxiety, restlessness, slower thinking, speaking, or physical movements, and unexplained health issues like back pain or headaches (WHO, 2022; Varayil et al., 2023; Phelps, 2020; Ertl et al., 2018).

Depression is stated as being among the most common types of mental health in line with the National Institute of Mental Health (2023) issues experienced by amputees, and the prevalence of depression among amputees coexists with anxiety. Depression can be moderate and mild or severe and chronic (Varayil et al., 2023). For example, some amputees feel sadness after six months of their amputation, while others may have it throughout their new life (Perkins et al., 2012; Varayil et al., 2023; Malissa et al., 2012). The distinction is evident in that, despite their amputation, some amputees preserve their status, such as work and financial stability (Rosca, 2023; Perkins et al., 2012; Ertl et al., 2018). While others abruptly lose everything upon amputation (Phelps, 2020; Varayil et al., 2023). Amputees might experience feelings of depression when they have been under prolonged stress due to the ongoing challenges that arise from their amputation, such as relying on other or assistive devices and being unable to regain their previous level of functioning. (Perkins et al., 2012; varayil et al., 2023; Malissa et al., 2012). Amputation results in an irreversible physical condition that can lead to feelings of powerlessness, this could potentially elevate the likelihood of experiencing depression (WHO, 2022; Varayil et al., (2023). Furthermore, depression may result in additional functional impairment and poor compliance with therapy (Jung et al., 2023). An individual with amputation who experiences intense depression may encounter challenges in performing ordinary daily tasks and may perceive life as lacking value. (Noblet et al., 2019; WHO, 2022).

Melissa, (2012), contributed that, amputation has resulted in emotional traumas like depression. Amputees experience emotional trauma as a result of feeling unsafe, helpless, and lonely. Depression can be seen as a consequence of Continuous amputation experience (Malissa et al., 2012; Varayil et al., 2023). Individuals who have undergone amputation may also feel a sense of grief and loss related to their missing limb, which has been compared by some to the mourning experienced after the death of a loved one. Consequently, Persistent thinking causes the amputee to acquire a sense of loss, which can lead to depression. (Kuschmider, 2021; Albizzati et al., 2014). According to research by Hall et al., (2017), amputees are prone to feel

depressed due to their new body image. Major lower-limb amputations continue to be a difficult problem. Amputees face challenges when it comes to sleeping, focusing, and remembering things, leading to concerns and sadness. Consequently, depression can negatively influence the professional and personal aspects of amputees' lives. (WHO, 2022; Amputees Coalition, 2023; Varayil et al., 2023).

Depression and the James-Lange theory.

For a better understanding, the James-Lange theory proves that what counts most is how the amputees react to this trauma (Cherry, 2022). Furthermore, research conducted by (Karen et al., 2012) shows that depressed women are more likely to exhibit bad parenting habits including being unreliable, controlling, or negligent because they believe that their husband disregards them due to their amputation and this causes them to be depressed.

Anxiety and traumatic lower limb amputation.

Anxiety is an emotion characterized by an unpleasant state of inner turmoil. Anxiety involves emotions of dread over impending occurrences (Noblet et al., 2019; Garcia et al., 2015). Often, it is accompanied by muscle stiffness, a feeling of restlessness, fatigue, difficulty breathing, tightness in the abdomen, queasiness, and difficulties with focus and attention (WHO, 2022; Hezien et al., 2021; Coporuglu et al., 2010). Individuals who have had amputations experience anxiety, which is strongly associated with fear, Fear is seen as a reaction to a real or imminent threat, such as dread (Rosca et al., 2021; Ghai et al., 2023). Furthermore, amputation can cause psychological and behavioural issues, which can lead to thoughts and worries, this situation may destabilize amputees' lives and may lead to self-harm or suicide (Esquenazi et al., 2021; Rankin et al., 2021). Moreso, as a behavioral effect, anxiety may cause individuals to retreat from z that caused the amputation or bad sensations in the past. As well as an increase in motor tension, such as foot tapping (McKechnie et al., 2014). Because of these circumstances, the amputee may feel worthless and may consider suicide as a better choice (Esquenazi et al., 2021; Pedras et al., 2018).

People who have had amputations are at a higher risk of encountering violence, overeating, substance abuse, confusing behavior, and sadness (Phelps, 2020). This condition is noticed, especially when the amputated individual believes the purpose of the surgical intervention was just to save his life, not to restore his injured limb (Karen et al., 2012; Hall et al., 2017). Consequentially, amputation may appear to be a downward spiral for the amputee, which may cause the individual to develop episodes of anxiety and may also drastically affect his quality of life through exposure to societal ills such as addiction (WHO, 2022; Karen et al., 2012). Favorably, with the presence of professional assistance and the support of those around him, the individual who has undergone amputation should have the capacity to effectively go through the five phases of mourning, which commences with refusal and seclusion, advances to anger, bargaining, and depression, and eventually reaches the ultimate stage of acceptance (Bandas and colleagues, 2021).

Leister et al. (2023), mentioned that amputees may also have cognitive disturbances caused by anxiety, such as concerns about potential threats like dread of death. Meanwhile, an example of this is narrated by Varayil et al. (2023), an individual with amputation may think that his chest aches are the consequence of a fatal heart attack or that the shooting sensations in his head are caused by the amputation. Whereas Pedras et al. (2021) discovered that, amputees experience tremendous fear when they think of comorbidities related to their amputation such as cardiovascular diseases which may result as a complication of the traumatic occurrence of their injury (Karen et al., 2012; Rachin et al., 2022). This condition is also noticed when amputees think about the source of their amputations more frequently than usual, and when they can't get it out of their minds (Garcia et al., 2015; Pedras, 2019; Rankin et al., 2021). Consequently, the amputees are prone to developing generalized anxiety which will drastically affect their standard of living (Bhutani et al., 2016; Varayil et al., 2023).

Amputees face continual feelings of monitoring and waiting for indicators and occurrences of additional risk on the remaining limb (Mckechnie et al., 2014; Rachin et al., 2022). This idea causes the amputee to experience nightmares. They also experience bad dreams, preoccupation with sensations, a trapped-in-the-mind feeling, and the impression that everything is frightening (Leister et al., 2023; Mckechnie et al., 2014). A foggy experience and a sense of powerlessness may also be present (Khan et al., 2023). These conditions leave the amputees in a state of thoughts, loss, and

frustration, and consequently, an inability to focus is noticed. (Pedras et al 2021; Rachin et al., 2022).

Moreover, individuals who have had an amputation may experience body image concerns, particularly when it comes to the look of their amputated leg (Simsek 2017; Pomares, 2020). Body image concerns in amputees arise from their perception of their physical appearance and overall self-worth (Kuschmider, 2021; Skoff et al., 2022). Adapting to the absence of a limb can be challenging, considering that a person's body image typically includes four limbs. It is common for individuals who have experienced an injury to deliberately or unconsciously conceal their affected limb, either to prevent drawing attention to it or due to apprehension about the reactions of others. (Asheville et al., 2023; Pedras et al., 2019). The amputee may develop anxiety due to thoughts of how to go about with their new look which will consequently result in depression and a decline in self-esteem. Typically, young children who have undergone amputation do not experience significant body image concerns: however, this concern tends to become more noticeable during adolescence (Jo et al., 2021).

On the other hand, individuals who have experienced trauma respond in unique ways and grapple with uncertainty regarding their future opportunities (Kuschmider, 2021; Asheville et al., 2023). The psychological issues linked to amputation diminishes when a prosthesis is implemented promptly (WHO, 2022). Recognizing anxiety as a psychological repercussion of lower limb amputation proves valuable for medical practitioners as it enables them to create effective counseling and rehabilitation schemes. (Rosca et al., (2021). Individuals with amputation may experience anxiety in the form of long, drawn-out daily symptoms that reduce the quality of life (WHO, 2022). This condition is known as chronic or generalized anxiety, or in short bursts with sporadic, stressful panic attacks, known as acute anxiety (Leister et al., 2023; Bhutani et al., 2016; WHO, 2022).

Moreover, due to the occurrence of amputation, individuals who undergo this procedure may experience varying levels of anxiety symptoms in terms of quantity, intensity, and frequency, which is specific to each person. Moreso, Leister et al. (2023) claimed that anxiety disorders are among the most chronic mental difficulties faced by amputees and can linger for decades if not treated. Individuals who have had

an amputation may have anxiety that may last longer than the appropriate period as a result of their rehabilitation (Ladlow et al., 2023, WHO, 2022). If appropriate measures are not taken, the aforementioned scenario could lead to various anxiety disorders such as generalized anxiety disorder and panic disorder (WHO, 2022; Noblet et al., 2019). Consequently, the psychological well-being and quality of life of the amputee may be significantly affected by the situation. (WHO, 2022; Ertl et al., 2018).

Post-Traumatic Stress Disorder (PTSD) and Traumatic Lower Limb Amputation.

Posttraumatic stress disorder (PTSD) is a psychiatric condition that may arise following an individual's exposure to a particular event that involves threatening or actual significant damage to himself or others, resulting in a response of fear, helplessness, or terror (Sha, 2018). Because of the emotional trauma associated with the event, amputation as a consequence of unintentional damage may result in a greater prevalence of PTSD (Copuroglu et al., 2010). Experiencing the traumatic incident again can take the form of undesired recollections, vivid nightmares, reliving past events, or strong responses like a racing heart or sudden panic. (WHO, 2022; Clasper et al., 2013). When reminded of the event, it may cause the individual to develop behavioral modification such as feeling wound up; experiencing trouble with sleeping or focusing; feeling irate or agitated; engaging in risky behavior; being easily startled; or consistently being vigilant for potential threats. (Sahu et al., 2016).

Furthermore, refraining from recalling the occurrence of behavior modification, such as engaging in certain activities, visiting particular places, interacting with specific individuals, contemplating certain ideas, or experiencing certain sensations that trigger memories of the trauma, can assist the amputee in overcoming the disorder (Rosca et al., 2021; Noblet et al., 2019). As a result, negative thoughts and emotions, including constant fear, anger, guilt, emotional numbness, loss of interest in daily activities, and feeling isolated from loved ones can profoundly impact the mental well-being of the amputee (WHO, 2022). A person who has suffered a traumatic amputation is more prone to experiencing the emotional and psychological consequences of post-traumatic stress Disorder (PTSD) compared to those who have undergone a planned surgical amputation, since they have not had the opportunity to mentally prepare for the

loss of their limb. (Rahim et al., 2022).

While some psychological symptoms are caused by the first traumatic injury such as the accident such as depression and anxiety, others such as PTSD are said to emerge gradually as the amputee adjusts to their impairment (Jo et al., 2021). Moreover, it is crucial for individuals who have undergone traumatic amputations to acknowledge the potential occurrence of post-traumatic stress disorder (PTSD). The patients' psychological health should be monitored consistently after the event. (Amputees coalition 2023). According to these ideas, amputees are more prone to become angry in response to stress, but their anger is also more likely to be accompanied by other unfavorable feelings like guilt and worry (Tietjen et al., 2023).

PTSD and the dual representative theory.

As per the dual representation theory, several manifestations of PTSD, including nightmares, flashbacks, and emotional disruption, could be linked to memory mechanisms that take place following a traumatic event (Brewin et al., 1996). In the dual representation theory, two distinct memory systems operate simultaneously in memory formation: the vocally accessible memory system (VAM) and the situationally accessible memory system (SAM). Calabrese et al. (2023) stated that the VAM consists of consciously processed information that can be intentionally recollected or communicated. On the other hand, the memory a system that can be accessed in certain situations stores sensory information that has been processed unconsciously and cannot be intentionally recalled. According to this perspective, the traumatic experience causes damage to the voluntary attention in the memory system as attention is primarily directed toward threatening information, leading to a trauma memory that is predominantly focused on fear. This has an impact on the processing of information and gives rise to symptoms of posttraumatic stress disorder (PTSD) such as thoughts, assessments, and emotions related to the trauma. During a traumatic event, the involuntary attention memory of the system records vivid sensory information, which is automatically retrieved when exposed to stimuli related to the trauma. This system is believed to be responsible for the occurrence of flashbacks and nightmares in individuals with PTSD (Strong, 2020).

Self-Esteem and Traumatic Lower Limb Amputation

Aside from the major impact of depression, anxiety, and PTSD faced by amputees, self-esteem is another concern. The American Psychology Association (APA, 2022) defines self-esteem as an individual's sense of worth or value, based on subjective feelings. It reflects a person's level of confidence in their abilities and characteristics. Rosca et al. (2021) suggest that age, disability, genetics, health conditions, physical capabilities, and socioeconomic status are some of the various factors that might influence an individual's self-esteem. Having low self-esteem can potentially lead to several mental health issues. Amputees may face difficulties in pursuing their goals and maintaining healthy relationships because their self-esteem is affected by amputation (WHO, 2022; Ghai, 2023). The decline in self-esteem can have adverse effects on an amputee's quality of life and increase the risk of suicidal thoughts (Ghai, 2023; WHO, 2022). According to Radhi et al. (2022).

