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PHYSICAL AND PSYCHOLOGICAL OUTCOME OF PATIENT WITH UNILATERAL LOWER LIMB AMPUTATION

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Bachelor of Science in Physiotherapy (B.Sc. PT)

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance of this dissertation entitled.

PHYSICAL AND PSYCHOLOGICAL OUTCOME OF PATIENT WITH UNILATERAL LOWER LIMB AMPUTATION

Submitted by, **Suchita Subrin** for the partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc. In PT)

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DECLARATION

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that any publication, presentation or dissemination of information of the study. I would oblige to take consent from the department of Physiotherapy of Bangladesh Health Profession Institute (BHPI).

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Acronyms

APA: American Psychological Association.

ASH: Disabilities of the arm, shoulder, and hand.

BHPI: Bangladesh Health Professions Institute.

BMRC: Bangladesh Medical and Research Council.

CRP: Centre for the Rehabilitation of the Paralyzed.

GAD-7: General Anxiety Disorder-7.

IRB: Institutional Review Board.

LCI: Locomotor capability index.

PEQ: Prosthesis evaluation questionnaire

PHQ-9: Patient Health Questionnaire-9.

PLUS: Prosthetic limb user's survey.

P&O: Prosthetics and Orthotics.

SPSS: Statistical Package of Social Science.

WHO: World Health Organization.

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Abstract

Background: The patients after unilateral lower limb amputation undergo a sudden transformation in their life. They face many difficulties in their physical and psychological status. **Objectives:** To determine the socio demographic information of the unilateral lower limb amputation person. To explore the anxiety level among the unilateral lower limb amputation. To find out depression status among the unilateral lower limb amputation person. To identify the functional outcome of unilateral lower limb amputation patient. **Methodology:** The study was conducted by using of cross sectional method. 70 participants were selected from Prosthetics and Orthotics Department at CRP, Savar, Dhaka. Participants were selected by convenience sampling. All data were collected through face-to face interview by using a semi structured questionnaire. **Results:** From the result of the study it was found that maximum participants were in between 21-30 years, 82.90% participants were male and remaining 17.10% were female. More than half (65.50%) of participant were functionally dependent on aids. On the other hand (15.91%) participants were functionally independent perform their activity individually.(13.87%) participant could perform their functional activity if anyone near them.(3.80%) participants were perform their daily activities with the help of other and (0.80%) were totally dependent on other. In unilateral lower limb amputation, most of the participants 50% faced mild depression. Among the patients with unilateral lower limb amputation, 55.70% participants were mild anxious. It is found that, fair functional outcome with minimal to mild psychological status of the unilateral lower limb amputation patients. **Conclusion:** From the result of the study it was found that male are more affected than female. After unilateral lower limb, people face not only functional but also psychological problem. And there was association between use of prosthesis and functional and psychological outcome.

Key words: Unilateral lower limb amputation, Functional outcome, Psychological outcome.

1.1 Background

Amputation is surgically removal of full or part of the limbs to protect the other parts. An amputation is the elimination of an organ or other limbs in the body. Amputation is defined as synthesis or spontaneous partial or completely removable portable or part of the processing body, which is covered by skin and is one of the most disabilities (Pooja and Sangeeta 2013,p. 36). Lower limb amputation is a permanent surgical procedure that can influence the daily activity of the person and also effect important functionality (Van Twillert et al. 2004,p. 642).

Life-altering surgery includes lower limb amputation (Geertzen et al. 2015,p. 365). Lower extremity amputation is a surgical surgery with significant anatomical, functional, psychological, and social repercussions that may have an impact on the patients' quality of life. Regardless of gender, patients who have had lower extremity amputations have many more restrictions than the control group, whereas individuals who have had lesser levels of amputation have higher levels of physical functioning (Knezevic et al. 2015, p. 103).

The most frequent reasons for surgical amputations are diabetes-related problems (diabetic foot), which include several vascular issues such ischemia and peripheral artery disease (Feinglass et al. 2012, p. 158). Furthermore, peripheral vascular disorders, a frequent cause of limb amputation, are extremely widespread (70%) in low- and middle-income countries, and their prevalence is rising quickly (Fowkes et al. 2013, p. 1330). Amputations were most frequently recommended following hospitalization for 14 diabetes complications (81%), cardiovascular disease (6%), or cancer (3%) according to another study conducted in Canada (Kayssai et al. 2016, p. 99). Thus, it may be said that peripheral vascular disease is the most common reason for amputation in developing nations. According to a study done in India, trauma was the reason for 70.3% of amputations (Jordan et al. 2012, p. 431).

Amputation can occur at a number of anatomical levels. It can affect either the upper or lower limbs (unilateral) or just one (bilateral). Additionally, there are multiple amputations (a combination of upper and lower limb amputations) (De Laat et al. 2011, p. 1306). According to a study lower limb amputation may also involve the removal of one or more toes, a portion of the foot, ankle disarticulation (disarticulation is the amputation of a body part through a joint), trans-femoral (above the knee) amputation, hemi-pelvectomy (removal of half of the pelvis), and hip disarticulation (Ziegler-Graham et al. 2008, p. 422).

Amputations can occur via the shoulder, above the elbow, below the elbow, through the elbow, through the hand, through the hip, below the knee, through the knee, and through the ankle, depending on the extent of the damage. Due to the reduction in body mass, the circulatory system, and static and dynamic functions, amputation of a limb causes significant alterations in homeostasis. As cardiovascular functions, metabolism, exercise tolerance, and ability deteriorate, rehabilitation and prosthetic fitting become more challenging (Kurdibaylo 1994, p. 222).

The most important task following an amputation is the patient's rehabilitation, which focuses on restoring the patient's functioning and activity participation as well as general health and psychological well-being, pain management, skin and stump care, and prosthesis fitting (Porter 2003, p. 851). Improvements in cardiorespiratory and overall physical functioning are the major components of functioning restoration. (Simmelink, Wempe, Geertzen, Der and Dekker 2018, p.13).

The initial stage of range of motion, strengthening, and endurance exercises are given to amputation patients to improve their functional result, in accordance with World Health Organization (WHO) guidelines. The primary physical functioning outcomes that are anticipated in the later stages of rehabilitation are bathing, clothing, feeding, and toileting, hygiene, transferring, walking, going up and down stairs, and jumping up a step. Additionally, regimens for running, walking, and riding a stationary bike can be

used to enhance both cardiovascular and muscle health. The next step in rehabilitation is prosthetic fitting and achieving functional results with the prosthesis, which is dependent on the patient's age (Kurdibaylo 1994, p. 222).

The primary goal of rehabilitation is to enhance functional outcomes and quality of life while also enabling patients to become independently functioning members of society (Agrawal 2016, p. 25). To evaluate functional results and quality of life in clinical settings, a variety of scales can be utilized. These scales, which can be used at the beginning, throughout, and at the conclusion of the rehabilitation program to assess patient achievements and improvements, can basically be divided into three categories: self-reported measures or patient-reported outcomes, performance-based measures, and biomechanical measures. (Agrawal 2016, p. 25).

Scales like the Amputee activity survey, Prosthesis evaluation questionnaire (PEQ), Prosthetic profile of the Amputee, Locomotor capabilities index, Orthotic prosthetic users' survey, Trinity amputation and prosthesis experience scales (TAPES), Prosthetic limb users survey (PLUS), and Disabilities of the arm, shoulder, and hand (DASH) can be used to measure self-reported measures or patient-reported outcomes (Agrawal 2016, p. 25). A program to evaluate patient accomplishments and advancements (Agrawal 2016, p. 25).

Lower limb amputees are more familiar with this situation than upper limb amputees, even though the incidence of lower limb amputation is higher than that of the upper limb (Sinha et al. 2011, p. 90). Amputation results in a permanent disability that dramatically alters the person's life and function. In a recent study conducted in Kolkata, lower limb amputees made up 94.8% of the population with amputations, with people in their 20s and 30s being the age group most frequently affected (Pooja and Sangeeta 2013, p. 36).

The patient who underwent an amputation has experienced a variety of psychological difficulties. Body image issues, anxiety, sadness, and post-traumatic stress disorder (PTSD) are possible among the amputees. Depression is linked to greater degrees of activity restriction, emotions of vulnerability being easily exposed, and worse self-

reported health. Higher degrees of discomfort and anxiety are risk factors for depression among amputees. Up to 64% of amputees showed signs of anxiety after the amputation. Greater levels of symptomatic distress and greater rates of suicide conduct are documented when anxiety disorders like post-traumatic stress disorder (PTSD) coexist with depression (Iqbal et al. 2009, p.2).

Lower limb amputation (LLA) is regarded as the most extreme surgical surgery, with significant effects on function in daily activities. The effects of these actions might be lessened by employing rehabilitation techniques. Although amputations have saved countless lives, they also contribute significantly to inequality, particularly in poor and underdeveloped nations. Lower limb prosthesis is more common because of mining and auto accidents. Antipersonnel land mines and explosive remnants from the collision many years ago caused injuries to persons (Zidarov et al. 2009, p. 634).

The patient who underwent an amputation has experienced a variety of psychological difficulties. Body image issues, anxiety, sadness, and post-traumatic stress disorder (PTSD) are possible among the amputees. Depression is linked to greater degrees of activity restriction, emotions of vulnerability being easily exposed, and worse self-reported health. Higher degrees of discomfort and anxiety are risk factors for depression among amputees. Up to 64% of amputees showed signs of anxiety after the amputation. greater levels of symptomatic distress and greater rates of suicide conduct are documented when anxiety disorders such post-traumatic stress disorder (PTSD) coexist with depression (Iqbal et al. 2009,p. 2).

There are favorable results for those who have had amputations, and rehabilitation specialists do their utmost to restore functionality through the use of therapies in rehabilitation. But using a lower limb prosthetic still presents challenges. For rehabilitation that is related with premorbid functions and for a specific person with LLA, specific assessments and outcomes are chosen (Horne and Neil 2009, p. 154). Unexpectedly, the common objectives of amputee rehabilitation programs for amputee patients are to increase mobility and function by properly fitting prosthetics. It also attempts to help people with LLA reintegrate into the community and, ultimately, to increase their total functional activity (Zidarov et al. 2009, p. 135). All rehabilitation

programs for amputee patients have as their central goal the restoration of mobility and locomotor function (Franchignoni et al. 2007, p. 743).