A significant number of amputees exhibit a negative outlook on their body image and experience a loss of self-confidence due to the amputation. This situation contributes to heightened stress, which can result in anxiety, despair, and further deterioration of their self-esteem, potentially leading to suicide attempts. Amputation diminishes the capacity of amputees in various aspects including decision-making, interpersonal connections, emotional wellness, and overall quality of life (Saroca et al., 2021; Holzer et al., 2014; Abdulrazaq et al., 2022). Because of a reduction in amputee's self-ability as a result of amputation, individuals lack the power to make decisions to advance in their abilities. As a result, the amputees may rely on others, such as family members or friends, to assist them in decision-making. As a result, if the activity does not go well, the amputee may get despondent, and his self-esteem may suffer. Amputation also affects the degree of motivation of amputees (Rankin et al., 2021). This condition is particularly common when individuals who have had their limbs amputated have an unhealthy and poor self-image (Rankin et al., 2021; Sha et al., 2018). Consequently, this issue could result in individuals not being aware of their capabilities and lacking the drive to attempt new tasks. (Radhi et al., 2022; Abdulrazaq et al., 2022).

Stigma and prejudice have also been proven to lower amputee's self-esteem (Ladlow et al., 2023, Hezien et al., 2021; Sarayil et al., 2023). Individuals with

amputations typically feel less deserving when they are stigmatized and discriminated against by society. Their thoughts in such situations are mostly focused on their impairment, which may make them feel insecure about themselves (Radhi et al., 2022; Sarayil et al., 2023; Freysteinson et al., 2016). This situation has the potential to cause a decline in one's self-confidence and eventually lead to the development of depressive symptoms. (Radhi et al., 2022; Freysteinson et al., 2016).

Naturally, amputation can have an impact on an amputee's self-confidence, which is important in maintaining existing relationships, forming new ones, and dating (WHO, 2022). Amputees frequently worry about how others will perceive or stare at them, ask inappropriate questions, or treat them as second-class citizens because of their fresh physical appearance (Sarroca et al., 2023; Clasper et al., 2023). In addition, amputees are sometimes concerned or offended, especially when they are asked a question or when people make an improper statement about their amputation (Ahmed et al., 2022; Sarroca et al., 2021). As a result, the individuals will feel less worthy and insulted. This experience will significantly cause a decline in their self-esteem (Ahmed et al., 2022; 2023).

Our experiences frequently serve as the foundation for our overall self-esteem. The cause of an amputee's low self-esteem, for example, may be induced by overly critical or negative appraisals from family and friends (WHO, 2022). To minimize unnecessary side effects in an amputee's life, family, friends, and society as a whole must cultivate a good attitude towards amputees. As a result, individuals with amputations may have high self-esteem, improved perception of one's physical appearance, and an enhanced standard of living (Mugo et al., 2010; Rybarczyk et al., 2008). Ahmed et al. (2021) stated that various factors such as age, the extent and position of the amputation, and the individual's ability to cope mentally and emotionally with the leg loss were referred to and understand how this situation can alter amputee's short and long-term perspective (WHO, 2022; Rybarczyk et al., 2008). Individuals who have had a limb amputated require a comprehensive schedule of physiotherapy and rehabilitation, which may include cognitive behavioral therapy (Rybarczyk et al., 2023; Mugo et al., 2010). Access to a complete and regular course of therapy is critical, and the long-term prognosis can be

considerably improved if the appropriate treatment is administered when it is most required (Rosca et al., 2021; Ladlow et al., 2023).

Physical Consequences Linked to a Severe Lower Extremity Amputation.

The World Health Organization, (2022) mentioned that amputation continues to be a major cause of psychological trauma as well as the cause of mortality in most developing countries. The direct physical effects of amputation can be easily understood. As an illustration, losing a limb will make it impossible for an individual to walk without help (Habitue et al., 2018). Furthermore, due to significant changes in an individual's physiological functioning, there exist various physical consequences that could hinder the quality of life for an amputee (Tutak et al., 2020). The primary outcome of a lower limb amputation entails the loss of mobility, ultimately rendering the individual incapable of walking as they previously did before a traumatic incident or surgical intervention (WHO, 2022; Amputees Coalition, 2022; Villari, 2022). In most instances, with proper care and rehabilitation, the affected individual may be able to utilize a prosthetic limb (Rosca et al., 2021). The absence of a lower limb would inevitably impact mobility, potentially disrupting an individual's sense of balance. Consequently, the injured person becomes more susceptible to falls or collisions with objects or individuals (Tietjen et al., 2021).

Although the use of a wheelchair is unlikely, their ability to move and display agility may be compromised, particularly during the initial stages of the injury. (LaRaia and colleagues 2010; Mugo, 2010). After undergoing an amputation, the basic tasks of everyday life will probably become much more challenging, if not impossible (Alessa et al., 2022; Rahim et al., 2022). Previously, simple responsibilities like cooking or doing household chores may have become exceedingly difficult, and the individual's ability to carry out tasks independently might have been restricted (Rahim et al., 2022). Many of these activities are ordinary actions that people often take for granted, such as getting dressed, bathing, and carrying groceries (Silaghi et al., 2022). An amputee may suffer from either

discomfort in the remaining stump phantom limb pain, or even both. Stump pain is felt in the remaining portion of the wounded limb and the cause of this pain is attributed to the damaged nerve groups at the site of the phantom limb. (Talbot et al., 2017).

After undergoing surgical removal of a body part, the basic everyday tasks likely will become significantly more challenging, and in some cases, impossible (Alassa et al., 2022; Rahim et al., 2022). Previously, simple duties like cooking or doing household chores might have become extremely difficult, and the person's ability to perform tasks independently may have been limited (Rahim et al., 2022). Many of these activities are commonplace actions that individuals often take for granted, such as getting dressed, bathing, and carrying groceries (Silaghi et al., 2022). An individual who has undergone amputation may experience discomfort in the remaining area phantom limb pain, or even both. Stump pain refers to the sensation of pain in the remaining portion of the amputated limb, and this pain is believed to be caused by damaged nerve groups at the site of the missing limb.

Complications can arise for amputees if the skin on their stump deteriorates from injuries like falls, leading to the development of sores (Bargo et al., 2018). Such incidents can cause infections and hinder the full utilization of a prosthetic limb. Consequently, there may be difficulties with blood flow and circulation, leading to the formation of blood clots, or excessive moisture build-up at the stump could result in infected wounds (Phelps, 2018). Unfortunately, in some cases, these infections may require further surgery to remove additional parts of the limb or even the entire remaining leg (Fitzgerald et al., 2022). Another problem is the occurrence of muscular contracture, which happens when the muscles of the limb becomes imbalanced. Lower-limb amputees are particularly susceptible to muscular contracture due to the sudden and significant changes in their anatomy and the weight-bearing pressures on their lower limbs (Silaghi et al., 2022; Alassa et al., 2022).

In addition, contracture refers to the muscles of a residual limb becoming shortened and tightened due to prolonged immobility, such as when an amputee is bedridden at home or hospital (LaRaia and colleagues, 2010; Mugo, 2010). However, it is crucial to address these contractions through stretching exercises to prevent

potential life-threatening issues (Tutak et al., 2020). If left untreated, amputees may lose the ability to properly use a prosthetic limb, further limiting their mobility (Amputees Coalition, 2022; Rahim et al., 2022). Another challenge faced by amputees is the occurrence of deep vein thrombosis (DVT), a condition characterized by blood clot formation, which often affects the lower limbs (Villari, 2022). Amputees who have undergone lower limb amputation is particularly vulnerable to developing DVT, especially if their legs were immobilized and bound during the amputation procedure. (Glig, 2016).

According to Bandas (2021), if left untreated, deep vein thrombosis can lead to a potentially fatal condition called pulmonary embolism, where a blood clot breaks free from the leg and travels to the lungs in amputees. Amputees may experience increased tiredness and fatigue due to the extra effort required to perform daily activities (Sahu, 2016). This could be because lower-limb amputees need more energy to walk with a prosthetic limb or simply because activities may take longer to complete. As a result, in rare cases, the fatigue caused by pain medication may make individuals feel more exhausted or sleep for longer periods (Mandell et al., 2021). However, the psychological and physiological impact of the injury and accident may disrupt sleep and worsen fatigue.

Theoretical Cases of Phantom Limb Pain and Traumatic Lower Limb Amputation.

In their publication, Feldman et al., (2023) highlighted Weir's (1981) study, which described the hypotheses that aimed to explain the mechanism causing phantom limb pain. Among these hypotheses are the following:

The Gate or Central Theory.

The gate hypothesis of pain, proposed by Melzack and Wall in 1965, garnered significant attention. This concept suggests that the dorsal horns of the spinal cord act as a gate, capable of modifying somatosensory information before it is perceived and reacted to. According to Melzack and Wall, the activity of motor neurons such as A-beta, A-delta, and C fibers determine the alteration of input through this neural mechanism, which is regulated by descending impulses from the

brain and inhibits the neural mechanism. Melzack hypothesized that the lack of sensory input after amputation would reduce brain inhibition, thus intensifying the self-sustaining neuronal activity of the gate resulting in agony. The precise location of this neural mechanism remains a subject of debate among neurosurgeons today. This notion has given rise to treatments like electrical stimulation, dorsal column stimulation, and other pharmacological interventions.

Peripheral Theory.

According to Ambroise Pare, a French military surgeon in 1551, he suggested that, the sensation felt in the stump is linked to the areas that were previously innervated by the severed nerves. This is also referred to as imagined or referred pain. When a stimulus is applied to a peripheral nerve at any point along its axon, it produces impulses that are similar to those originating from receptors connected to that particular neuron, resulting in projected pain. However, attempts to provide pain relief through total peripheral nerve analgesia or posterior rhizotomies has been unsuccessful in individuals with phantom pain. Another interpretation of the peripheral hypothesis suggests that phantom pain is caused by changes in the central nervous system due to peripheral nerve damage. This group believes that faulty or incomplete reinnervation of spinal cord cells is responsible for phantom pain.

Ambroise (1551) also made a brief mention of the theory of spiral in his writing, where he clarifies that the loss of sensory information occurs when peripheral nerves are severed during amputation below the level of amputation. This alteration in neurochemicals brings about a change in the pain pathway of the dorsal horn.

Psychological theory.

Psychological theories commonly associate phantom sensations with the subconscious desire to fulfill a wish that arises from denying the loss of a body part, whereas phantom pain is considered to be caused by the denial of emotions associated with the loss. According to C. Kolb (1975), persistent and painful phantom limbs indicate an emotional response to the loss of a crucial body part that

plays a significant role in the patient's social interactions. This emotional response can lead to the development of hostile feelings and anger towards individuals whom the patient perceives as either causing or experiencing mutilation, as well as guilt toward those whom the patient depends on and fears rejection from. The experience of pain may serve as a form of punishment for these feelings of anger and guilt.

Parkes, who has worked with amputees experiencing pain, views the phenomenon of phantom limbs as part of a mourning syndrome. According to Parkes, just as a widow may struggle to accept the death of her husband and often feels his presence, the experience of phantom limbs involves elements of fantasy and is linked to the grieving process. The amputation itself triggers thoughts of personal mutilation of the affected limb, which is stifled and kept suppressed.

Social Consequences Associated with a Traumatic Lower Limb Amputation

The inability to participate in physical activities due to amputation can hinder an individual's involvement in social activities, leisurely pursuits, and hobbies they would typically enjoy (WHO, 2022; Elywy, 2022). due to mobility problems, they could before their amputation (WHO, 2022; Turner, 2022; Boakye, 2022; Elywy et al., 2022). According to Freyja et al. (2020), the environment in which an amputee lives has a contextual influence on his amputation experiences. Individuals who have had their limbs amputated must deal with the problems of re-integration and acceptability in their community, despite their amputation (WHO, 2022; Da et al., 2018). Disregard, stigma, and prejudice are examples of such challenges (Hawkins et al., 2015; Hanschmidt et al., 2016). The lack of awareness and comprehension of the reasons and outcomes of amputation within society can lead to these problems. (Alessa, 2022; Kristjansdottri et al., 2020; Da et al., 2018). Furthermore, society thinks that being amputated is a punishment, a pain, or a result of ancestral reasons (Kristjansdottri et al., 2020; Kizilkurt et al., 2020). Because of this belief, society views amputees as worthless and unworthy, and they avoid them for fear of being contaminated or going through the same experience (Valentino et al., 2012; Charach et al., 2014). To overcome these, believe, and improve their quality of life, the amputee must first embrace their amputee status as well as their new body image (Mugo et al., 2010; Crocker et al., 2021; Charach, 2014). Furthermore, the amputee's failure to

acquire coping skills and a defense mechanism may lead to feelings of isolation and loneliness (Kristjansdottri et al., 2020). Consequently, with the constant reminder of his amputation, through stigma and discrimination by society, depression may ensue if proper precautions are not followed (WHO, 2022; Alessa, 2022).

Another study by Kizilkurt et al. (2020) found out that, people who have undergone amputations endure stigma, such as being mocked by their friends, co-workers, and the community. Especially friends and co-workers who are close to the amputees, yet have little information about amputation. This condition makes amputees feel cheated, embarrassed, and guilty for being amputated, especially when others see their savaged limb (Hanschmidt et al., 2016; Simsek et al., 2017). Furthermore, this stigma may hinder amputees to withdraw from social gatherings and walks and possibly return to work. For example, when amputees go to parties, they may opt to sit in the car owing to the state of their amputated limb while their family attends the party (Kizilkurt et al., 2020; Simsek et al., 2017). To tackle this problem of stigmatization, amputees will choose to conceal their amputated limb from public view by covering it with a cloth or blanket hoping that, by so doing, they will be able to overcome public opinion and stigma (Alessa, 2022; Kizilkurt et al., 2020). In general, such circumstances can lead to psychological anguish, such as loneliness and emotional suppression). If proper care is not taken, the amputee may develop depression, which may lead to suicide attempts (Kizilkurt et al., 2020; Kizilkurt et al., 2020; Hanschmidt, 2023).