A lower limb amputation affects a person's mobility as well as their participation in a variety of everyday activities, how they are seen in society regarding their appearance, and their quality of life. The ability to walk with a prosthesis is reduced by lower activities of daily living slots and a lower level of social activity. Because of this, fewer people can walk and carry out daily tasks with prostheses in their homes and in society (Pooja and Sangeeta 2013, p. 36).

Physical therapy is a crucial component of being able to handle daily activities. Amputees must get training in order to accomplish some activities of daily living, including self-care, mobility, transfer, balance, and exercises they can do on their own. Exercise is crucial for the patient's recovery from the amputation as well as for post-amputation wheelchair and crutch mobility. In order to enable patients to execute their everyday duties independently, it is also crucial to develop the muscles in both lower extremities. The individual has to learn about basic hygiene, including washing, dressing, transferring, moving around, maintaining balance, and exercising (Nehler et al. 2014,p. 686).

1.2 Rationale

Amputation brings a major change in an individual's life, whose image of their own body is changed; movement activities and self-care are made more difficult; the psycho-social status of the patient's life is changed as well, and the performance of professional and other activities are significantly affected. Lower extremity amputation is seen in clinical practice. Most of the case have injuries caused by trauma or various disease. In recent year, disability caused by amputation has increased every year with the development of our country. The most affected function is walking, especially in different terrains and slopes. After any catastrophic situation national and international welfare organizations are ready to provide fund for immediate response or early recovery but a very few numbers of organizations follow the sustainability development or empowerment of the injured or disabled people. Many patients who face depression and anxiety after amputation do not want to receive treatment because they think they are the burden of family and society. So, it is important to explore their psychological level and motivate them to treatment. In Bangladesh, there is no evidence of psychological status (Anxiety, depression level) of amputation survivors. The main focus of the study is to determine the outcome of functional activity, anxiety and depression level of unilateral lower limb amputation which will beneficial for them, their caregivers and also for physiotherapist because they will inform about patient's psychology. However the investigator feels that there have still some limitation. Developed and evidence based project study should be done to strengthen physiotherapy profession. There is no such relevant research has been conducted in this field yet in Bangladesh. That's why I am interested to do it.

1.3 Research Question:

What are the functional and psychological outcome of patient with unilateral lower limb amputation?

1.4 Aim of study:

To identify the functional and psychological outcome of patients with unilateral lower limb amputation.

1.5 Objectives:

1.5.1 General objective:

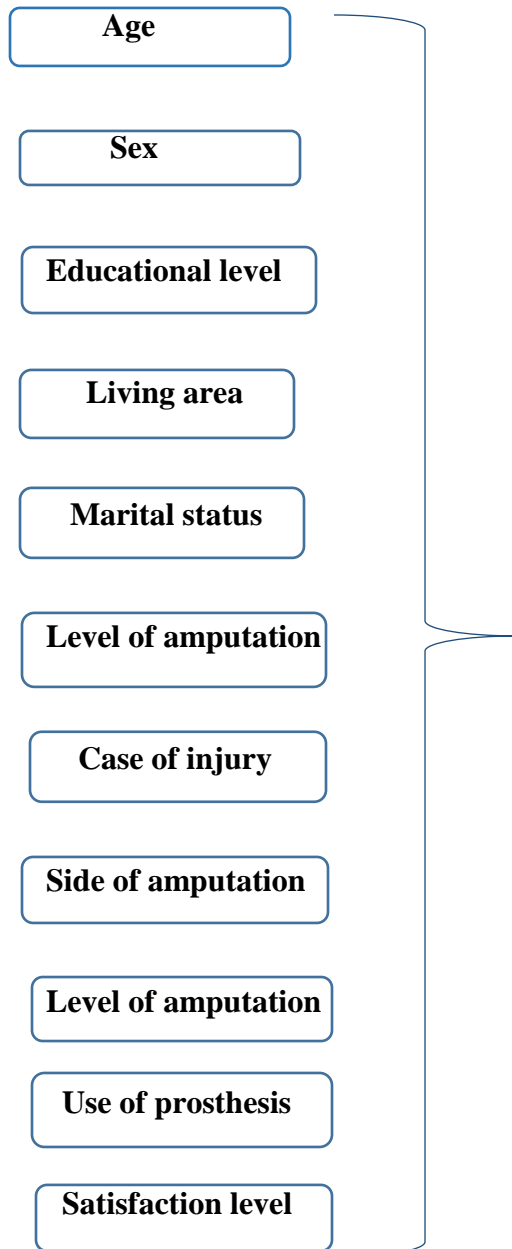
To identify functional and psychological (Anxiety and depression level) outcome of patients with unilateral lower limb amputation.

1.5.2 Specific objectives:

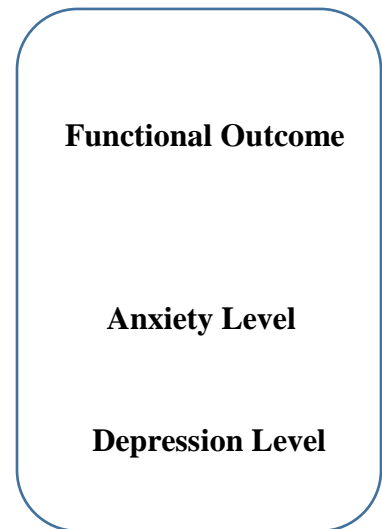
1. To determine the socio demographic information of patients with unilateral lower limb amputation.
2. To find out the functional outcome of patient with unilateral lower limb amputation.
3. To explore the anxiety level among the patient with unilateral lower limb amputation.
4. To explore depression status among the patient with unilateral lower limb amputation.
5. To find the correlation between socio-demographic information and LCI.
6. To determine the association between socio-demographic information and GAD.
7. To determine the association between socio-demographic information and PHQ.

1.6 Conceptual framework

Independent Variables



Dependent Variables



1.7 Operational Definition

Amputation: An amputation is the exclusion of a limb or other limb outgrowth of the body. Amputation is defined as the surgical or spontaneous partial or complete removal of a limb or projecting body part covered by skin and is one of the most common developed disabilities.

Lower limb amputation: Lower-limb amputation is the removal of a part or multiple parts of the lower limb. Though there is some discrepancy in literature regarding exact distal boundaries, it is generally accepted that “major” amputations include those which are at or proximal to the ankle.

Functional outcome: Functional outcome distinguishes itself from clinical outcome, focused instead of an individual's recovery in areas such as vocational and social functioning rather than symptom resolution. Functional outcomes are the results of care that define how a patient is able to perform activities of daily life.

Anxiety: Anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure. People with anxiety disorders usually have recurring intrusive thoughts or concerns. They may avoid certain situations out of worry. A feeling of apprehension and fear, characterized by physical symptoms such as palpitations, sweating, and feelings of stress.

Depression: Depression is a common mental disorder, characterized by persistent sadness and a loss of interest in activities that you normally enjoy, accompanied by an inability to carry out daily activities, for at least two weeks. Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest. Also called major depressive disorder or clinical depression, it affects how you feel, think and behave and can lead to a variety of emotional and physical problem.

One of the first surgical procedures, dating back to Hippocrates, is the amputation of an extremity (Paudel et al. 2005, p. 212). An extremity is amputated as part of a therapeutic operation when its function has been irreparably damaged. On the basis of anatomical level, procedures range from foot amputations to the more proximal knee and hip disarticulations. Globally, the rate of lower limb amputation varies greatly, from 5.8 to 31 per 100,000 people (Paudel et al. 2016, p. 212).

There is no statistics on the global incidence of amputation, but data that is available shows that there is a lot of diversity both within and within countries. According to Moxey et al. (2011, p.1144), the major amputation rate was 5/1 per 100,000 people and remained stable over a 5-year period. Depending on the type and severity of the condition, the prevalence of disability in South East Asia ranges from 1.5% to 21.3% of the total population. (Imam et al. 2017, p. 374). The Global Lower Extremity Amputation Study Group evaluated the incidence of lower limb amputation in ten different locations around the world using a standard protocol for data collection, and they found significant variations in the annual rates of lower limb amputation among test sites (Narres et al. 2017, p. 18). According to the most recent figures in the United States, there are currently more than 1.7 million people living with amputations (Mousavi et al. 2012, p. 1555).

35,306 LLA procedures were carried out in Australia between July 1, 2007, and June 30, 2012. These procedures were performed below the ankle in nearly three-quarters of the cases. More over 40% of all LLA were toe amputations, making them the most frequent level. In comparison to transtibial and transfemoral amputations, partial foot amputations (excluding the toe level) were twice as common. Over 60s made about two thirds of the population undergoing LLA. A tiny percentage of people under the age of 35 were affected by LLA, which affected adults between the ages of 35 and 60. Males underwent two-thirds of all LLA procedures. People with type 2 Diabetes Mellitus accounted for half of all LLA cases. national rate of occurrence The crude IR-LLA across the time series of this analysis was 32.4 per 100,000 people. Males had an age-adjusted IR-LLA

that was twice as high as that of females (40.3 per 100,000 population 95%CI 39.8-40.8) (19.9 per 100,000 population; 95%CI 19.5–20.2) (Dillon et al. 2017, p. 17).

According to the most recent figures in the United States of America (Mousavi et al. 2012, p. 1556), there are currently about 1.7 million people who live with amputations. According to estimates, one in every 190 people in the United States has lost a limb. The number of Americans living with amputations is expected to more than double by the year 2050 if current trends continue. The same study revealed a rising proportion of lower limb amputations, which are less common than upper limb amputations and account for around 65% of LLAs in the United States (Ziegler-Graham et al. 2008, p. 422).