In the same light, another study reported that some amputees sense their families are upset and angry about their amputation (Mandall et al., 2023; Rankins et al., 2021). Amputation is a dreadful condition that impacts not only the individuals who have had their limbs amputated but also their families and the community (WHO, 2022; Ladlow et al., 2023). As a result of the amputee's change in behavior due to the cause of their amputation, the victim's family feels furious, disturbed, and even stressed after an amputation (Kizilkurt et al., 2020; Alessa, 2022; Mandall et al., 2023). This issue is especially noticeable when the amputees develop new attitudes such as overdependence, overdemanding, repeated complaints, and excessive expenditure as a result of comorbidities associated with their amputation because of these issues, the

family regularly complains about living in the same house as the amputee (Mandall et al., 2023; Rosca et al., 2023; Hawkins et al., 2015; Hanschmidt et al., 2016).

As a result, the victim's relatives may neglect them, by leaving them with no one they can to complain to or support them (Hawkins et al., 2015; Hanschmidt et al., 2016). As a result, the amputee will have little alternative but to take to the streets, seeking financial aid from the general public (Kristjansdottri et al., 2020; Kizilkurt et al., 2020). Because of the amputee's poor state, a significant infection in the amputated limb may occur, resulting in an illness such as gangrene or a wound that never heals. Consequently, the amputees may require re-amputation or die prematurely as a result of this ailment (WHO, 2022; Hawkins et al., 2023).

Adults who are amputated, particularly women, have significant rates of interpersonal abuse as a result of their disability Olsen et al. (2023), stated that around 75% of women who have had their limbs amputated are subject to domestic abuse. Such abuses include: psychological, emotional, physical, abuse, and betrayal (, 2023; WHO, 2022, Clasper et al., 2023). The amputee's traumatic and permanent handicap is the reason for such violations (Olsen et al., 2023). Female amputees face these challenges the most commonly when their partner ignores and mistreats them (Meyer et al., 2022; Bergo, 2018). For example, female amputees are not allowed to make key decisions in their homes, and their partners threaten to file for divorce, bring in a second wife, or abandon them (2023; Whitefield, 2019; Olsen et al., 2023). Attempting to fight for their rights frequently results in their spouse assaulting them by hitting them, depriving them of their marital privileges, creating distance from them, and caring less about their sentiments (Olsen, 2023).

According to Meyer et al. (2022), single female amputees endure sexual harassment and abuse from males regularly (Smith et al., 2017; Meyer et al., 2022; Bergo, 2018). This issue develops when amputated individuals have no means of survival due to the economic challenges caused by their amputation (Giardino, 2023; Johnstone et al., 2023). These issues typically arise when individuals become unable to work or find employment owing to their condition (Bergo, 2018). They have few options but to succumb to men's requests to survive (Smith et al., 2017; Meyer et al., 2022). Amputees may become infected with sexually transmitted diseases and pregnancies that are unintended as a result of this condition, (Charach et al., 2014;

Abouammoh et al., 2020). Consequently, because of this harassment, female amputees may face additional challenges since the men abuse them due to their condition. As a result, they undergo stress, loneliness, anxiety, and depression. Amputees who endure such challenges may become worthless and irresponsible, even to the point of committing suicide (Esquenazi et al., 2021).

Furthermore, it has been observed that amputation is on the rise, with far-reaching consequences for individuals' lives and society at large (Wills et al., 2023; Pedras et al., 2019). Individuals with amputation may also experience social discomfort due to medication side effects related to their amputation (WHO, 2022; Hezien et al., 2021). This condition can be bothersome at times and makes amputees feel uneasy (Janicek et al., 2023). Etching, disorientation, and pain in the savage limb are examples of discomfort states (William, 2018; Esquenazi et al., 2021). This behaviour is particularly noticeable when amputees are in public places, at work, or even in their own homes (William, 2018; Esquenazi et al., 2021).

This discomfort caused by medication side effects is always out of the amputee's control and may be misinterpreted by the individual's entourage as a mental disorder since they have no knowledge of amputation (McAllister, 2021; Crocker et al., 2021). As a result, they may make a mockery of amputees who believe they are abnormal because of their amputation (Williams, 2018; Mugo, 2022). Furthermore, the amputee may feel uneasy, ashamed, and disgraced. This symptom can make an amputee feel irritated, confused, disgraced, and embarrassed (Whitfield, 2018). As a result, amputees might decide to isolate themselves by avoiding friends, co-workers, and family members to treat their condition (Low et al., 2023; Levy et al., 2023). As a result, this decision may lead amputees to experience unfavourable psychological pain and suffering, such as stress, anxiety, sadness, and loneliness (WHO, 2022; 2023).

According to Freyja et al., (2020), amputees confront the challenges of social disengagement, such as role play at a social gathering and an appointment in their workplace. The reasons are that they believe their new body image will not be appropriate for the new position, and secondly, their impairment will prevent them from doing the tasks correctly (Darter et al., 2018; Meraldi et al., 2019; Kark et al., 2011). Amputees suffer a major psychological problem in terms of body image

dissatisfaction (WHO, 2022; 2023). When amputees' self-esteem suffers as a result of their amputation, they perceive that particular poses will be a struggle and a source of distress for them (Shaista, 2014; Freyja et al., 2020). Individuals who have undergone amputation may endure tremendous changes as a result of the procedure (Sarroca et al., 2021). Although amputation is a painful and debilitating experience, individuals who have undergone amputations, whether traumatic or surgical, might respond positively to their circumstances due to the absence of pain. Consequently, some amputees are known to adopt an optimistic mindset that gradually develops into an overall acceptance, facilitating their adaptation to their new situation. Psychological repercussions of amputation are often overlooked as the focus tends to be on the obvious physical consequences. Amputation signifies a significant turning point in an individual's life, necessitating the provision of necessary care and support to assist them in rebuilding their lives (Mugo, 2010).

Financial Consequences Linked to a Traumatic Lower Limb Amputation

The presence of financial resources significantly influences the survival of patients both during and after amputation. (WHO, 2022). Individuals who have lost a limb must prepare for treatment, rehabilitation, the best prosthesis, and other modifications to get their lives back on track (WHO, 2022; Serrano et al., 2019; Rosca et al., 2021). People who have undergone amputations face difficulties related to their social and economic conditions, which interfere with their mental health and quality of life (WHO, 2022). Such challenges include: financial difficulty in paying healthcare costs (WHO, 2020; Rosca et al., 2021; Jo et al., 2021). Amputating a leg is an expensive procedure, especially in the event of an unplanned amputation (WHO, 2022; Sussman et al., 2015; Warne et al., 2009). This is because the incident occurred so suddenly that a lifesaving intervention was required before addressing the cost aspects of the operation (WHO, 2022; Thani et al., 2019; Crocker, 2021; Kurichi et al., 2013). These funds revolve around theatre costs, hospitalization, drugs, wound cleaning, and dressing, to name a few. The hospitalization bill is normally handed to the amputees and their families during their discharge from the hospital (Crocker, 2021; Kurichi et al., 2013).

This financial problem often places the amputee and their family under financial constraint, leaving them with little alternative but to bear the financial burden

(Pasquina, 2015; Kurichi et al., 2013; Warne et al., 2009). More so, if the amputee had a low financial status before his amputation, the issue becomes even more complicated (Cain et al., 202; Lennan, 2021). This financial inability has a significant influence on the amputee's psychological condition, causing anxiety, stress, and depression (WHO, 2021; Kent et al., 2019; Ladlow et al., 2023). As a result, the amputee will be re-traumatized to the state he was in before receiving psychiatric therapy.

According to Magnusson et al. (2023), amputees find it difficult to go through the rehabilitation procedure following their amputation due to financial constraints. Amputation leads to long-term disability that impacts a patient's perception of themselves, their ability to take care of themselves, their mobility, and places them in a disadvantaged socioeconomic position. (Pedras, 2022; Lee, 2023). The rehabilitation of an amputated patient begins immediately following surgery, during the acute therapy phase (Lee, 2020; Naido et al., 2019). A more intensive rehabilitation program is typically initiated when the patient's condition improves (APT et al., 2022; Bao et al., 2023; Turner et al., 2022). Many factors influence rehabilitation success such as amputation level and type, as well as the nature and severity of any ensuing impairments and disabilities (Magnusson et al., 2022; Crocker et al., 2021). The patient's general health as well as family support is also included (APT et al., 2022; Crocker et al., 2021; 2023). Due to the intricate nature of the rehabilitation program, the amputee who has once undergone a traumatic event that caused him to be financially unstable will be re-traumatized (WHO, 2022). Cain et al. (2023) reported that most amputees find it difficult to complete the process of rehabilitation, while some don't even go for rehabilitation because of financial difficulties. To this effect, going through amputation difficulties causes the individual to be more distressed. Consequently, he may prefer suicide as a better option.

The financial constraints of amputees make it impossible for them to acquire a prosthetic fit (Stuart, 2019). According to the Physical and Rehabilitation Team, (2019) An artificial device known as a prosthetic limb is utilized to substitute an absent body part, possibly due to an accident, illness, or congenital condition. These prostheses are specifically created to regain the regular functioning of the body. (Stuart, 2019). Serrano et al., (2019) mentioned that about 40% of amputees worldwide are unable to acquire a prosthetic limb. This situation is analogous to the amputee's poor economic position (WHO, 2022; Stuart, 2019). Their low income can be understood in the sense that, either their traumatic amputation puts them in a

situation of economic difficulties or their economic status was low before their amputation (Rosca et al., 2021; Jo et al., 2021; Jang et al., 2011).

Furthermore, Fanclullacci et al., (2021) discovered that, due to financial constraints, some amputees are unable to obtain prosthetic limbs, such as crutches, which are said to be the first limb support recommended for an amputee after recovery from a surgical intervention. (Lagaide et al., 2011; Dunkin et al., 2021; Warne et al., 2009; Kent et al., 2019). Rosca et al., (2021) discovered that the cost of prostheses such as wheelchairs, crutches, and prosthetic limbs is so high that most amputees may experience pain because they can't afford the prosthetic limb which may cause them to be re-traumatized (Lennan et al., 2021; Australia, 2023; Sussman et al., 2015; Fanclullacci et al., 2021). Stress, anxiety, and depression may occur from the re-traumatization.

According to Kent et al. (2019), some amputees who suffer financial challenges in obtaining a prosthesis may lose their self-esteem. This is more likely when the amputee is financially dependent on his family to acquire the prosthetic limb (Dunkin et al., 2021; Lagarde et al., 2011). As a result, the amputee's family may be dissatisfied with the financial burden the amputee puts them through and may respond adversely to their request for assistance (WHO, 2022; Jo et al., 2021; Serrano et al., 2019; Sussman et al., 2015). Because of this negative response, the amputee may experience psychological discomfort such as stress and sadness, which may have a detrimental impact on their self-esteem (Sussman et al., 2015; Cain et al., 2021). As a result, most amputees prefer to stay indoors and deal with the consequences of loneliness, boredom, and isolation, while others, particularly those with high self-esteem, will prefer to scroll on the floor with their hands to request financial assistance to improve their living condition (Cain et al., 2021; Serrano et al., 2019; Rosca et al., 2021).

Assistance for individuals dealing with a distressing amputation of the lower limb.

Amputees endure several difficulties (WHO, Steward, 2023). The removal of a body part can have a substantial impact on various facets of an individual's

existence, particularly for those who have just been wounded, and these issues can be terrifying and overwhelming (Fitzgerald, 2023; Alessa et al., 2022). Those who have had limbs amputated may experience grief, despair, worry, and reduced self-esteem as a result of the heinous act (Alessa et al., 2022). As a result, knowing what resources are accessible to amputees and understanding that they are not alone in overcoming new challenges is advantageous (WHO, 2022; Amputees Coalition, 2023; Steward, 2023). There is a lot of support individuals with amputation can receive ranging from, peer groups, family members, government, and organizations.

A strong support network, like everything else in life, is critical for the best possible outcome (WHO, 2022; 2023). Friends and family must be aware of what is happening, they should speak freely (if the amputees are comfortable doing so) about an amputee's daily life and issues and provide realistic solutions (Fitzgerald, 2023). In addition, discomfort in the wound following amputation surgery may continue for a longer period, family members should take a vital role in inquiring about the amputee's pain and seeking medical advice to establish an effective pain management strategy which might be a practical way to assist them (limbless Asso. 2023; 2023). Additionally, positive interactions with the amputee and his family, such as the parents and siblings are also linked to decreased depression rates among amputees. This assistance has been demonstrated to help with stress management techniques and offers examples of how family members can help the amputated victims develop coping strategies (WHO, 2022; Rosca et al., 2019).

Furthermore, the family plays a significant role in providing emotional and psychological support to their family member who has been amputated during amputation and recovery time (WHO, 2023; Pedras, 2019). According to Rosca et al., (2021) amputees receive support from their families, especially from their spouses, who help them in terms of house chores which lessen their stress (Ossur, 2023). According to Noblet et al., (2019) having access to support enables amputees to manage the competing demands of their lives and employ the best parenting techniques despite their disability. Therefore, the family of an amputee is a crucial source of support for the individual during difficult times in their struggle to make it up in life (Ossur, 2023).

Family members should inquire about life after an amputation and how they might best assist them with humility and empathy (Paula, 2023). Asking meaningful and focused questions may give the amputee more assurance. Because recovery is

rarely a straight line, family members should be patient as they assist a loved one who is readjusting to basic chores (Noblet et al., 2019; Paula, 2023). In addition, it might be aggravating to have to relearn routine duties and rely on others to help with everyday obligations (Fitzgerald, 2023). It is important to be patient throughout the recuperation process and offer the amputees plenty of help while they discover new ways to work, socialize, and move around (Findingyourfeet, 2023). Family members should extend compassion, empathy, and care during the mourning process to assist amputees in understanding their feelings and allowing them to vent negative emotions related to the loss of a limb because it will keep them away from stress and depression (Tietjen and colleagues, 2022).

Peer support has been employed to provide more readily available assistance, particularly for newly amputated victims which helps them cope with their psychological distresses and enable them to continue with their activities and fit in the society. (Kahalef, 2023) Peer group support helps in the promotion of self-management concerning health issues such as the management of drug use and alcohol abuse as well as chronic conditions like cancer that are linked to amputation. An amputee may experience several new changes in the environment. Peers can make many playlists with the amputee, including music that gets them enthusiastic for the day, podcasts they want to listen to, and audiobooks (Sparke, 2023; Bock, 2023). Moreover, it is critical to have goals to work towards, especially during recovery. Goals should be significant to the amputee's life while also being reachable and reasonable, working with a professional, such as a psychologist, can also help amputees acquire new coping strategies (Sparke, 2023) and a therapist may assist amputees in developing such goals (Kahalef, 2023; Bock, 2023).

Setting and attaining objectives frequently gives amputees a sense of purpose and organization, as well as boosts confidence and self-esteem (WHO, 2022; 2023). Similarly, having a regular schedule and planned activities is a beneficial coping method (Tietjen et al., 2022). There may be times when fears develop and cause suffering. Problem-solving, action, mindfulness, and "letting go" techniques are all helpful strategies for dealing with troublesome concepts. It may also be useful to try to cultivate a "take things as they come" attitude (Tietjen et al., 2022; Bock, 2023). It may keep the amputee engaged by acting as a diversion and preventing them from concentrating on their predicament, which may be harmful to their physical and mental health over time (Fitzgerald, 2023; Bock, 2023). Weiland, (2023) Finally, adapting to

an amputation takes time and involves a wide spectrum of emotions. Self-care, maintaining touch with support networks, and being aware of and involved in the healing process may all aid in coping and contribute to better health outcomes (Tietjen et al., 2022).

The Pendulating: A Grounded Theory, Associated with A Traumatic Lower Limb Amputation

This theory was coined by Levine (2010), it focuses on the method for comprehending the amputated patient's behavior and underlying concerns, as well as recognizing where they are in the healing process. According to Levin (2010), a strategy of cycling between two vortexes, a trauma vortex, and a healing vortex, is presented to titrate the remembrance of traumatic circumstances. Rather than retraumatizing, the vortexes alternate between fearful and hopeful or joyful recollections to make trauma therapy more manageable. (Levine 2010). To this, when clients begin to remember painful experiences during a therapy session, they become absorbed in the details, which leads to overwhelming feelings. At this point, we can detect physiological indications like faster speech, a higher heart rate, restlessness, as well as increasing annoyance, impatience, fury, dread, and finally panic (Levine 2010). Meanwhile, Clients with excessive sympathetic activity cannot assimilate therapeutic understanding, they instead get retraumatized. Consequently, by concentrating on this vortex, the client may stop excessive activity and relax their nervous system so that they do not become overwhelmed and dissociative (Levine 2010).

Preventive Measures for a Traumatic Lower Limb Amputation

Despite the negative consequences that people with amputations experience, there are steps that future generations may take to prevent this from happening (WHO, 2022). According to Goodney et al. (2014), it is believed that up to 60% of amputations might be prevented. Medically, comprehensive foot care, including frequent visits to a podiatrist, has been linked to a reduction in diabetes-related amputations of up to 80% (WHO, 2022; Goodney et al., 2014) If not treated, severe forms of peripheral

artery disease (PAD) can cause irreparable tissue damage and raise the risk of amputation (Goodney et al., 2014). Maintaining good overall health is crucial for minimizing the likelihood of amputation.

(WHO, 2023; Lazzarini et al., 2012). This includes: eating well, staying active, avoiding tobacco intake, and taking your regular medications as directed to help manage high blood pressure (2023; Shishehbor, 2023). In addition, cholesterol and diabetic patients who have wounds should work with podiatry and other wound care specialists to maximize wound care and promote healing vascular surgeons conduct amputations when required to save patients from life-threatening problems (Miller et al., 2023; Lazzarini et al., 2012).

Furthermore, work practices, staff training, and administrative controls can also help prevent and reduce amputation dangers (Botros et al., 2020; Azura, 2019; Halihiy et al., 2020; McDermott, 2023; McIntosh et al., 2009; Lead, 2021). Machine protection is the most effective technique to prevent amputations caused by stationary machinery: workers should be able to recognize, identify, manage, and control common workplace amputation dangers, such as those barred from operating band saws, circular saws, etc. (Clasper et al., 2013; Mendez and Sanchez, 2023) workplace practices, employee training, and administrative controls can also aid in the prevention and reduction of amputation risks (Mohd et al., 2019; Pawick, 2021; Bluestein, 2020). Furthermore, with the provision of guidelines for pedestrian facilities on national roads and for people with disabilities, there will be a great prevention of injuries caused by road accidents.

Moreover, by establishing car safety standards such as airbags, anti-braking systems, tires, and crash tests, total vehicle safety conformity of production will also be a plus for accident prevention (Ajibade et al., 2013; Murphy, 2021). Notification of the installation of speed limitation devices on all modes of transportation will also aid in the prevention of amputation caused by road accidents (Meenach, 2014; Rhoades and Morrow, 2021). Model inspection and certification scheme with central help for checking vehicle fitness via an automated system will bring road users to consciousness (Weisz et al., 2020; Poynter and Bucheri, 2022; Fleming, 2022; Koe et al., 2019). Enacting legislation that provides for strong enforcement through the use of technology, as well as stringent fines for guaranteeing strict compliance and increasing deterrents for violations of traffic rules will be of great importance to society (Goel et

al., 2020; Ertl, 2018; Bei et al., 2023; Asirdizeret al., 2022; Saini et al., 2020; Howell, 2020; Leeper, 2023; Mcnil, 2023).

Related Studies.

Jasmin, (2013) examined the correlation between psychological and demographic variables in individuals who had their lower limbs amputated in the United States. In this study, several assessment tools were utilized, including the demographic the questionnaire, the trinity amputation scales, the appearance schema inventory, the perceived social support scale, and the Centre for Epidemiological Research depression scale. The study involved a total of 70 participants, with 35 males (57%) and 35 females (43%), all residing in Connecticut and aged between 18 to 40 years. These participants were recruited from four different clinics affiliated with the Hanger prosthetics and orthotics group practice. The research findings indicated a significant association between being an adolescent amputee and the likelihood of developing depression compared to older amputees. Specifically, older individuals were found to be more receptive to activity limitations, while younger individuals were more concerned about their physical appearance. Furthermore, an overall analysis of gender and depression revealed that women had higher rates of depression compared to men.

Matos and colleagues (2020) conducted a study in a rehabilitation institution located in the Midwest region of Brazil, where they examined the quality of life of individuals with lower limb amputations who were using prostheses. The main objective of the study was to investigate the well-being of individuals who had undergone lower limb amputations and were utilizing prostheses. This involved a descriptive and cross-sectional study with 49 amputees, whose average age was 36.4 years, with 59.2% falling within the age range of 18 to 39. The results from the data analysis demonstrated that functional capacity (the ability to perform specific activities) and vitality (levels of energy and exhaustion) were the categories with the lowest average scores, with scores of 64.8 and 66.5, respectively. On the other hand, the remaining amputees had an average score above 70, with the social factor measuring the impact of physical or emotional concerns on social activities having the highest score of 80.5. Overall, women received lower ratings in terms of

prosthetic usage compared to men. However, when analyzing the SF-36 data according to gender, etiology of amputation, and type of amputation (above or below the knee), no statistically significant differences were found among the groups. In addition, factors such as time since amputation, male gender, and below knee amputations were identified as predictors of higher levels of quality of life and better adjustment to amputation.

Tutak et al., (2020) conducted research in Turkey on depression, social phobia, and the quality of life in individuals who had undergone significant lower limb amputations. The researchers proposed that patients who had experienced major amputations, social anxiety, and depression were more likely to have lower quality of life compared to the control groups. They also suggested that depression remained a significant concern five years after the amputation. The control groups was randomly selected from hospital inpatients. To evaluate the participants, the Liebowitz Social Anxiety Scale (LSAS), the Hospital Anxiety and Depression Scale (HADS), and the short form36 (SF36) Quality of Life Survey was utilized. The results showed that individuals with major limb amputations experienced higher levels of social anxiety and depression, along with a reduced quality of life. Furthermore, the amputees had higher levels of social fear compared to the control group as indicated by the LSAS social fear levels. Patients who had undergone amputations for more than five years had higher ratings of social phobia compared to those who had undergone the procedure for a shorter duration. Employed patients in the study had significantly lower levels of social phobia and despair compared to unemployed patients. The research also highlighted various complaints experienced by amputees, such as low back pain, phantom pain, stump pain, age, level of amputation, adaptation to the prosthesis, and employment, compared to the control group. In conclusion, it was recommended that amputees receive prompt and adequate psychosocial treatment to address their needs.

Htet et al. (2022) conducted a comprehensive meta-analysis on unilateral lower limb amputations resulting from traumatic events. The objective of the researchers was to examine the outcomes of individuals with unilateral transtibial and transfemoral amputations in terms of mobility, physical, prosthesis usage, and discomfort. The study involved an extensive search of the

electronic databases PubMed and Science Direct to identify articles that investigated the health implications of traumatic unilateral leg amputation. Utilizing the Preferred Reporting Items for systematic reviews and meta-analyses (PRISMA) standards, observational, clinical, comparative studies, and randomized controlled trials published in English between 2012 and 2022 were meticulously evaluated. The quality of the search results was assessed using the Newcastle Ottawa Scale (NOS). The findings of the study indicated no statistically significant difference in physical activity between transtibial and transfemoral amputees based on the pooled impact estimate. Transfemoral amputees exhibited a higher frequency of prosthesis usage compared to transtibial amputees. Both groups reported similar levels of discomfort resulting from prosthesis fit. Additionally, amputees who regularly utilized leg prosthetics experienced greater autonomous movement and engaged in more physical exercise. Catastrophic unilateral transfemoral amputees derived benefits from leg prostheses that provided enhanced accommodation and movement.

A quantitative research study was conducted in Turkey by Nuray et al. (2022) to examine the mental health of patients with post-traumatic lower limb amputations. The study aimed to explore the impact of post-traumatic amputation on people's mental well-being. Interviews were conducted with 12 individuals who had experienced traumatic lower extremity amputations. Data was collected through a personal information form and an interview form, which included questions about the psychological effects of amputation. The interviews were semi-structured and in-depth, allowing for one-on-one discussions. The findings revealed that individuals with post-traumatic lower limb amputations underwent emotional and behavioral changes following their amputations. Their body image and self-esteem were negatively affected, and they experienced isolation from their family and friends. Additionally, they had negative feelings about their future and sought mental support to develop coping skills. Furthermore, after the amputation, individuals faced significant emotional difficulties including anger, introversion, helplessness, and low self-esteem. The unsupportive attitude of their relatives, who should be assisting during this time, had a detrimental impact on their ability to adapt. An important aspect highlighted by the respondents was that having access to a mental health professional would provide them with the opportunity to seek solace and support.

In 2022, Murray and Fox examined the correlation between wearing a prosthesis and body image among lower limb amputees. The study included participants who had been wearing a prosthesis for an average of 8.1 years. The findings indicated that body image disturbance (BID) was somewhat linked to levels of pleasure, suggesting that wearing a prosthesis did not always hurt an individual's self-perception. Surprisingly, participants expressed satisfaction with their prostheses as long as they were able to provide for their families. In contrast, women displayed greater contentment with the appearance of their prostheses. They felt more feminine and happier if others were unable to detect their amputation. These findings were supported by Singh et al. (2007), who suggested that certain individuals are more susceptible to recurrent psychiatric issues. Additionally, the study revealed that feelings of despair and anxiety decrease following amputation but resurge within two to three years. Consequently, symptoms can persist for as long as 17 years.

CHAPTER III

Methodology

In this chapter, a thorough explanation is given of the methodology employed in the present study. The chapter includes details about the research design, the participants, the process of gathering data, and the procedures for analysis. Additionally, this section explores the different statistical methods utilized to analyse the gathered data.