The amputees ranged in age from under 20 to over 70 years old. Age 21 to 30 was the most common age range for amputation, making up 32.0% of all amputees. The age group of 20 years and under came in third, accounting for close to 14.2% of all amputees, followed by the 31–40 year age group, which represented 23.2% of all amputees. In the same study, different levels of amputation as measured by Permanent Physical Impairment (PPI) revealed that below-knee, through-knee, above-knee, below-elbow, above-shoulder, through-hip, and through-ankle amputations were all higher than 70%, 75%, 85%, and 55%, respectively (Pooja and Sangeeta 2013, p. 36).

The amputee is supposed to go through four or five stages as part of their oppressing process, namely resistance, anger, 11 coping, sadness, and acceptance. The amputee most frequently oppresses for the missing limb and the old body image. This frequently mimics how individuals typically react when a loved one passes away or when they are told they have a serious illness (Chin and Toda 2016, p. 957).

Six reports on the frequency of trauma-related amputations have been released since the middle of the year 2000. In Maryland nonfederal hospital admissions, the rate of traumatic limb loss fell from 1.3 to 0.6 per 10,000 people between 2002 and 2004 in the United States. People over the age of 70 and those who have had both lower limbs amputated may find it difficult to walk after the procedure (Tashkandi et al. 2011, p. 23).

Although limb absence statistics are not currently compiled in the UK, the United National Institute for Prosthetics & Orthotics Development (2013) estimated that in the years 2010–2011, over 6,000 people with limb absence were referred to prosthetic centers. Additionally, the Republic of Ireland does not keep statistics on limb loss, although a national representative group has asserted that there are over 5,000 people in this nation who are limbless (Amputee Disability Federation Ireland 2014).

A variety of medical specialties must work together on physical rehabilitation. Preoperative, right after surgery, prosthetic rehabilitation, and ongoing care are the four stages of the rehabilitation process. The initial step after recovery from surgery is to assess the patient's suitability for prosthetic rehabilitation (O'Keeffe 2011, p. 246).

A single limb may be amputated (unilateral), both upper and lower limbs may be amputated (bilateral), and both upper and lower limbs may be amputated (multiple amputations). Various anatomical levels can be amputated. Removal of one or more toes, a portion of the foot, an ankle disarticulation, a transtibial (below the knee) amputation, a trans-femoral (above the knee) amputation, a hip disarticulation, and a hemi-pelvicotomy (removal of half of the pelvis) are all examples of lower limb amputation (Ziegler-Graham et al. 2008, p. 423). The majority of studies have shown that after distal and unilateral amputations regain better and greater ability of walking and achieving ADLs than proximal or bilateral amputations (Obalum and Okeke 2009, p. 2).

A research to evaluate functional outcomes following lower limb amputation due to trauma was carried out by Mackenzie et al. in 2004. The study's objectives were to evaluate the six functional outcomes, compare them to the degree of amputation, and identify other variables that were connected to the functional outcome. The functional level of the participants was assessed every three months, six months, a year, and twenty-four months during the cohort research, which involved 161 patients who underwent above ankle amputation three months later. The functional results have been evaluated using the Sickness Impact Profile and a self-reported functional status scale. In addition, discomfort, the degree of independence felt during transfers, walking, climbing stairs, walking speed, and the doctor's level of satisfaction with the functional and cosmetic results have all been assessed as secondary outcomes. The Sickness Impact Profile scores

for different levels of amputation do not differ significantly, but through-knee amputees have the lowest scores. Additionally, research has shown that transtibial amputees walk faster than transfemoral amputees. Additionally, doctors are less pleased with the functional and cosmetic results of patients who had their knees amputated. They have arrived to the conclusion that as patients with above knee and through knee amputations have less favorable functional outcomes, care must take this into account.

A unilateral above-knee amputee's functional results and gait were examined by Mahon et al. (2017, p. 1913). The study's objectives were to identify changes in body composition brought on by limb loss and the impact these changes had on mobility and quality of life. Additionally, the study sought to determine the relationship between energy use and falling risk and mechanical changes to the body brought on by prostheses. To accomplish the study's goals, 67 young, active military members who had suffered unilateral traumatic amputations were chosen, and 76 healthy males served as the control group. According to the study, the control group experienced lower stability, higher trunk velocity and step breadth, a higher risk of low back and knee pain, greater trunk lateral flexion, and greater vertical ground force. Additionally, the study found that participants had lower walking efficiency and higher oxygen use than the controls. According to the study's findings, unilateral transfemoral amputees had poor functional results and gait compared to healthy people, and it was advised that these patients seek greater follow-up and additional rehabilitation programs to enhance their quality of life.

Feeling depressed can be characterized as being melancholy, blue, wretched, or depressed. Most people experience these feelings occasionally for brief periods of time. When feelings of sadness, loss, rage, or frustration interfere with daily life for weeks or more, it is considered to be a true clinical depression (Zieve and Merrill 2011, p. 120). Depression is also referred to as "living in a black hole" or as a sense of impending doom. Some depressed individuals, particularly men, may even experience anger, aggression, and restlessness instead of sadness. Instead, they may feel lifeless, empty, and indifferent (Parashar et al. 2012, p. 4). Alcohol and drug abuse, certain medical conditions like an underactive thyroid, cancer, or chronic pain, certain medications like steroids, sleep issues, stressful life events like a loved one's passing or illness, divorce, childhood abuse

or neglect, are a few factors that may contribute to depression unemployment, social exclusion (Zieve and Merrill 2011,p. 120). Women are twice as likely as males to experience depression, which affects about one in ten people. In contrast to the male gender, where the frequency is lower in youth and tends to rise with age, the prevalence is higher in young women and tends to decline with age. Reactive or external depression, which is also known as neurotic depression, is defined as depression that occurs as an exceptionally lengthy or strong reaction to loss. A particularly severe case of depression could also develop with no apparent external reason; it appears to come from 'inside' the patient. Endogenous depression is a kind of psychosis that falls under the psychosis umbrella. Genetic and physiological mechanisms are implicated in endogenous depression (Chilcot et al. 2018, p. 15).

Agitation, restlessness, and irritability are common signs of depression, as are dramatic changes in appetite, often accompanied by weight gain or loss, extreme difficulty concentrating, exhaustion, a lack of energy, feelings of worthlessness, shame, and guilt, withdrawing or isolating oneself, losing interest in or enjoyment from once-enjoyed activities, thoughts of death or suicide, and difficulty sleeping or excessive sleeping (Zieve and Merrill 2011, p.120).

American Psychiatric Association (2020) stated that Depression symptoms can vary from mild to severe and can include:- Feeling sad or having a depressed mood, Loss of interest or pleasure in activities once enjoyed, Changes in appetite — weight loss or gain unrelated to dieting, Trouble sleeping or sleeping too much, Loss of energy or increased fatigue.

Anxiety is a feeling of unease, such as worry or fear that can be mild or severe (Appukuttan and D.P. 2016, p. 35). Bandelow et al. (2015, p. 9) stated that, there are several types of anxiety disorders, including: - Generalized anxiety disorder (GAD), Panic disorder, Phobias, Separation anxiety. Other mental health conditions share features with anxiety disorders. These include post-traumatic stress disorder and obsessive compulsive disorder.

Videbeck (2010) stated that, Common anxiety signs and symptoms include: - Feeling nervous, restless or tense, having a sense of impending danger, panic or doom, having an

increased heart rate, Breathing rapidly (hyperventilation), Sweating, Trembling, Feeling weak or tired, Trouble concentrating or thinking about anything other than the present worry.

3.1 Study design

This study was conducted using cross sectional design under a quantitative study method .Survey methodology was chosen to meet the study aim as an effective way to collect data.

3.2 Study site

The study was conduct in Tertiary level rehabilitation hospital like Centre for the Rehabilitation of the Paralysed (CRP) Savar, which is the largest rehabilitation center of the South Asia.

3.3 Study duration

The study was conducted from 1st May to 30th July 2023.

3.4 Study population

Peoples who had lower limb amputation was collected using convenience sampling from Tertiary level hospitals like Centre for the rehabilitation of the paralysed (CRP) Savar, at Prosthetics and Orthotics (P&O).

3.5 Sample size

Sample was a group of subjects are selected from population, who were used in a piece of research. A sample was a smaller group taken from the population. Sometimes the sample size may be big and sometimes it may be small, depending on the population and the characteristics of the study.

The equation of sample size calculation is given below-

$$n = \frac{Z^2 pq}{d^2}$$
$$= \frac{(1.96)^2 \times 0.418 \times 0.582}{(0.05)^2}$$
$$= 373$$

Here,

Z (confidence interval) = 1.96

P (prevalence) = 41.8% (Low et al. 2017)

And, q = (1-p)

$$= (1 - 0.418)$$

$$= 0.582$$

The actual sample size was, n = 373.

According to this equation the sample should be more than 373 people but due to time consuming and the availability of the sample, the study is conducted with 70 participants are selected according to the inclusion and exclusion criteria.

3.6 Sampling procedure

The study was conducted by using the convenience sampling methods due to the time limitation and as it was the one of the easiest, cheapest and quicker method of sample selection. The researcher used this procedure, because getting of those samples whose criteria were concerned with the study purpose. Participants were chosen purposively because the participants had some particular features or characteristics which was enable detailed exploration of the research objectives.

3.7 Inclusion criteria:

1. Age range 15-70 years.
2. Both male females were selected (Pooja and Sangeeta 2013).
3. People who were willing to participate in the study.
4. People with amputation of unilateral lower limb.
5. Good cognitive functional level.

3.8 Exclusion criteria:

1. Those who were not interested to participate.
2. People who had mental illness.
3. Patient with poor cognitive function.
4. Any Contraindication are found.

3.9 Data Collection

3.9.1 Data collection instrument:

A semi structured questionnaire and demographic information chart was used as a data collection instrument. In that time some other necessary materials were used like pen, pencil, and white paper and clip board. The English questionnaires were converted into Bengali to ask the participants during interviews. Researcher must took permission from each volunteer participant by using a written consent form in Bengali.

Measurement tools:

1. Locomotor Capabilities Index (LCI)
2. Patient Health Questionnaire (PHQ -9)
3. Generalized Anxiety Disorder (GAD-7).

Locomotor Capabilities Index (LCI)

Locomotor capabilities index was used to analysis the participants' physical functional level (Agrawal 2016, p. 25; Esfandiari et al. 2017, p. 349; Gailey et al. 2002, p. 615). LCI was used to find out the mobility level and how well participants are doing ambulation independently. It consists of 14 questions which are assessing basic and advanced skill of individuals under 5 levels to identify the level of independency. Level 5 indicates that an individual can perform daily activities independently without even assistive devices while level 1 indicates that individual cannot perform the tasks in daily living even with someone else support (Franchignoni, Orlandini, Ferriero and Moscato 2004,p. 745).

Patient Health Questionnaire (PHQ -9)

The Patient Health Questionnaire 9-item depression scale (PHQ-9) is a 9-item self-administered depression screening and diagnostic tool increasingly used in primary care and other medical populations.

The PHQ-9 can be used as a screening tool, with summed score ranging from 0 (no depressive symptoms) to 27 (all symptoms occurring daily). The PHQ-9 can also be used as a diagnostic assessment; with major depression diagnosed if 5 or more of the 9 symptoms have been present at least more than half the days of the past 2 weeks and 1 of these symptoms is either depressed mood. 22 Scores 1 to 4 represents minimal depression, scores of 5 to 9 represents patients with mild depression, scores of 10 to 14 represents moderate depression, moderately severe depression is scored by 15 to 19 and scores 20 to 27 usually indicated severe depression.

Generalized Anxiety Disorder (GAD-7)

A 7-item anxiety scale (GAD-7) had good reliability, as well as criterion, construct, factorial, and procedural validity. A cut point was identified that optimized sensitivity (89%) and specificity (82%). Increasing scores on the scale were strongly associated with multiple domains of functional impairment. Scores 1 to 5 represents minimal anxious, scores of 6 to 10 represents patients with mild anxious, scores of 11 to 15 represents moderate anxious, and scores 16 to 21 usually indicated severe anxious.

3.9.2 Data Collection Procedure

At the very beginning researcher clarified that, the participant has the right to refuse to answer of any question during completing questionnaire. They can withdraw from the study at any time. Researchers also clarify to all participants about the aim of the study. Participants were ensured that any personal information would not be published anywhere. Researcher took permission from each volunteer participant by using a written consent form. After getting consent from the participants, standard questionnaire was used to identify the complaint and collect demographic information. Questions were asked according to the Bangla format. For conducting the interview, the researcher conducted a face-to-face interview and asked questions. Physical environment was considered strictly. Stimuli that can distract interviewee were removed to ensure adequate attention of interview. Interviewee was asked questions alone as much as possible with consent as sometimes close relatives can guide answer for them. The researcher built a rapport and clarified questions during the interview. Face to face interviews is the most effective way to get full cooperation of the participant in a survey. Face to face interviews is also effective to describe characteristics of a population. Face to face interviews was used to find specific data which describes the population descriptively during discussion. According to the participants' understanding level, sometimes the questions were described in the native 17 language so that the patients can understand the questions perfectly and answer accurately. All the data were collected by the researcher own to avoid the errors.

3.10 Data Analysis

Descriptive statistics were used to analyze data. Descriptive statistics refers methods of describing a set of results in terms of their most interesting characteristics (Hicks, 2009). Data were analyzed with the software named Statistical Package for the Social Science (SPSS) version 22. The variables were labeled in a list and the researcher established a computer-based data definition record file that consist of a list of variables in order. The researcher put the name of the variables in the variable view of SPSS and defined the types, values, decimal, label alignment and measurement level of data. The next step was cleaning new data files to check the inputted data set to ensure that all data has been

accurately transcribed from the questionnaire sheet to the SPSS data view. Then the raw data were ready for analysis in SPSS. Data were collected on frequency and contingency tables. Measurements of central tendency were carried out using the mean plus standard error (SE) for variables. For the study of the association of numeric variables one-way anova test were used. Data were analyzed by descriptive statistics and calculated as percentages and presented by using table, bar graph, pie charts etc. Microsoft office Excel 2017 was used to decorating the bar graph and pie charts. The results of this study were consisted of quantitative data. By this study a lot of information was collected.

3.11 Ethical Consideration

The researcher maintained some ethical considerations: Researcher has followed the Bangladesh Medical Research Council (BMRC) guideline & WHO research guideline. A research proposal was submitted to the physiotherapy department of BHPI for approval and the proposal was approved by the faculty members and gave permission initially from the supervisor of the research project and from the course coordinator before conducting the study. The proposal of the dissertation including methodology was presented to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) for oral presentation defense was done in front of the IRB. Then the necessary information was approved by Institutional Review Board and was permitted to do this research. After getting the permission of doing this study from the academic institute the researcher had been started to do it. The researcher had been taken permission for data collection from the P&O dept. CRP Savar. The participants would be informed before to invite participation in the study. A written consent form used to take the permission of each participant for the study and participants who are <18 years old, the researcher took permission from their parents. The researcher ensured that all participants were informed about their rights and reserves and about the aim and objectives of the study. Researcher also ensured that the organization (CRP) was not hampered by the study. All kinds of confidentiality highly maintained. The researcher ensured not to leak out any type of confidentialities. The researcher was eligible to do the study after knowing the academic and clinical rules of doing the study about what should

be done and what should not. All rights of the participants were reserved, and researcher was accountable to the participant to answer any type of study related question.

For the purpose of this research, a total of 70 participants who had unilateral lower limb amputation were questioned. Necessary information was collected from the respondents and after analysis data was presented as tables and graphical from below.

4.1 Socio-demographical Information:

4.1.1 Age range of the participants

Table-1: Age of the participants

Age Group (Years)	Frequency (n)	Percent (%)
<20	10	14.3%
21-30	22	31.5%
31-40	16	22.9%
41-50	19	27.2%
>51	3	4.3%

Among 70 participants, the minimum age was 17 years, maximum age was 65 years & the mean age was 33.09 years. Demographic data showed that among 70 participants, <20 years of age about 14.3% of participants or 10 participants, about 31.5% of participants or 22 participants were between 21-30 years age range. In between 31-40 years of age range the participants are 22.9% or 16 participants and in between 41-50 years of age range the participants were 27.9% or 19 participants .And 4.3% participants or 3 participants were in the age ranged >51 years.

4.1.2 Gender of the participants

Demographic data showed that among 70 participants, most of the participants were male 82.90% rather than female 17.10%. It also showed there were 58 males and only 12 females.

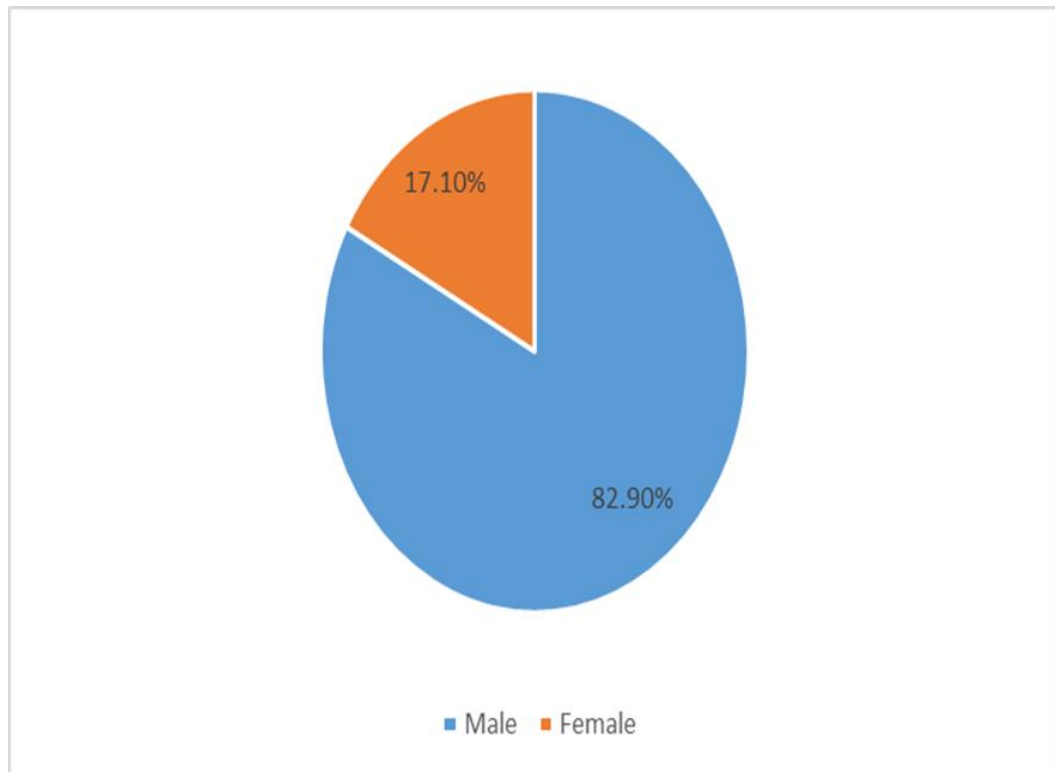


Figure-1: Gender of participants

4.1.3 Educational level of the participants

Table-2: Educational level of the participants

Education level	Frequency (n)	Percent (%)
No Formal Education	8	11.4%
Primary	20	28.6%
Secondary	17	24.3%
Higher Secondary	9	12.9%
Bachelor	16	22.9%

This table-2 showed that Primary passed participants were the highest rate, at 28.6% (n = 20). Secondary passed participants had the second-highest rate, which was 24.3% (n = 17). Among the Bachelor passed participants, third position was 22.9% (n = 16), Higher secondary passed was 12.9% (n = 9). And 11.4 % (n=8) participants had no formal education.

4.1.4 Marital status of the participant

In case of their marital status about 65.70% were unmarried, 34.30% were married. It also showed there were 44 married participants and 33 unmarried or single participants.