Research Design

The study made use of a quantitative research methodology. The research was conducted using a quantitative approach to acquire objective data that was not influenced by the researcher's personal opinion and perspective (Tan, 2014). The study employed a correlation research model to assess the relationship between, depression, anxiety, PTSD, and self-esteem among victims of amputation. A comparative research model is a type of non-experimental research technique in which the researcher investigates the relationship between two or more variables and evaluates the statistical relationship between them without controlling any of them (Bandari, 2021).

Population, participants, and sampling

This study targeted young adults aged 18 to 45 who had experienced a unilateral or bilateral traumatic lower limb amputation as a result of an injury. The Participants for the study were selected using a purposive sampling approach. This type of sampling is a non-probability method, also referred to as judgment sampling, in which the researcher uses their expertise to choose a sample that will be most beneficial to the research objective. As stated, by Shona (2019), purposive sampling is commonly employed in qualitative research when the researcher aims to acquire a comprehensive understanding of a particular phenomenon, as explained by Creswell (2002). This research was conducted in Cameroon and included the ten regions of the country. Based on this population in Cameroon, an estimate of about 826 cases of lower limb amputation was reported (WHO, 2019). About 17 percent are found in rural areas, and slightly about 35 percent of amputees are found in urban areas (Alegbeleye, 2020; Tamfu et al., 2023).

A sample size of two hundred and forty (240) amputees was used with a confidence level of 95% and a margin error of 5%. The scales were administered online through a Google form. The result was scored and computed using descriptive statistics to show the distribution of demographic variables.

Table 1. Participant's Socio-Demographic Characteristics in the Study (n=240)

Variable	Categories	Frequency	Percentage
Gender	Male	163	67.9%
	Female	77	32.1%
Location	West Cameroon:	144	60.0 %
	English		
Residence	East Cameroon: French	96	40.0 %
	Urban	159	66.3 %
Marital Status	Rural	81	33.8 %
	Single	154	64.2 %
	Married	70	29.2 %
	Divorce	12	5.0 %
Employment	Widow	4	1.7 %
	Self - Employed	96	40.0 %
	Employed	94	39.2 %
	Unemployed	50	20.8 %
Religion	Christian	166	69.2 %
	Others	38	15.8 %
	Islam	36	15.0 %
Education	Secondary	115	47.9 %
	Undergraduate	96	40.0 %
	Master	18	7.5 %
	Primary	11	4.6 %
Income Level	Medium	126	52.5 %
	Low	87	36.3 %
	High	27	11.3 %
Cause of Amputation	Injury	163	67.9 %
	Disease	77	32.1 %
Type of Prosthesis	Crutches	102	42.5 %
	Prosthetic Limb	99	41.3 %
	Wheelchair	39	16.3 %

The distribution of sociodemographic characteristics of the study participants is presented in Table 1. The age range of the study participants was observed in the

table. 15 – 66 (34.504± 9.06SD) years; males were in the majority 163(67.9%), Female 77 (32.1%); West Cameroon English Region 144(60%), East Cameroon French region 96(40%); Urban 159(66.3%), rural 81(33.8%); Single 154(64.2%), Married 70(29.2%), Divorce 12(5%), Widow 4(1.7%); Self-employed 96(40%), Employed 94(39.2%), unemployed 50(20.8%); Christian 166(69.2%), others 38(15.8%), Islam 36(15%); Secondary education 115(47.9%), Undergraduate 96 (40%), Master 18(7.5%), Primary education 11(4.6%); Medium income level 126(52.5%), Low 87(36.3%), High 27(11.3%), Majority of the cause of amputation was Injury with 163(67.9%) while diseases were 77(32.1%); those who uses Crutches as a cause of prosthesis were 102(42.5%), prosthetic limbs 99(41.3%) and Wheelchair 39(16.3%).

Table 2. The Categorization of Depression, Anxiety, PTSD, and Self-Esteem Levels of Study Participants

Variable.	Categories	Frequency	Percentage
Depression.	Minimal Depression	17	7
	Mild Depression	30	12.5
	Moderate Depression	67	27.9
	Moderately Severe Depression.	95	39.6
	Severe Depression	31	12.9
Anxiety	Minimal Anxiety	6	2.5
	Mild Anxiety	18	7.5
	Moderate Anxiety	136	56.7
	Severe Anxiety	80	33.3
PTSD	Not indicative of probable PTSD	88	36.7
	Indicative of probable PTSD	152	63.3
Self-Esteem	Low Self-Esteem	101	42.1
	Normal Self-Esteem	137	57.1
	High Self-Esteem	2	.8

In Table 2, the Categorization of the Depression, Anxiety, PTSD, and Self-Esteem Levels of Study Participants is shown. The majority of the study participants had Moderately Severe Depression 95(39.6%), Moderate Depression 67(27.9%), Severe Depression 31(12.9%), Mild Depression 30 (12.5%), and Minimal Depression 17 (7.1%). Regarding their Anxiety Levels, The majority have Moderate Anxiety 136 (56.7%), Severe Anxiety 80 (33.3%), Mild Anxiety 18(7.5%) and Minimal Anxiety 6 (2.5%). When their PTSD levels were examined, The majority had levels that were indicative of probable PTSD 152(63.3%) while 88 (36.7%) had levels Not indicative of probable PTSD. Finally, concerning Self Esteem those who had Normal Self Esteem was in the majority 137 (57.1%), Low Self Esteem 101(42.1%), and High Self Esteem 2 (0.8%).

Data Collection Tools/Materials

Data were gathered through the use of a structured survey. The survey consisted of sociodemographic forms and four standardized measurement scales, namely: the PHQ-9, the GAD-7, the PCL-5, and the RSES.

Demographic Variable

This form included questions that were used to generate basic socio-demographic information about the respondents, including gender, age nationality, patriotist tribe, place of resident, occupation, educational level, financial status, cause of amputation, level of amputation, literacy, year amputated, type of prosthetic use, the experience of phantom behavior, experience of pain from the use of prosthesis.

The Patient Health Questionnaire-Depression Scale (PHQ-9)

Dr. Robert and his colleagues created the patient health questionnaire for depression (PHQ-9) in 1999. The PHQ 9 is designed to evaluate the intensity of depression and consists of nine self-report questions. This scale combines the criteria for depression outlined in the DSMIV with other prominent symptoms of major depressive disorder, resulting in a concise self-report tool that is often employed for screening purposes. Responses on the PHQ-9 are recorded on a five-point Likert scale, ranging from 1 (strongly agree) to 5 (strongly disagree). It has

a reliability and validity score of .82 to .88 with a consistency of .55 to .95 and Cronbach's alpha ranges from .77 to .88 (Tavakol & Dennick, 2011).

Carballeira et al., (2007) translated the Patient Health Questionnaire-Depression (PHQ-9) into French. The questionnaire consists of nine items that are assessed on a 4-point Likert scale. The authors found the questionnaire to have a high level of internal consistency, indicated by Cronbach's alpha coefficient above 0.80. Additionally, the questionnaire demonstrated reliable sensitivity and specificity rates of 65% and 75%, respectively.

Scale for Generalized Anxiety Disorder (GAD-7)

Spitzer and his colleagues (2006) created a scale for generalized anxiety disorder (GAD) which is a self-administered questionnaire consisting of seven items. This scale is utilized to assess and measure the intensity of GAD symptoms. Each item requires the respondent to rate the severity of their symptoms experienced within the past two weeks. The response options range from 0 to 3 and are scored on a 4-point Likert scale, where 0 represents no symptoms and 3 indicates symptoms experienced almost every day. The instrument exhibit's good reliability with a Cronbach's alpha of 0.83, and validity levels of 0.73 and 0.77.

Micoulaud-Franchi et al. (2016) performed the translation of the GAD-7 into French. This instrument consists of seven items and is evaluated on a Likert scale with four response options. The scale possesses positive psychometric properties, demonstrating satisfactory internal consistency and reliability, as indicated by a Cronbach's alpha coefficient of 0.83. Additionally, the instrument exhibits an acceptable level of convergent validity, with a score of 0.62.

The rating scale for Post-Traumatic Stress Disorder (PTSD-5)

Weathers and colleagues (1993) developed the PTSD-5, which is a self-report measure consisting of 20 items. These items assess the 20 symptoms of post-traumatic stress disorder (PTSD) according to the DSM-5 criteria. The questionnaire includes four dimensions: Re-experiencing, Avoidance, negative alterations in

cognition and mood, and Hyperarousal (Cohen et al., 2015). The scoring of the PTSD-5 is based on a 5-point Likert scale ranging from 0 (not at all) to 5 (extremely), with higher scores indicating greater severity. The total symptom severity score can range from 0 to 80, and a cut-off raw score of 38 is used for a provisional diagnosis of PTSD. This cut-off score has a sensitivity of .78 and a specificity of .98 (Cohen et al., 2015).

The French version of the PTSD-5 scale was translated by Cottraux et al. in 2003 and validated. It also consists of 20 items and has a sensitivity of 98% and a specificity of 87%. The Cronbach's alpha range for this version ranges from 0.78 to 0.94.

The Rosenberg Self-Esteem Scale (RSES)

Morris Rosenberg created the Rosenberg self-esteem scale in 1965 as a means of measuring global self-esteem through a 10-item self-report questionnaire. The scale evaluates an individual's overall sense of self-worth or self-acceptance. Participants rate each statement on a four-point Likert scale, with options ranging from strongly agree to disagree, yielding scores between 10 and 50. The scale demonstrates a high level of internal consistency with a Cronbach's alpha value of 0.88 (Kori, 2023).

In 1990, a French version of the Rosenberg self-esteem scale was translated by Evelyne and Robert. This version contains 20 items, also evaluated on a four-point Likert scale. It exhibits strong reliability with a coefficient of 0.90 and a correlation of 0.85.

Data Collection

Procedure:

This research was conducted with the ethics committee's consent and guidelines of the Near East University, Social Science Ethical Committee (application number NEU/SS/2023/1681). The study made use of a structured questionnaire that was drafted in a Google format. The link was shared with participants through the Internet using social media channels, such as Gmail, Yahoo, WhatsApp, and

Facebook. In accessing these groups of individuals, a permission letter for data collection was addressed to the Ministry of Social Affairs (MINAS), Cameroon, and the presidents of association and Rehabilitation centers requesting their permission and access to the members to participate in the survey. Voluntary participation was assured. An agreement to complete the questionnaire was sought. The participants were given a guarantee that the data collected would remain confidential and anonymous, solely for the current study, and utilized only by the researcher.

Data Analysis Procedures

The data was analyzed using IBM Version 22 of the Statistical Software for Social Science (SPSS). To determine whether the data followed a normal distribution, a test for normality was conducted.

Table 3. Normality Table

Variables	N	Minimum	Maximum	Mean	Std.Dev	Skewness		Kurtosis	
						Statistic	Std.Error	Statistic	Std.Error
Depression	240	0.00	25.00	13.9917	5.43427	-.623	.157	.061	.313
Anxiety	240	0.00	21.00	13.1458	3.60839	-.814	.157	2.151	.313
PTSD	240	3.00	60.00	33.7167	12.23835	-.450	.157	-.292	.313
Self-esteem	240	5.00	26.00	14.8042	3.79153	-.064	.157	.313	.313

According to the characteristics presented in Table 1, the study data is described in detail. As per George and Mallery (2010), it is considered acceptable for the values of asymmetry and kurtosis to fall between -2 and +2 to demonstrate a normal univariate distribution. According to Bryne (2010), and Hair et al. (2010), skewness and kurtosis can be defined as normal if they fall between the range of -2 to +2 and -7 to +7, respectively. As seen, our data did not meet the normality test criteria, so we used the non-parametric equivalent of the parametric examination. The assessment

begins with the Spearman-Brown rho correlation to enable us to assess the relationship between depression, anxiety, PTSD, and self-esteem according to year and age at amputation. To examine the distinction between the two levels of independent variables such as injuries and diseases and the dependent variables of depression, anxiety, PTSD, and self-esteem. A Mann-Whitney U test was used to see if there is a difference between dependent variables such as depression, anxiety, PTSD, and self-esteem according to the causes of amputation, pain incurred from the use of prosthesis, phantom behavior, place of residence, and region of origin. In addition, the study employed the Kruskal Wallis H test to see whether there is any difference between depression, anxiety, PTSD, and self-esteem according to the levels of amputation, laterality, type of prosthesis, and economic level. Lastly, the regression analysis was done to identify if depression, anxiety, and self-esteem can be considered as predicting factors for an increase in an amputee's level of PTSD.

Research Plan and Process

Table 4. Research plan.

The plan below shows the structure of the research conducted.

<p>In this methodology plan, the first step was to obtain permission from the authors who developed in the study, the research utilized several scales including the Patient Health Questionnaire for measuring depression (PHQ-9), the Generalized Anxiety Disorder Scale (GAD-7), the Post-Traumatic Stress Disorder Scale (PTSD-5), and the Rosenberg Self-Esteem Scale (RESC).</p>	<p>September 2023</p>
<p>The second phase consisted of the Ethical Approval form which was filled and sent via email to the Near East University Ethical Committee, and approval was granted to conduct the research</p>	<p>September 2023-October 2023</p>

<p>In the third phase, a purposive sampling technique was use to the participants were given the questionnaire through online platforms like Facebook and WhatsApp.</p>	<p>October, 2023</p>
<p>Investigation of pertinent literature and examination of correlated studies</p>	
<p>The information gathered from the individual involved in the investigation was utilized to obtain statistical data and discovering's of the research. The outcomes were deliberated in relation to the literature, and fitting deduction and suggestions were provided.</p>	<p>December, 2023 – January, 2024</p>

CHAPTER IV

Results And Conversations

In this section, the examination of the information gathered from the study participants and the presentation of primary discoveries is presented. The findings are showcased in tables and summaries.

Table 5. Spearman's-Brown correlation relationship between depression, Anxiety, PTSD, Self-Esteem, Year and Age at amputation

Variable		Depression	Anxiety	PTSD	Self-esteem	Year of Amputation	Age
Depression	r						
	p-value						
Anxiety	r	0.267					
	P-value	< .001**					
PTSD	r	0.557	0.239				
	P-value	< .001**	< .001**				
Self-esteem	r	-0.263	-0.118	-0.429			
	P-value	< .001**	0.068**	< .001**			
Year of Amputation	r	0.156	-0.071	0.124	-0.096		
	P-value	< .05*	< .001	> .05	> .05		
Age	R	0.094	-	-0.022	-0.119	0.137	-0.133
	P-value	> .05	> .05	> .05	> .05	> .05	> .05

$P \leq 0.05^*$ $p \leq 0.01^{**}$

Table 6 presents the Spearman-Brown correlation among various factors including depression, anxiety, PTSD, self-esteem, year of amputation, and age in individuals who have undergone lower limb amputation. The results reveal a noteworthy and positive correlation between depression, anxiety, PTSD, and the year of amputation. Furthermore, a significant and positive correlation is observed between anxiety ($P < 0.05$) and PTSD ($P < 0.05$). On the other hand, there exists an adverse and significant correlation between self-esteem, depression, anxiety, and PTSD about the year of amputation.

Table 6. Hierarchical Regression Analysis for Variables Predicting PTSD Scores

Variables	Model 1 (R ² =0.434)			Model 2 (R ² =0.461)			Model 3 (R ² = 0.466)		
	β	SE	β	β	SE	β	β	SE	β
Depression	1.14	.12	.501	1.10	.125	.486	1.09	.127	.481
	0	2	**	6		**	4		**
Anxiety	.230	.17	.068	.270	.180	.080	.250	.184	.074
		8							
Self – Esteem	-	.17	-	-	.173	-	-	.180	-
	.826	1	.256	.841		.261	.888		.275
			**			**			**
Cause of Amputation (Injury/Disease)				.275	1.29	.011	.408	1.31	.016
					6			0	
Year of Amputation				.076	.077	.051	.071	.078	.047
Level of Amputation (Above the Knee/Below the Knee/ Angle Disarticulation/Pelvic Amputation/ Hip Disarticulation				-	.721	-.086	-	.750	-.073
				1.14			.977		
				8					
Literality (Left/ Right/ Bilateral)				-	1.04	-.016	-	1.05	-.021
				.322	3		.415	6	
Type of Prosthesis (Prosthetic Limb/ Crutches/ Wheelchair)				-	.896	-.065	-	.939	-.050
				1.09			.849		
				8					
Phantom Pain (Yes/No)				2.21	2.00	.062	2.14	2.04	.060
				6	6		9	8	
Pain with Using Prosthesis (Yes/ No)				-	1.71	-.106	-	1.75	-.094
				3.25	7		2.91	4	
				5			3		
Gender (Male/Female)							-	1.34	-.045
							1.17	8	
							0		
Marital Status (Single/Married/Divorce/Widow)							.270	.971	.014
Occupational status (Employed/Unemployed/Self – Employed)							-	.705	-.023
							.319		
Educational Level (Primary/Secondary/Undergradua te/Master)							.186	.937	.011
Financial Level (Low/Medium/High)							.780	1.05	.041
								8	

Hierarchical Regression Analysis for Variables Predicting PTSD Scores

*p<0.05, **p <0.001

Table 6 shows the result of the hierarchical linear regression for variance predicting PTSD. The first model included depression, anxiety, and self–esteem as the predictors, with PTSD as the dependent variable. In model 2, Cause of Amputation, Year of Amputation, Level of Amputation, Literality, Type of prostheses, Phantom pain, and Pain with using prosthesis were also included as the predictor variable with PTSD remaining as the dependent Variable. In Model 3, Gender, Marital Status,

Occupational status, educational level, and financial level were included as predictor variables with PTSD as the same dependent variable. Overall, the results showed that the first model was significant $F(3,232) = 59.23, p < 0.001, R^2 = .43$ Both depression and self-esteem are significantly associated with PTSD ($B = 0.501, p < .001$, and $B = -0.256, p < .001$ respectively). The second model was significant $F(10,225) = 19.24, p < .001, R^2 = .46$, only depression and self-esteem is significantly associated with PTSD ($B = 0.486, p < .001$, and $B = -0.261, p < .001$) and the third model was significant ($B = 0.481, p < .001$ and $B = -0.275, p < .001, R^2 = .466$), only Depression and Self-esteem is significantly associated with PTSD in the third model. There was no significant improvement in the second and third models $\Delta F(7,225) = 1.621, p > 0.05, \Delta R^2 = 0.027$ & $\Delta F(5,220) = 0.413, p > .05, \Delta R^2 = 0.005$. Overall, when all other variables were included in the model excluding depression and self-esteem, there was little increase in the variance explained but it was nonsignificant.

Table 7. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to Cause of Amputation.

Variable	Mann-Whitney U Test				
	Amputation Cause	n	Mean rank	z	p
Depression	Disease	77	121.68	-.182	.856
	Injury	163	119.94		
Anxiety	Disease	77	114.79	-.881	.378
	Injury	163	123.20		
PTSD	Disease	77	123.49	-.458	.647
	Injury	163	119.09		
Self – Esteem	Disease	77	110.91	-1.477	.140
	Injury	163	125.03		

$P \leq 0.05^*$ $p \leq 0.01^{**}$

The findings of the Mann-Whitney U test in Table 1 indicate that there is no noticeable distinction in depression, anxiety, PTSD, and self-esteem scores of amputees according to the cause of amputation. The score ranges for

depression, anxiety, PTSD and self-esteem is 25,21, 57, and 21. Those scores are not statistically significant.

Table 8. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to amputee's level of Amputation

Variable	Level of Amputation	n	Mean rank	Kruskal Wallis Test		
				X ²	Df	p
Depression	Above the Knee	57	132.62	14.990	4	.005**
	Below the Knee	127	118.34			
	Ankle Disarticulation	39	90.15			
	Pelvic Amputation	8	165.63			
	Hip Disarticulation	8	156.25			
Anxiety	Above the Knee	57	118.31	3.773	4	.438
	Below the Knee	127	121.21			
	Ankle Disarticulation	39	109.12			
	Pelvic Amputation	8	159.63			
	Hip Disarticulation	8	126.25			
PTSD	Above the Knee	57	144.79	13.549	4	.009**
	Below the Knee	127	113.73			
	Ankle Disarticulation	39	97.29			
	Pelvic Amputation	8	139.00			
	Hip Disarticulation	8	134.56			
Self – Esteem	Above the Knee	57	108.68	8.985	4	.061
	Below the Knee	127	126.58			
	Ankle Disarticulation	39	125.79			
	Pelvic Amputation	8	60.75			
	Hip Disarticulation	8	127.13			

P≤0.05* p≤0.01**

The results of the Kruskal Wallis test presented in Table 3 indicate that depression and PTSD scores of amputees exhibit a noteworthy disparity based on the level of amputation, as denoted by their respective significance levels (P<0.001 for

depression and $P < 0.005$ for PTSD). Nevertheless, no remarkable distinction is observed regarding self-esteem, and anxiety scores according to the level of amputation. Dunnett T3 post hoc test shows that the difference is between ankle disarticulation: above the knee and pelvic amputation for the depression score and between above the knee: below the knee and ankle disarticulation for PTSD and self-esteem.

Table 9. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to amputee's laterality

Variable	Literality	n	Mean rank	Kruskal Wallis Test		
				X ²	Df	P
Depression	Left	97	116.03	6.086	2	.048*
	Right	125	117.69			
	Bilateral	17	159.68			
Anxiety	Left	97	116.31	.696	2	.706
	Right	125	121.50			
	Bilateral	17	129.97			
PTSD	Left	97	122.68	2.721	2	.257
	Right	125	114.80			
	Bilateral	17	142.91			
Self – Esteem	Left	97	123.08	.624	2	.732
	Right	125	119.06			
	Bilateral	17	109.35			

$P \leq 0.05^*$ $p \leq 0.01^{**}$

The depression levels differ significantly, as indicated by the results of the Kruskal-Wallis Test presented in Table 4. ($P < 0.005$) score of amputees according to laterality.

There

is, however, no significant difference in Anxiety, PTSD, and self-esteem scores according to laterality. Amputees who have laterality that are bilateral have higher median scores (159.68) as compared to the other types of lateralities.

Table 10. Differences in Depression, Anxiety, PTSD, and Self-Esteem according to the type of prostheses used by amputees

Variable	Prosthesis Type	n	Mean rank	Kruskal Wallis Test		
				X ²	Df	P
Depression	Prosthetic Limb	99	125.72	4.786	2	.091
	Crutches	102	109.77			
	Wheelchair	39	135.29			
Anxiety	Prosthetic Limb	99	128.59	2.419	2	.298
	Crutches	102	113.64			
	Wheelchair	39	117.92			
PTSD	Prosthetic Limb	99	126.18	1.290	2	.525
	Crutches	102	117.96			
	Wheelchair	39	112.73			
Self – Esteem	Prosthetic Limb	99	126.62	1.963	2	.375
	Crutches	102	119.09			
	Wheelchair	39	108.65			

P<0.05* p<0.01**

According to the findings from the Kruskal Wallis test depicted in Table 5, it can be concluded that the type of prosthetic limb utilized by amputees does not have a noteworthy impact on their levels of depression, anxiety, PTSD, or self-esteem.

Table 11. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to Pain from Prosthesis

Variable	Pain of Prosthesis	n	Mean rank	Mann-Whitney U Test	
				z	p
Depression	No	48	105.60	-1.617	.106
	Yes	191	123.62		
Anxiety	No	48	106.93	-1.473	.141
	Yes	191	123.29		
PTSD	No	48	122.99	-.335	.737
	Yes	191	119.25		

Self – Esteem	No	48	123.43	-.386	.700
	Yes	191	119.14		

$P \leq 0.05^*$ $p \leq 0.01^{**}$

According to the data presented in Table 6, the Mann-Whitney U test results indicate that there is no noteworthy distinction in the depression, anxiety, PTSD, and self-esteem ratings among amputees based on the pain caused by their prosthetic device. While they do encounter discomfort from their prosthesis, but the levels of pain they experience do not exhibit any statistical variance with depression, anxiety, PTSD, and self-esteem.

Table 12. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to Phantom Behaviour.

Variable	Phantom behaviour	n	Mean rank	Mann-Whitney U Test	
				z	p
Depression	No	35	84.37	-3.307	.001**
	Yes	204	126.11		
Anxiety	No	35	102.59	-1.622	.105
	Yes	204	122.99		
PTSD	No	35	93.50	-2.455	.014**
	Yes	204	124.55		
Self – Esteem	No	35	144.57	-2.285	.022**
	Yes	204	115.78		

$P \leq 0.05^*$ $p \leq 0.01^{**}$

The Mann-Whitney U Test results provided in Table 7 indicate a notable distinction in the scores of amputees' depression ($P < 0.05$), PTSD ($P < 0.05$), and self-esteem ($P < 0.05$) based on phantom behavior. Conversely, no significant difference is observed in the anxiety scores of amputees concerning phantom behavior. Amputees who acknowledged experiencing phantom behavior exhibited a higher average rank compared to those who denied experiencing phantom behavior.

Table 13. Differences in amputee's Depression, Anxiety, PTSD, and Self-Esteem scores according to Economic Status

Variable	Economic Status	n	Mean rank	Kruskal Wallis Test		
				X ²	Df	p
Depression	Low	87	123.77	14.018	2	.001**
	Medium	126	109.04			
	High	27	163.44			
Anxiety	Low	87	118.93	2.404	2	.301
	Medium	126	117.44			
	High	27	139.81			
PTSD	Low	87	119.71	8.224	2	.016*
	Medium	126	113.51			
	High	27	155.67			
Self – Esteem	Low	87	104.01	7.935	2	.019*
	Medium	126	130.94			
	High	27	124.93			

P≤0.05* p≤0.01**

The Kruskal Wallis Test in table 8 above shows the differences in depression, anxiety, PTSD, and Self-Esteem scores according to the amputee's economic status. The results show that there is a significant difference in Depression (P<0.05), PTSD (P<0.05), and self-esteem (P<0.05) scores according to the amputee's economic status. However, there is no significant difference in anxiety scores according to the amputee's economic status. Dunnett T3 post hoc test shows that the differences are between those amputees who have High, Low, and medium income for the depression score. Between those who have Medium and high income for PTSD scores and Low and medium for self-esteem scores. Those amputees who have high-income status have higher median scores for both depression and PTSD scores.