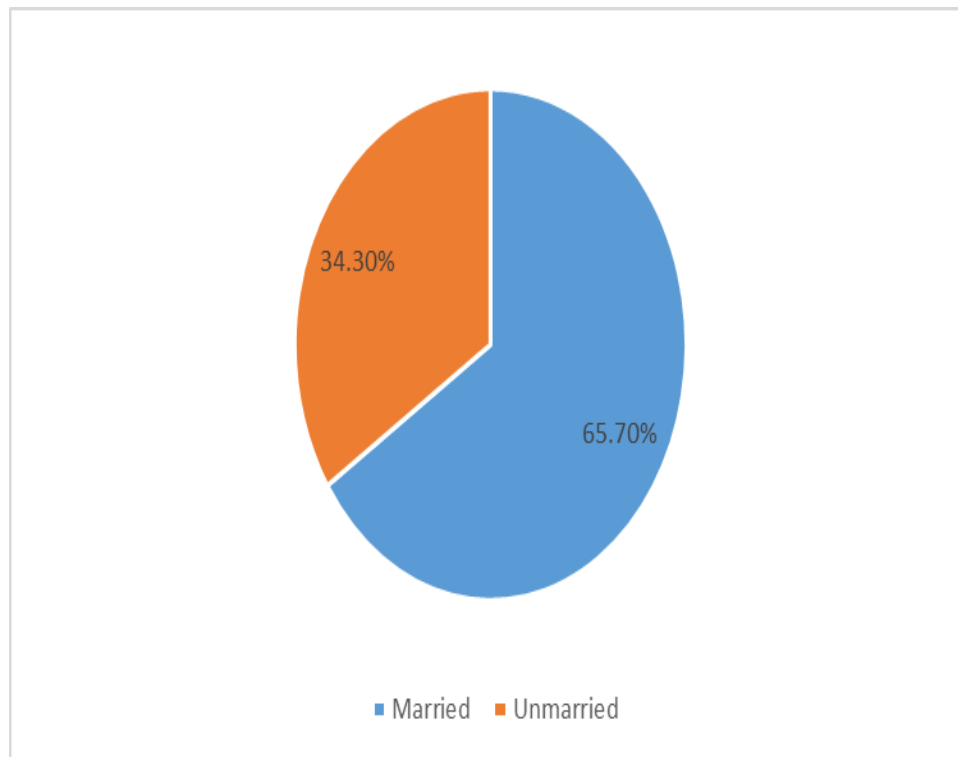


Figure-2: Marital status of the participants

4.1.5 Living area of the participants

In this study, the data showed that among 70 participants 55.70% participants were lived in rural area, 18.60% participants were urban and rest of them, 25.70% participants were lived in semi urban area.

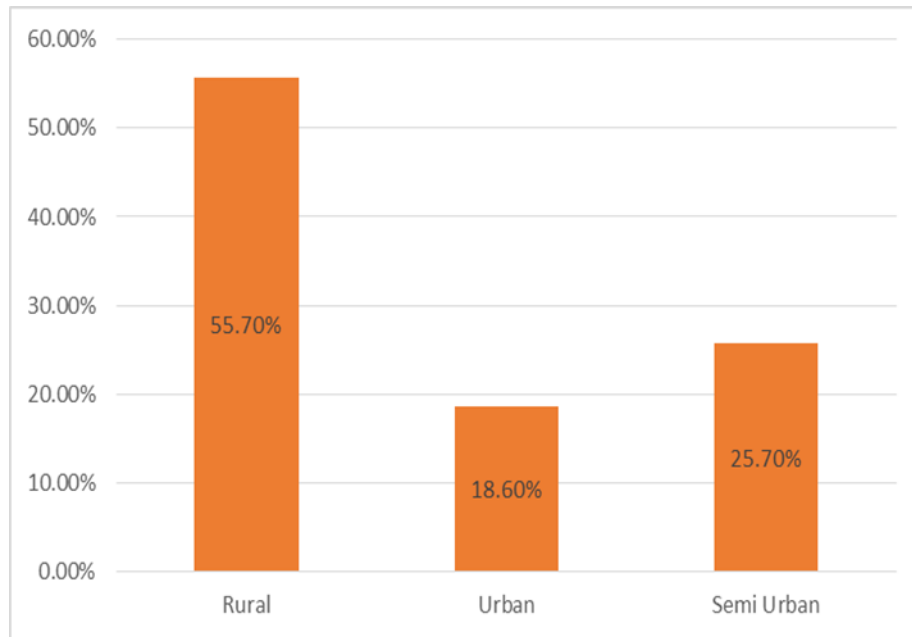


Figure-3: Living area of the participants

4.1.6 Current occupation of the participants

After amputation most of participants change their occupation because of their physical condition. 48 Of the participant were changed their occupation and 22 of participant stayed in the same occupation after injury. The ratio of changing occupation and staying in same was 68.6% and 31.4%.

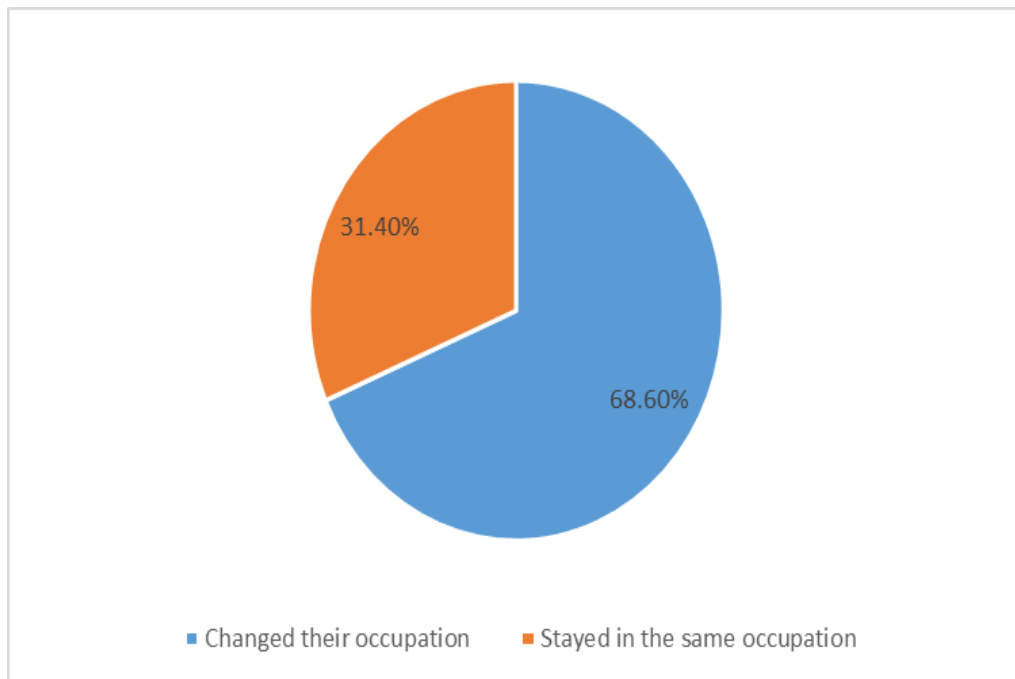


Figure-4: Ratio between changing and staying in the same occupation after amputation

4.2 Amputation related information

4.2.1 Causes of injury of the participants

Table-3: Causes of injury of the participants

Cause	Frequency (n)	Percent (%)
Road traffic accident	44	62.9%
Industrial accident	6	8.6%
Other	20	28.6%

In this study, the data showed that among 70 participants, Cause of amputation for 62.9% or 44 participants were Road traffic accident, 8.6% or 6 participants were industrial accident and 28.6% or 20 participants were other causes .In other cause large number of cause was congenital It showed that road traffic accidental cause was more than any other causes of injury.

4.2.2 Side of amputation of the participants

In this study, the data showed that among 70 participants, Site of amputation of 52.90% of the participants or 37 participants were right sided, 47.1% of the participants or 33 participants were left sided amputation. It showed that right site was more affected than left site lower limb.

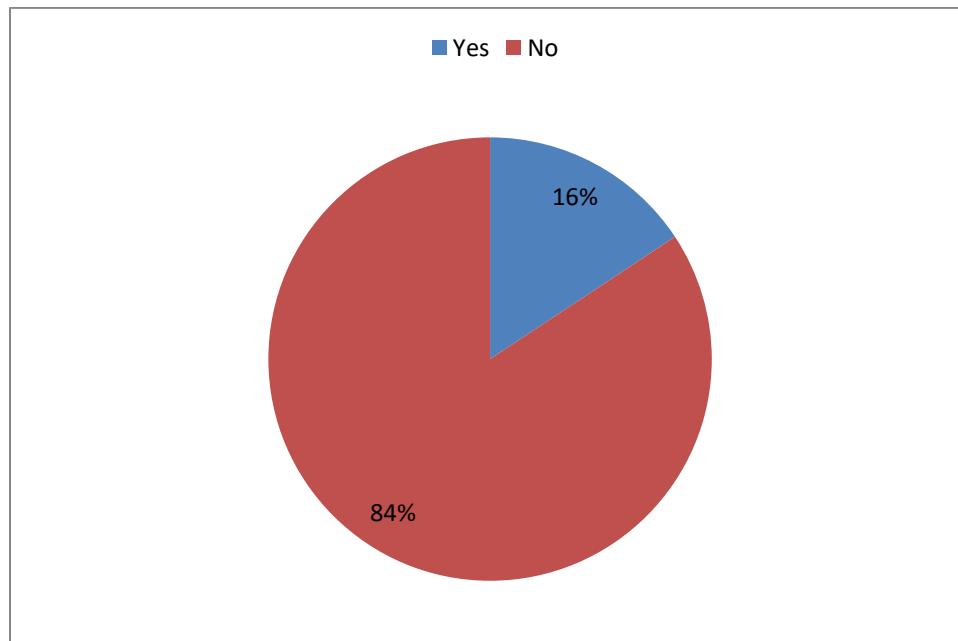


Figure-5: Amputated side of the participants

4.2.3 Year of injury of the participants

Table-4: Year of injury of the participants.

Year of injury	Frequency (n)	Percent (%)
1986-2000	5	7.1%
2001-2015	34	48.7%
2016-2023	31	44.2%

Among the 70 participants 7.1% (n=5) person was injured in the year between 1985-2000. In 2001-2015 year the injured participants were 48.7% (n=34). And 44.2% (n=31) participants was injured in the year between 2016-2023. Maximum number of the participants were injured in 2001-2015. The mean year is 2012 and standard deviation is 7.79

4.2.4 Level of amputation of the participants

In this study, the data showed that among 70 participants, the level of amputation of 7.1% of the participants or 5 participants were through hip amputation, 31.4% of the participants or 22 participants were above knee, 8 participant or 11.4% of the participants were through knee amputation .Below knee amputation was 48.6% of the participants and 1.4% of the participants or 1 participant was through ankle amputation. It showed that maximum level of amputation was below knee and minimum is through ankle amputation.

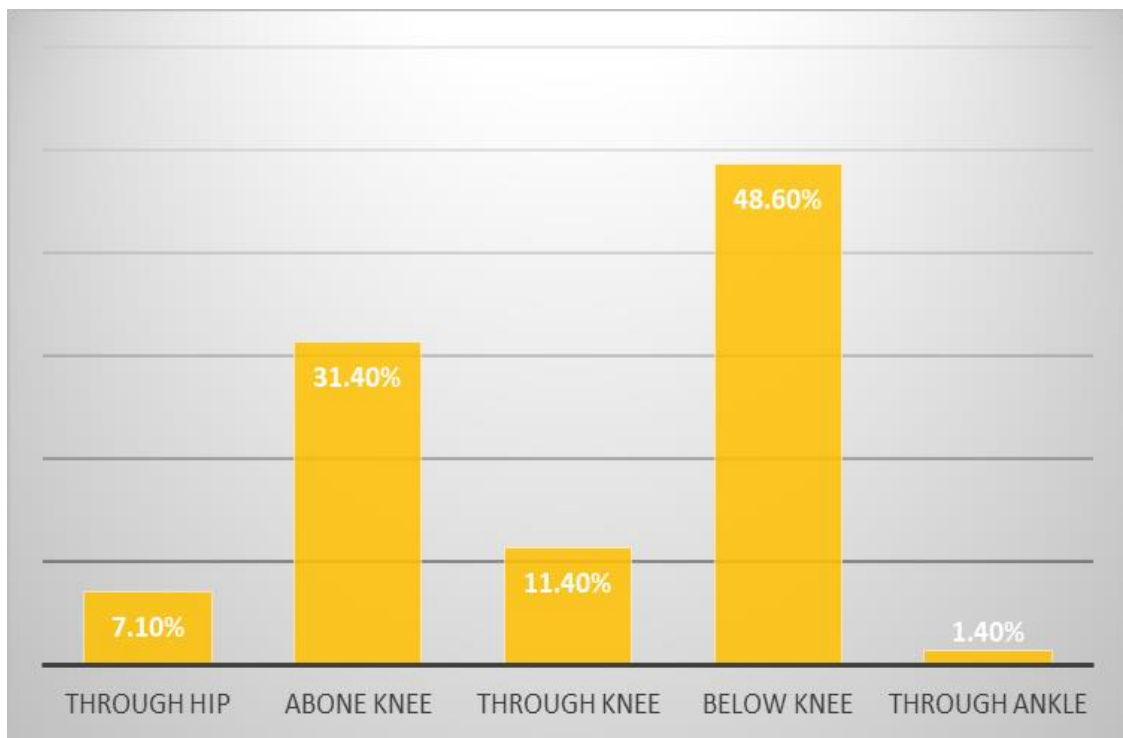


Figure-6: Level of amputation of the participants.

4.2.5 Phantom pain of the participants

Among the 70 participant, data showed that 15.7% Of the participants or 11 participants feel pain or discomfort and other 84.3% or 59 of the participants did not feel any phantom pain or discomfort after amputation.

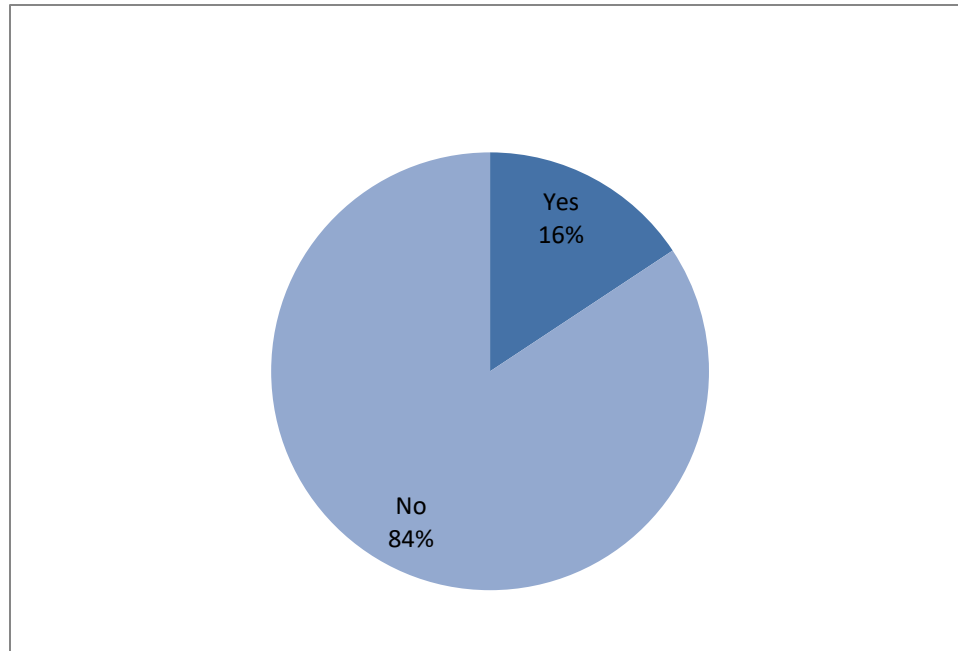


Figure-7: Phantom pain of the participants

4.2.6 Use of prosthesis of the participants

Among all of lower limb prosthesis users most of the participants used their prosthesis 24/7 or throughout the day and it's about 42.9% (n=30) of the participants. 28.6% (n=20) of the participants used prosthesis usually and 22.9% (n=16) of the participants used their prosthesis rarely. Among 70 participants 5.7% (n=4) of the participants were not use prosthesis at all.

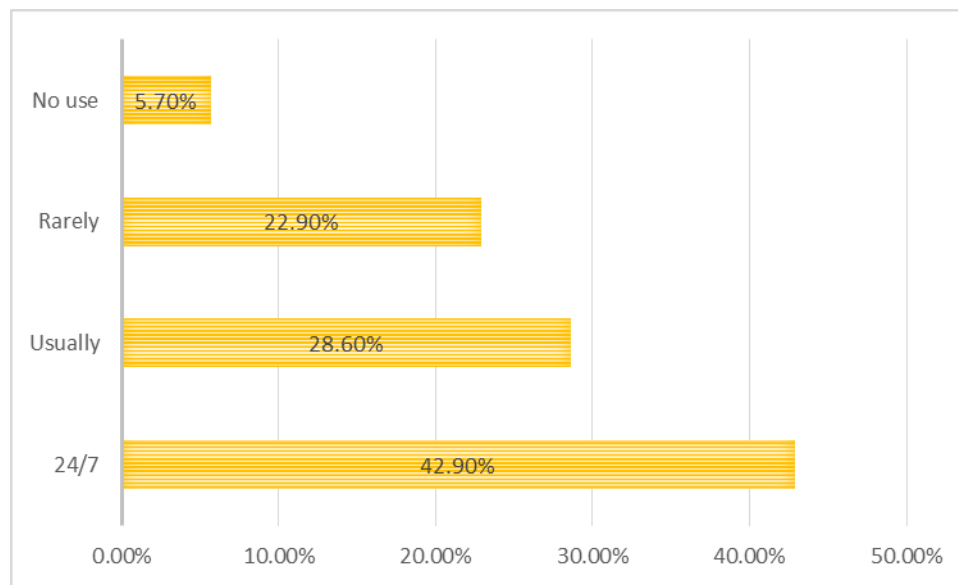


Figure-8: Uses of prosthesis of the participants

4.2.7 Year of taking rehabilitation after amputation

Table-5: Year of Rehabilitation of the participants

Year of taking Rehabilitation	Frequency (n)	Percent (%)
2001-2005	2	2.8%
2006-2010	7	10%
2011-2015	16	22.9%
2016-2020	24	34.3%
Above 2020	21	30%

Among 70 participants, the data showed that In the year of 2001-2005 2.8 %(n=2) of the participants took rehabilitation.10%(n=7) of the participants took rehabilitation in between 2006-2010, 22.9%(n=16) of the participants took rehabilitation in between 2011-2015. In the year of 2016-2020 participants took rehab was 34.3 % (n=24). After 2020, 30% (n=21) of the participant took rehabilitation. The mean year was 2016 and standard deviation was 5.22.

4.2.8 Satisfaction level of using prosthesis of the participants

Among the 70 participants, 54.3% of the participants or 38 participants were highly satisfied by using prosthesis and it's the maximum percent. Moderate satisfied by using prosthesis were 32.9% of the participants or 23 participants. 7.1% of the participants or 5 participant's satisfaction level was low. And 5.7% participant not using prosthesis this was not applicable for them.