Table 14. Differences in Depression, Anxiety, PTSD, and Self-Esteem scores according to amputee's place of Residence

Variable	Mann-Whitney U Test				
	Residence	n	Mean rank	z	p
Depression	Urban	159	127.21	-2.104	.035*
	Rural	81	107.32		
Anxiety	Urban	159	126.71	-1.951	.051
	Rural	81	108.31		
PTSD	Urban	159	122.14	-.514	.607
	Rural	81	117.27		
Self – Esteem	Urban	159	120.15	-.111	.912
	Rural	81	121.19		

$P \leq 0.05^*$ $p \leq 0.01^{**}$

The Mann-Whitney U Test in Table 9 above shows the Comparison of the amputee's Depression, Anxiety, PTSD, and Self-Esteem scores according to the amputee's place of residence. The findings indicate that there is a notable distinction in depression, with statistical significance ($P < 0.05$). Score according to their place of residence. Amputees who are from urban areas have higher median scores as compared to those from rural areas. There is no significant difference in the Anxiety, PTSD, and self-esteem scores of amputees according to their place of residence.

Table 15. Comparison of amputee's Depression, Anxiety, PTSD, and Self-Esteem scores according to Region of Origin

Variable	Mann-Whitney U Test				
	Residence	n	Mean rank	z	p
Depression	East Cameroon: French	96	75.23	-8.266	.001**
	West Cameroon: English	144	150.68		
Anxiety	East Cameroon: French	96	105.90	-2.675	.007**
	West Cameroon: English	144	130.24		
PTSD	East Cameroon: French	96	75.84	-8.140	.001**
	West Cameroon: English	144	150.27		
Self – Esteem	East Cameroon: French	96	141.89	-3.913	.001**
	West Cameroon: English	144	106.24		

$P \leq 0.05^*$ $p \leq 0.01^{**}$

The Mann-Whitney U Test in table 11 above shows the Comparison of amputee's Depression, Anxiety, PTSD, and Self-Esteem scores according to their region.

The findings indicate that the scores for depression, anxiety, PTSD, and self-esteem vary significantly depending on the amputee's place of origin. Amputees who are from West Cameroon: The English region has a higher mean rank for depression, anxiety, and PTSD as compared to amputees from East Cameroon and the French region. While those from East Cameroon the French region have higher median scores for self-esteem as compared to those from West Cameroon: The English region.

CHAPTER V

Discussion

The objective of this research is to analyze the psychological consequences experienced by young adults in Cameroon who have undergone traumatic amputation in their lower limbs. The focus of the study was on assessing the effects of this condition on depression, anxiety, post-traumatic stress disorder, and self-esteem. This chapter discusses the results according to related literature and the contextual factors that informed this study.

The findings reveal a significant and positive relationship between anxiety, PTSD, and years of amputation. This study is consistent with research by Illham et al., (2022), who stated that there is a positive correlation between anxiety and PTSD according to the year of amputation. They reported that anxiety and PTSD symptoms are prevalent in the first two years following amputation and may worsen during the adjustment to normal life after discharge. This study supports our findings which show that after amputation, amputees' minds are clustered with negative thoughts, such as future projections that are characterized by feelings of unhappiness, pessimism, despair, uncertainty about existence, a sense of powerlessness, and anticipated setbacks in life due to their limb removal. This condition may result in rumination and insomnia which increases their level of anxiety and PTSD. Furthermore, it can be suggested that the cause of the increased level of anxiety and PTSD among the participants can be attributed to the amputation itself, the event that resulted in the amputation, or a combination of both. Moreover, anxiety and PTSD may reappear two years after amputation because of the severity of the anxiety and PTSD, or because they did not complete their previous treatment (Marqoob et al., 2008; Muzaffar et al., 2012; Smith, 2019). The results of this research suggest that a considerable number of individuals who go through amputation experience both anxiety and PTSD simultaneously.

There is a positive and significant relationship between depression, anxiety, PTSD, and age at amputation. The result is similar to that of Maciver et al.,

(2023) who mentioned that depression, anxiety, PTSD, and age at amputation have considerable significance. They reported that younger amputees, who are typically of working age, well educated, and have responsibilities such as dependent children, often experience high levels of depression, anxiety, and PTSD symptoms. In Cameroon, amputation can significantly disrupt the lives of young adults, particularly during a time when they are focused on achieving their goals. The drastic change resulting from amputation may cause them to give up their previous aspirations and instead focus on rehabilitation and adaptation programs to restore their mobility. As a consequence of feeling unable to keep up with the demands of life, they may develop anxiety, which can exacerbate their depression and eventually lead to PTSD, impacting their overall quality of life. Related studies mentioned that age at amputation determines the degree of emotional struggle that awaits an amputee (Singh et al., 2009; Melcer et al., 2010). Hence, it implies that younger amputees are more likely to experience melancholy, anxiety, and PTSD since they have more life years ahead of them, as well as a higher perceived loss of social position.

However, a negative and non-significant correlation was noticed between self-esteem, depression, anxiety, and PTSD according to the year of amputation. This agrees with the findings of EL-Matary et al. (2022). The researchers' findings indicate that individuals who have strong self-esteem are less prone to experiencing depression, anxiety, and stress, particularly among amputees. This result supports our findings in that, amputees who have been able to maintain their self-esteem are less affected by sadness, anxiety, or PTSD, and they are less susceptible to acquiring these conditions. A possible explanation is that: they have accepted their new state of life, and they still maintain their family relationships and their social and financial status. Some studies indicated that amputees who have high levels of self-esteem are more likely to have feelings of calmness, restful sleep, and a stable state of mental well-being in comparison to amputees with low self-esteem (Mark 2013; Mulligan, 2011). According to the findings, it is possible to deduce that the occurrence of sadness, anxiety, and stress among amputees is driven by environmental stressors as well as their self-esteem.

The findings indicate that both depression and self-esteem are predicting factors of PTSD. Our result is in line with that of Illham et al., (2022) who mentioned

that depression and self-esteem have a correlation with PTSD in amputation. According to the statements made, a significant number of individuals who undergo amputation experience elevated levels of depression and low self-esteem, which ultimately leads to an increase in their PTSD levels. This aligns with our findings, as the majority of our participants reported a high level of PTSD. This indicates that when an amputee experiences an increase in depression, their self-esteem tends to decrease, resulting in a significant rise in their PTSD levels.

Phelps et al. (2017) suggested that 15% to 26% of individuals with limb loss may experience increased levels of PTSD due to depression and self-esteem. According to Muzaffar et al. (2012) the prevalence of psychiatric comorbidity, specifically PTSD, in individuals with traumatic amputation range from 20% to 80%. The research has shown that higher levels of depressive symptoms can lead to various debilitating consequences such as increased pain intensity, limited activity, self-consciousness, anxiety related to body image, and a significantly reduced quality of life (Asano et al., 2008; Hanley et al., 2012). However, in our study, despite considering demographic factors, we observed little to no significant causal relationship with PTSD. It is suggested that amputation may contribute to an increase in PTSD levels due to the prevalence of depression and a decline in the self-esteem of amputees.

The results indicate that there is no significant difference in depression, anxiety, PTSD, and self-esteem according to the cause of amputation. Our finding is in line with that of Steward, (2008) who reported that depression, anxiety, PTSD, and self-esteem have no significant differences as per the cause of amputation. Amputations are classified into two types: traumas and illnesses. The effect of the initial loss can cause marked depression, anxiety, and PTSD, which can result in a decline in the amputee's self-esteem (Azura, 2018). These results support our findings in that, amputees, regardless of the cause of amputation, experience the same grief stages, which may lead to depression, anxiety, PTSD, and a decline in self-esteem which disrupts their quality of life. Moreover, we can explain that all amputees suffer from societal discrimination and stigmatization, which cause them to be vulnerable and develop maladaptive behaviours. As a result, it portrays a negative repercussion on their well-being and alienate them from society. A related study mentioned that despite the cause of the amputation, all amputees still suffer from body image

dissatisfaction, deteriorating their standard of living (Serraco et al., 2021). Hence, it is clear that emotional shock occurs and significantly affects all amputees regardless of the cause of amputation, whether due to an injury or a disease.

According to our research, we have discovered a notable distinction between depression and PTSD depending on the level of amputation. These findings align with the study conducted by Goksenoglu et al. (2019), reporting that the level of amputation plays a significant role in the prevalence of depression and PTSD among amputees. They stated that individuals who have had a knee disarticulation, above-knee amputation, or pelvic amputation are more likely to be depressed as compared to amputees with below-knee and ankle disarticulation (Simsek et al., 2020; Rybarczyk et al., 2019). This study is in support of our findings which show significant differences between hip amputation, above-knee amputation, knee disarticulation, and pelvic disarticulation for depression and below-knee amputation and ankle disarticulation for depression. This signifies that those with above-knee amputation typically have decreased locomotor capabilities which drastically increases their depression level. Moreover, another possible explanation is that amputees with above-knee amputation experience stress due to amputation level particularly they experience fear of post-amputation posture asymmetry, delayed wound healing, infection, or a re-amputation. The study suggests that amputees with knee disarticulation, above-knee amputation, hip amputation, and pelvic disarticulation experience increased depression or PTSD because the level of amputation affects their locomotive capability and makes them more vulnerable and dependent. However, there are no significant variations in self-esteem and anxiety based on the level of amputation.

There is a significant difference in depression according to the laterality of amputation. The results align with Coxon et al., (2021) study that discovered a significant correlation between the severity of amputation and depression according to the laterality of amputation. They reported that bilateral amputation, in particular, is the most fatal form of amputation, displaying both a higher mortality rate and a greater prevalence of depression. They reported that individuals who have had both of their limbs amputated face a lot of problems, such as limitations in mobility, dependency, isolation, and loneliness. This study supports our findings, which show that bilateral amputation has a higher mean score than unilateral amputation. The

amputee is more likely to rely on a wheelchair as their sole mode of mobility. As a result, this ailment restricts their everyday activities and places them in a position where they are reliant on others for support. As a result, the amputee may experience extreme depression, which may lead to suicide ideation. Related findings also reported that bilateral amputation has more repercussions than unilateral amputation (Brookmeyer, 2008; Curtze et al., 2009). The suggestion is that individuals who have had both legs amputated experience more psychological distress than those with unilateral amputation. Additionally, this study did not find any notable variances in anxiety, post-traumatic stress disorder (PTSD), or self-esteem based on the laterality of the amputation.

The findings also indicate that there are no notable variations observed in terms of depression, anxiety, PTSD, and the type of prosthesis employed by amputees. Our results align with those of Pechman et al. (2023), who also found no substantial distinction in depression, anxiety, PTSD, and self-esteem according to the type of prosthesis used by the amputees. They stated that there are several stages to the amputation journey, and one of the stages is the use of a prosthetic limb which causes the same distress to all amputees. This study is in line with our findings which show that prosthesis users face similar emotional challenges. However, amputees have no choice in the sort of prosthetic limbs; doctors select them based on their level of amputation, which may decrease their mental suffering as a result of the amputation.

The results of the findings reveal that there is no significant difference in depression, anxiety, PTSD, and self-esteem according to the pain caused by prosthesis. This study coincides with that of Bradway et al., (2018) who reported no significant differences in depression, anxiety, PTSD, and self-esteem according to the pain caused by prosthesis. They reported that all amputees develop an increased level of despair, anxiety, PTSD, and a decline in their self-esteem due to pain caused by prostheses. This study supports our findings in that, some of our participants presented a high score for depression, anxiety, PTSD, and self-esteem due to pain caused by their prosthetics. This pain can be attributed to the outdated nature of the prosthetics. Moore et al., (2023) reported that pain associated with prosthetics is also a matter of concern. This can be attributed to

various factors such as poorly fitting sockets, inadequate contact at the distal end, insufficient relief of the bones, excessively tight or loose fittings, friction or blisters caused by pistoning, incorrect alignment, and improper distribution of pressure.

There is a considerable difference in amputee's depression, PTSD, and self-esteem scores according to phantom behaviour. Phantom sensation is a perceptual feeling caused by a missing limb (WHO, 2022). Our result is in line with that of Jatkermany et al. (2021) who found a significant difference between depression, PTSD, and self-esteem according to phantom behaviours. They stated that amputees experiencing such sensations generally report significantly higher PTSD and anxiety. This is consistent with our finding which signifies that due to phantom limb behavior, there is a severe increase in the level of depression experienced by some amputees which might result in a decline in their self-esteem, while others are noticed with a high rate of PTSD which may have a significant influence on their self-esteem as well. Landaro et al., (2017) reported nocturnal falls caused by a feeling of the presence of the amputated limb as an example of phantom behavior. In this light, some of our participants reported this act, which causes sadness, discomfort, and distraction. Which has a significant impact on their quality of life. Therefore, it can be concluded from the results that phantom behaviour plays a role in the psychological impact of amputation. Furthermore, the research highlights that there is no noticeable variation in anxiety levels related to phantom behaviour. Meaning that the majority of amputees undergo anxiety caused by phantom limb pain as a reaction to their amputation.