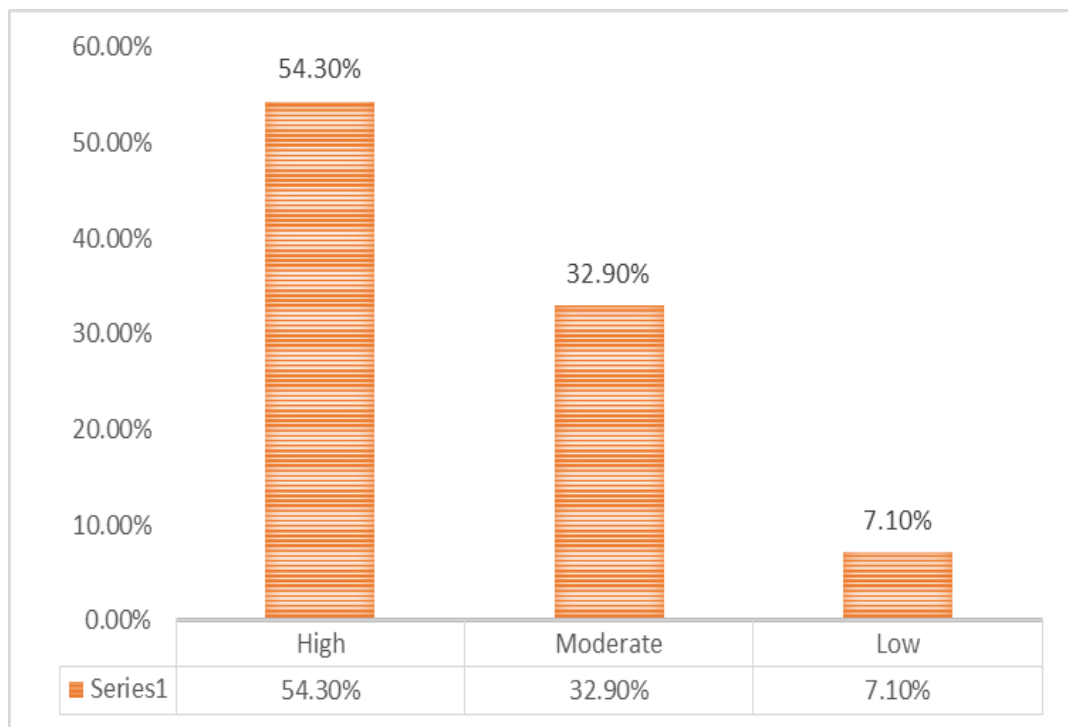


Figure-9: Satisfaction level of using prosthesis of the participants.

4.3.1 Locomotors capability index total

Locomotors Capability index 5 level classification showed how much independent the individual was when performing basic and advance daily activities. Level 5 means total independence or can walk without any aids, level 4 means slightly independence or can walk with aids, level 3 means if someone near the person, level 2 means if some help the person and level 1 means no or total dependence.

Among 70 participants of unilateral lower limb amputation on the basis of total score 0.80% participants in level 1 or fully dependent, 3.80% participants in level 2 , 13.87% participants in level 3, 65.50% people in level 4 which is the maximum and 15.91% participants in level 5. In the figure we saw that maximum participants can walk with the help of aids.

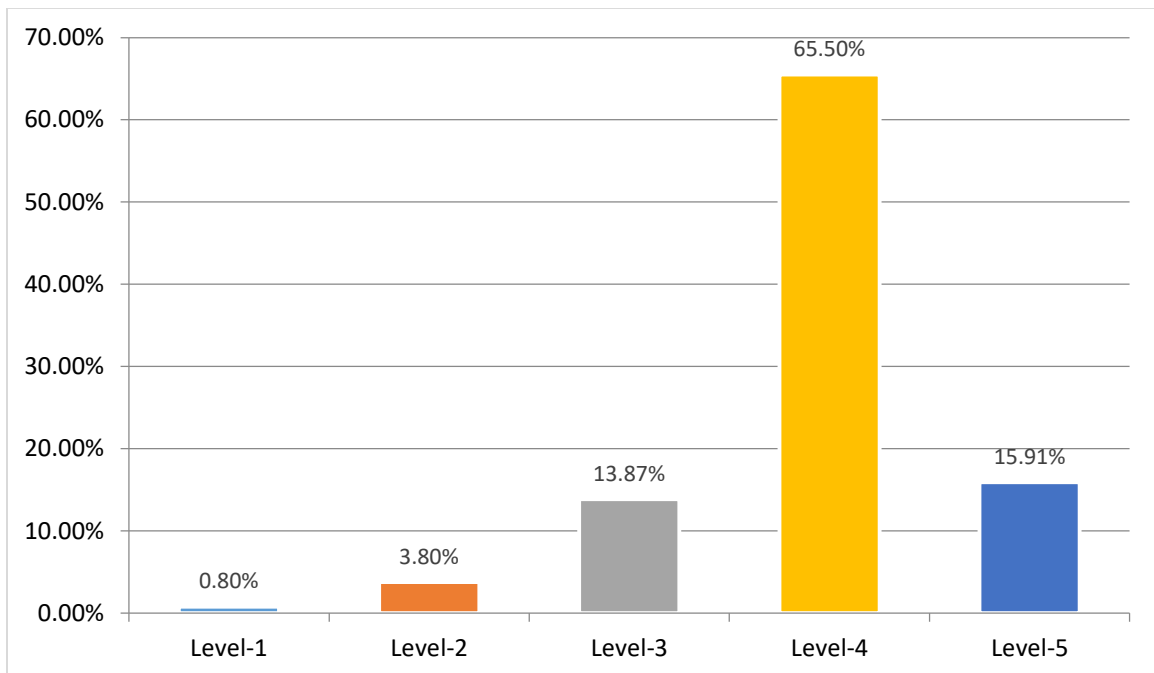


Figure-10: Physical functioning level based on LCI total score

4.3.2 Basic score (LCI)

Among 70 participants of unilateral lower limb amputation on the basis of LCI basic score 1% participants in level 1 or fully dependent, 1.80% participants in level 2 , 5.08% participants in level 3, 49.40% people in level 4 which was the maximum and 34.07% participants in level 5. In the figure we saw that maximum participants could walk with the help of aids.

4.3.2 Advance score (LCI)

Another figure showed that among 70 participants 0.60% participants in level 1, 3.80% participants in level 2 so they could perform activity if someone help them, 13.87% participants could perform their activity if someone near them, maximum number of participants in level 4 which was 65.50% so they could walk or do their daily activities with the help of aids and in the last level consist of 15.90% participants. They could perform their daily activities without any helping device.

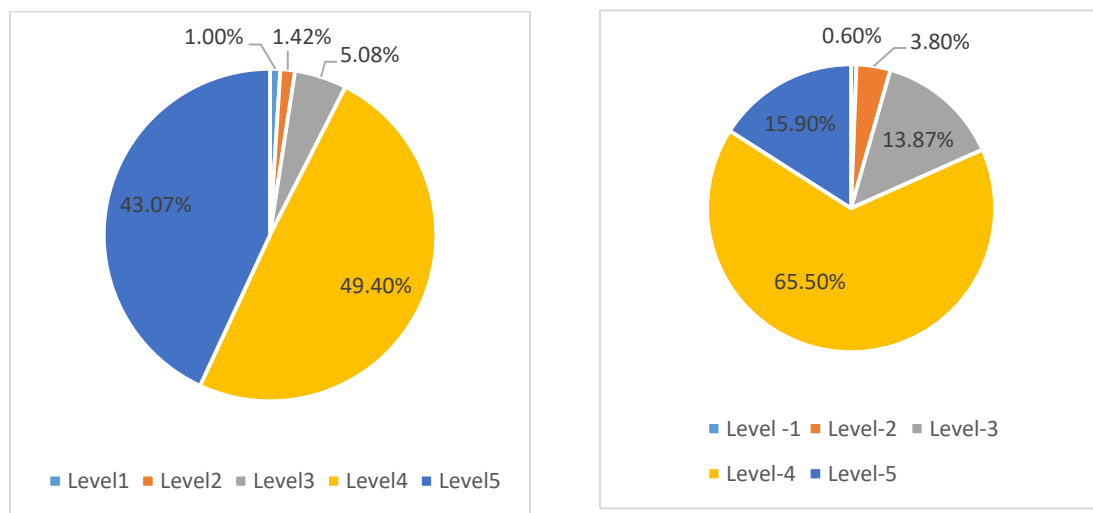


Figure -11: Physical functioning level based on LCI basic and advance score

Table 6. Descriptive statistics of physical functional level

Variable	Mean ± SD
LCI Basic	222.96±3.17
LCI Advance	20.47±3.55
LCI Total	43.43±6.41

LCI- Locomotor Capability Index, SD- Standard Deviation

4.4 Psychology Related

4.4.1 Generalized Anxiety Disorder (GAD) total score interpretation

Among 70 participants of unilateral lower limb amputation, 37.1% (n=26) respondents were minimal anxious, 55.7% (n=39) respondents were mild anxious, 7.1% (n=5) respondents were moderate anxious and no participant was severely anxious.

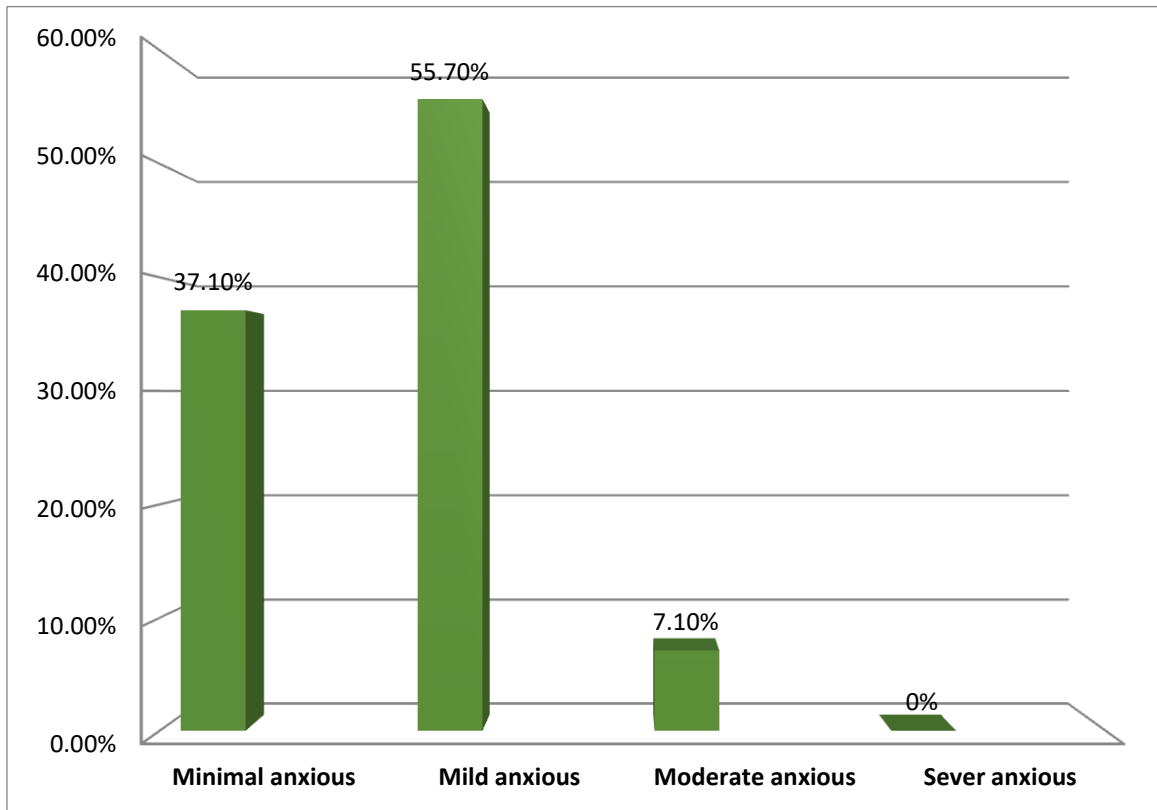


Figure-12: GAD total score interpretation.