The study reveals that there is a significant difference in depression, PTSD, and self-esteem according to the amputee's economic status. This result is in agreement with that of Amin et al., (2014) who reported a noticeable variance in depression, PTSD, and self-esteem according to the economic status of amputees. They reported that even though low-income amputees experience emotional discomfort, the intensity is greater among amputees with high economic status. This study is in support of our findings in that amputees with high-income status have higher scores for depression and PTSD. High-income status amputees associated sadness, PTSD, and low self-esteem with societal indifferences (Fanaroff et al., 202;

Fan et al., 2022; Yuan et al., 2023). Money is a resource; that people use to solve a wide array of problems. Unfortunately, the occurrence of an accident that necessitates an amputation, for example, cannot be predicted or controlled. As a result, they undergo acute depression, PTSD, and lower self-esteem. In Cameroon, society attributes their amputation as an occult method of increasing wealth. As a result, they suffer from social isolation, which increases negative thoughts and worries, lowers their self-esteem, and impairs their quality of life. There is however no significant difference in amputee's anxiety according to their economic status, meaning all amputees go through the same distress of anxiety due to the amputation.

The findings reveal that there is a significant difference in depression according to the area of residence. The discovery aligns with the same conclusion of Li et al., (2020) who asserted that amputees in metropolitan regions are more likely to suffer from increased depression than those in rural locations. In Cameroon, amputees in the urban areas are more prone to increased chances of re-amputation or a second amputation owing to excessive traffic. Also, they are exposed to pollution from automobiles and factories. Consequently, they may contract amputation-related complications such as cardiovascular diseases leading to an increase in depression which may affect their quality of life. However, there are no significant differences in anxiety, PTSD, and self-esteem scores of amputees.

The study indicates a significant difference in depression, anxiety, PTSD, and self-esteem according to the region of origin of the amputees. The finding is harmonious with that of Prechabe et al. (2008), who reported that amputees living in the West region of Cameroon are more exposed to depression, anxiety, PTSD, and low self-esteem due to political insecurity (Goodney, 2018). This study supports our findings in that amputees from West Cameroon had a higher mean rank for depression, anxiety, and PTSD than those from East Cameroon. This implies that due to the crises in the region, amputee realizes an increased level of depression, anxiety, PTSD, and low self-esteem as compared to those in the East region who are not affected by the crisis. As a result, they may develop suicidal ideas, believing that it is the best solution. This implies that amputees who live in crisis zones are more exposed to depression. Moreover, the finding reports that amputees from the French region have a high score

in self-esteem. This can be justified by the peace and tranquility they enjoy in the region. (Konings, 2020; Ayaefru, 2011).

CHAPTER VI

Conclusion and Recommendation.

Conclusion.

This research examines the psychological impacts of traumatic lower limb amputation among young adults in Cameroon. Depression, anxiety, PTSD, and self-esteem were among the variables that were studied. The outcome of this discovery shows that there are no considerable differences in depression, anxiety, PTSD, and self-esteem according to the cause of amputation. Even though amputees with planned amputation are aware of their amputation as opposed to those with unplanned amputation who wake up in shock because of their amputated limb, they all experience the same grief stages and societal challenges, which disrupt their quality of life. The result of the hierarchical linear regression for variance predicting PTSD indicates that both depression and self-esteem are significantly associated with PTSD. Moreover, the level of amputation is said to have a considerable difference in terms of depression, and PTSD, the reasons being that amputations above the knee result in greater discomfort as compared to that below the knee because it affects the amputee's locomotive capability making them more vulnerable and dependent than below-knee and ankle disarticulation amputations. There is a considerable difference in depression according to amputee's laterality, individuals with bilateral amputation suffer more in terms of psychological distress as compared to those with unilateral amputation. The results also reveal that there are no considerable differences in depression, anxiety, PTSD, and self-esteem according to the type of prosthesis amputees use, meaning prosthesis users face similar emotional challenges. In addition, there is a considerable difference in depression, PTSD, and self-esteem according to phantom behavior, Hence, it is evident from the findings that phantom behavior contributes to the psychological effect of amputation because of the discomfort it puts the amputees through. Again, the findings reveal that there is a significant difference in depression, PTSD, and self-esteem according to the economic status of amputees, high-income earners suffer more depression than low-income earners because of the prejudices the societal attributes to amputation such as a means of incurring more finances.

Recommendation for Future Research.

- Most amputees were left out of the study because they were not present in the rehabilitation centers at the time of data collection. Hence, it is recommended that further studies be done to incorporate other rehabilitation centers and neighborhoods to have a bigger sample.

Recommendation for Health Professionals in Charge of Caring for Amputees.

- It is evident from the results of the findings that despite the cause of the amputation all amputees face an increase in their level of depression, anxiety, PTSD, and a decline in their self-esteem. It is recommended that the amputee rehabilitation team should include a psychologist for therapeutic intervention, social workers to provide psychosocial assistance, and a psychiatrist to address one or more aspects of the patient's need.

In addition, involving the family in every stage of development can

be highly advantageous. The team approach, in particular, plays a crucial role in enabling a quicker transition back to familiar environments and personal autonomy. Intervention must be delivered to patients in a timely way to reduce functional limitations and improve occupational reintegration and social participation for amputees.

Recommendation for the Government.

- It is evident from the findings that prosthetic limbs cause pain and suffering to all amputees increasing their level of depression, anxiety, and a decline in their self-esteem. It is therefore recommended that the Cameroonian government should improve the fabrication of modern prosthetic limbs such as biotic limbs, electronic wheelchairs, and hand-fitting crutches at a reduced cost. This new device will help to alleviate the mental distress that amputees experience as a result of using outdated prosthetic limbs. This will be extremely important since it will boost their self-esteem and quality of life.

- Based on the findings of this study which reveals that all amputees face phantom behavior that affects their mental well-being, it is recommended that the Cameroonian government should implement special recruitment and training programs to amputee knowledge to specialists on modern techniques of intervention in chronic pain such as phantom limb pain, phantom limb sensation. This will help to minimize the discomfort this condition puts them through.

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APPENDICES

Appendix A

Participants Information Consent Form

Dear Participant,

You are invited to participate in a research study to examine the psychological impacts of traumatic lower limb amputation. It focuses on the psychological factors such as depression, stress, anxiety as well as self-esteem on the mental health of young adults amputated in Cameroon. The questionnaire will require just 10 minutes to complete. Participation in the study is voluntary and will not affect your association, club, or rehabilitation centre adhesion. The questionnaire does not include any questions about identifying information such as names of participants. The data collected during this study will be used for academic purposes only and no identifying information will be collected or included in the write-up. You are free to withdraw from the study at any time by contacting us; therefore, your information will be deleted from our databases. If you have any questions or concerns, please contact us through the communication channels below.

Eveline Limba Ngwane

Department of Psychology

Near East University

20223232@std.neu.edu.tr

By signing below, you agree to take part in the study.

Signature.....

Date.....

Appendix B

Participant Information Sheet

Dear Participant,

This questionnaire contributes to a research study to understand the psychological impacts of traumatic lower limb amputation. It focuses on the psychological factors such as depression, stress, anxiety, and self-esteem on the mental health of young adults amputated in Cameroon. By completing this form, you agree to participate in our study.

Please note that your participation in the study is voluntary. Agreeing or refusing to participate in the research will not impact your adhesion to the association, club, or rehabilitation centre. The identities of the participants will not be disclosed to any third parties. The questionnaire does not include any identifying information, such as names of participants. The data collected during this study will be used for academic purposes only. The data will be stored in password-protected files to be deleted a year after the research is completed. You have the right to withdraw from the study at any time by contacting us, and your information will be deleted from our databases.

If our study causes harm or distress, don't hesitate to contact the researchers for psychological support. If you have any questions or concerns, please contact us using the information below.

Eveline Limba Ngwane

Department of Psychology

Near East University

20223232@std.neu.edu.tr

Appendix C

Demographic Questions

Instruction: Please Tick the Best Answers as it Applies to You

1. Cause of amputation
2. Level of amputation: (A) Above knee, (B) Below knee, (C) Ankle disarticulation, (D) Pelvic disarticulation, (E) Hip amputation
3. Laterality: (A) Left, (B) Right, (C) Bilateral
4. Which type of prosthesis do you use? (A) Prosthesis (B) Crutches (C) wheelchair
5. Do you feel any phantom pain? (A) Yes, (B) No
6. Do you feel any pain from the use of a prosthesis? (A) Yes, (B) No
7. Financial status: (a) high (b) low (c) medium
8. Year amputated
9. Region of origin: (A) West Cameroon, (B) East Cameroon
10. Place of resident (a) rural (b) urban

Appendix D

The Patient Health Questionnaire- Depression (PHQ-9), by Dr. Robert and Colleagues 1999.

The following statements describe how often you have been bothered by the following statement. There are no right or wrong answers; the best answer is the immediate, spontaneous one. Read each phrase carefully and mark the answer that reflects your first reaction.” For each depression item participants indicated on a four-point Likert scale whether the statement is **Note at all, Several days, more than half the days, nearly every day**

1. Little interest in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling or staying asleep, or sleeping too much
4. Feeling tired or having little energy
5. Thought that you would be better off dead, or of hurting yourself

Appendix E

The Generalised Anxiety Disorder- GAD-7 by Dr. Spitzer and Colleagues (2006).

The following statements describe how often you have been bothered by the following problem. There are no right or wrong answers; the best answer is the immediate, spontaneous one. Read each phrase carefully and mark the answer that reflects your first reaction.” For each anxiety item participants indicate on a four-point Likert scale whether the statement is **Note at all, Several days, more than half the days, or nearly every day.**

1. Feeling nervous, anxious or on edge
2. Not being able to stop or control worrying
3. Worrying too much about different things
4. Trouble relaxing

Appendix F

Rosenberg Self-esteem Scale, (RSES)

The following statements describe how often you have been bothered by the following statement. There are no right or wrong answers; the best answer is the immediate, spontaneous one. Read each phrase carefully and mark the answer that reflects your first reaction.” For each self-esteem item participants indicate on a four-point Likert scale whether the statement **Strongly agreed, Agreed, Disagreed, Strongly Disagreed**

1. I feel that I am a person of worth, at least on an equal plane with others.
2. I feel that I have several good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I can do things as well as most people.

Appendix G

Post-Traumatic Stress Disorder Scale – (PCL-5) by Weathers and Colleagues (2013).

Below is a list of people's complaints and problems in response to stressful life experiences. Indicate with a tick in each box how much you have been bothered by that life problem since your amputation.

1.	Repeated, disturbing and unwanted memories of the stressful experience?
2.	REPEATED, disturbing dreams of the stressful experience?
3	Suddenly acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?
4.	Feeling very upset when something reminded you of the stressful experience?

Appendix H

Permission regarding the use of the Patient Health Questionnaire-Depression Scale, (PHQ-9)

No permission

The PHQ 2 and 9 are both publicly available, and **no permission** is required to use, reproduce, or distribute the tools. Additionally, the tools are free of cost to use and can be incorporated into electronic health records.

File Size: 151KB

Page Count: 6

[Administering the Patient Health Questionnaires 2 and 9 \(PHQ 2 an...](#)

 www.health.ny.gov/health_care/medicaid/redesign/dsrip/docs/2016-07-01_ph...

Appendix I

Permission regarding the use of the Generalized Anxiety Disorder Scale

No permission is required

The GAD-7 is a questionnaire developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc.¹. No permission is required to reproduce, translate, display or distribute the GAD-7 and its translations^{1 2}. The copyright is held by Pfizer Inc. but the questionnaire is free to use³. The questionnaire has been validated for use as a screening tool and severity measure^{3 4}.

Appendix J

Permission regarding the use of the Rosenberg Self-Esteem Scale

Public domain

The Rosenberg Self-Esteem Scale is now in the **public domain**, meaning you may use it without charge and without notifying the Sociology Department. This permission extends to making translations or adaptations as you see fit, consistent with traditional scholarly attribution practices.

[Rosenberg Self Esteem Scale | SOCY | Sociology Department | Univ...](#)

 socy.umd.edu/about-us/rosenberg-self-esteem-scale

Appendix K

Permission Regarding the use of the Checklist for DSM-5 (PCL-5) Scale

PCL-5

UPDATED: August 24, 2021

The PTSD Checklist for *DSM-5* (PCL-5) is a 20-item self-report measure that assesses *DSM-5* symptoms of PTSD. This measure was developed by staff at the Veterans Affairs (VA) National Center for PTSD. It is free for qualified health professionals and researchers to use.

RESOURCE LINK: [View Resource](#)

Appendix L

Ethical Approval



NEAR EAST UNIVERSITY

SCIENTIFIC RESEARCH ETHICS COMMITTEE

06.11.2023

Dear Eveline Limba Ngwane

Your application titled **“Examining the Psychological Impacts of a Traumatic Lower-Limb Amputation among Young Adults”** with the application number NEU/SS/2023/1681 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Prof. Dr. Aşkın KİRAZ

The Coordinator of the Scientific Research Ethics Committee

Appendix M

Turnitin Originality Report

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Appendix N

Curriculum vitae

My name is Eveline Limba Ngwane, I am an unmarried woman from Cameroon. I completed my G.C.E. ordinary and advanced levels at Inter-Comprehensive High School in Buea and Cerget Comprehensive High School in Douala between 2003 and 2006. Between 2007 and 2010, I earned a Higher National Diploma in Social Work from the National Institute of Social Workers in Cameroon. In 2020 and 2021, I obtained a bachelor's degree in clinical psychology and psychopathology from the University of Douala in Cameroon. In 2022 and 2023, I pursued post-graduate studies in general psychology at Near East University in Northern Cyprus. My professional experience includes working at Team Foundation and the Ministry of Social Affairs.