4.4.2 Patient Health Questionnaire (PHQ) total score interpretation

Among 70 participants of unilateral lower limb amputation, 34.3 % (n=24) respondents had no notable depressive symptoms, 50.0% (n=35) respondents were faced mild depression, 11.04% (n=8) respondents were faced moderately depression, 4.3% (n=3) faced moderately severe depression and there was no severely depressed participant.

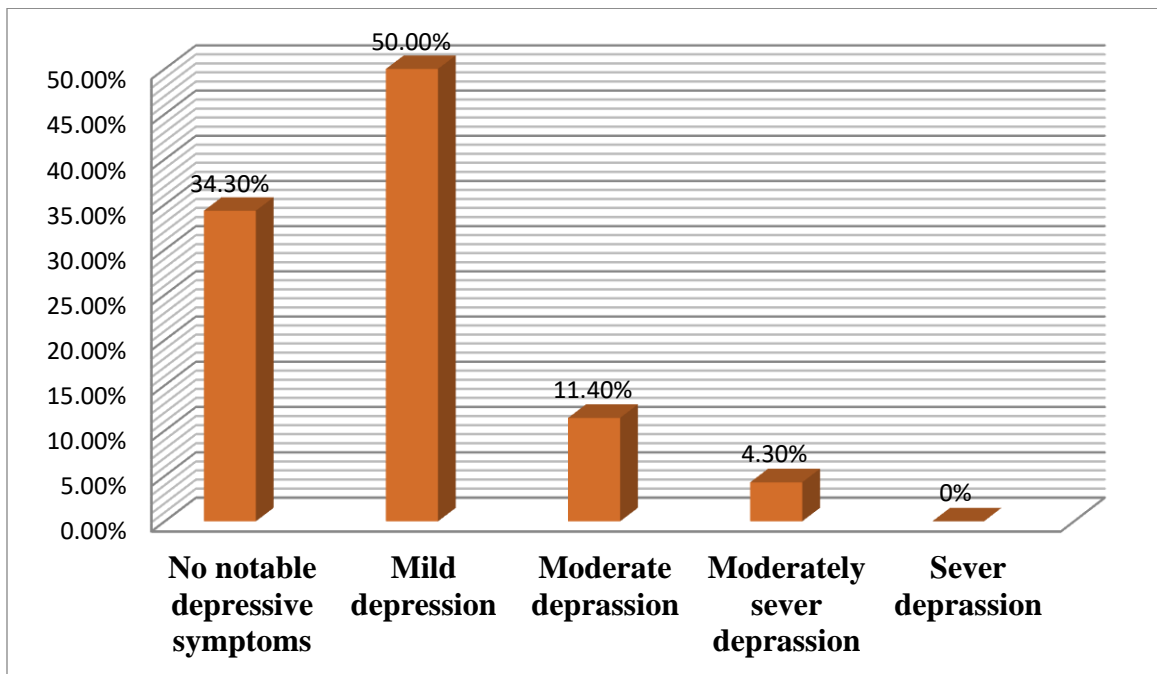


Figure-13: PHQ total score interpretation

Table 7. Correlation between Sociodemographic and physical functioning

Variables	Spearman correlation value	p value
Age~LCI Total	-0.196	0.104
Gender~LCI Total	-0.294	0.014*
Marital status~LCI Total	0.108	0.372
Educational status~ LCI Total	0.128	0.290
Current occupation~LCI Total	-0.375	0.001*
Cause of injury~ LCI Total	-0.145	0.233
Side of amputation~ LCI Total	-0.002	0.986
Level of amputation~LCI Total	-0.150	0.216
Phantom pain~ LCI Total	-0.037	0.761
Use of Prosthesis~ LCI Total	0.309	0.009*
Satisfaction level~ LCI Total	0.177	0.142

*Significant ($p < 0.05$)

In spearman's test we saw the correlation, If the p value was < 0.05 result is significant. The results showed that there was significant correlation between gender and current occupation with the total score of locomotor capability index respectively and there p value was 0.014 and 0.001. In addition to that there was no significant positive correlation among address, Educational status, side of amputation or satisfaction level with LCI. Further, significant positive correlation was found use of prosthesis with LCI and the p value was 0.009 .

Table 8. Association between Sociodemographic and Generalized Anxiety Disorder (GAD)

Variables	Chi-Square/Fisher's exact value	p value
Age	10.156	0.144
Gender	4.513	0.309
Marital status	5.809	0.055
Educational status	10.471	0.187
Current occupation	0.155	0.926
Cause of injury	4.829	0.286
Side of amputation	0.873	0.741
Level of amputation	17.132	0.009*
Phantom pain	1.401	0.523
Use of Prosthesis	6.665	0.322
Satisfaction level	3.370	0.785

*Significant ($p < 0.05$)

The study had association occurred between socio-demographic profile and GAD which was mentioned in the objective of the study. In this study we saw that there was not a significant association in between category of GAD and age category. The Fisher's exact

value 10.156 and p value was 0.144 which was not significant. The Fisher's exact value was 4.513 and p value was 0.309 in among in the association between gender and GAD. That was not significant. There was no significant association between marital status and GAD. Here the Chi-square value was 5.809 and p value was 0.055. There was no significant association between educational status and GAD .In this case the Fisher's exact value 10.471 and p value was 0.187. The Chi-square value was 0.155 and p value was 0.926 which showed that there was no significant association between current occupation and GAD. There was no significant association between cause of injury and GAD .The Fisher's exact value was 4.829 and p value 0.286. There was also no significant association between side of amputation so the Fisher's exact value was 0.897 and p value was 0.741. In this study there was significant association between the level of amputation and GAD .Here the Fisher's exact value was 17.139 and the p value was 0.009. There was no significant association between phantom pain and GAD the Fisher's exact value was 1.401 and p value was 0.523. The Fisher's exact value was 6.665 and p value was 0.322 in among in the association between use of prosthesis and GAD. That was not significant. There was also no significant association between satisfaction level and GAD. Here the Fisher's exact value was 3.370 and p value was 0.785.

Table 9. Association between Socio-demographic and Patient Health Questionnaire (PHQ)

Variables	Chi-Square/Fisher's exact value	p value
Age	6.817	0.548
Gender	5.996	0.136
Marital status	5.219	0.074
Educational status	13.293	0.067
Current occupation	0.763	0.683
Cause of injury	4.381	0.323
Side of amputation	0.429	0.841
Level of amputation	11.100	0.138
Phantom pain	1.633	0.417
Use of Prosthesis	14.825	0.010*
Satisfaction level	6.359	0.340

*Significant (P<0.05)

The study had association occurred between socio-demographic profile and PHQ category which was mentioned in the objective of the study. In this study we saw that there was not a significant association in between category of PHQ and age category. The Fisher's exact value 6.817 and p value was 0.548 which was not significant. The Fisher's exact value was 5.996 and p value was 0.136 in among in the association between gender and PHQ category. That was not significant. There was no significant association

between marital status and PHQ category. Here the Chi-square value was 5.219 and p value was 0.074. There was no significant association between educational status and PHQ. In this case the Fisher's exact value 13.293 and p value was 0.067. The Chi-square value was 0.763 and p value was 0.683 which showed that there was no significant association between current occupation and PHQ category. There was no significant association between cause of injury and PHQ. The Fisher's exact value was 4.381 and p value 0.323. There was also no significant association between side of amputation and PHQ, so the Fisher's exact value was 0.429 and p value was 0.841. In this study there was no significant association between the level of amputation and PHQ category. Here the Fisher's exact value was 11.100 and the p value was 0.138. There was no significant association between phantom pain and PHQ, the Fisher's exact value was 1.633 and p value was 0.417. The only significant associations occur between use of prosthesis and PHQ category. And the Fisher's exact value was 14.825 and p value was 0.010 which was significant. There was also no significant association between satisfaction level and PHQ category. Here the Fisher's exact value was 6.359 and p value was 0.340.

In this chapter the results of the study are discussed in relation to the research questions and objectives of the study. The objectives of the study were to find out the demographic profile, functional outcome and psychological (Anxiety, Depression level) outcome of the unilateral lower limb amputation patients.

Numerous research have looked at how people with lower limb amputations physically perform, deal with melancholy, and deal with anxiety. The majority of individuals who lose a limb as a consequence of trauma or surgery experience a range of sophisticated psychological reactions. Age and sex, the type and degree of amputation, enduring patterns of stress management, the perceived value of the amputated leg, and expectations for the rehabilitation program are some of the variables that affect psychological reactions to amputation. People who have experienced the painful loss of a limb must adjust to having a new body and self as well as a new reality (Hawamdeh et al. 2008, p. 627).

Variation of Socio-demographical, Amputation Status and Rehabilitation Aspects

The study was conducted on 70 participants of having unilateral lower limb amputation. In the study the minimum age of a participant was 17 and maximum age of a participant was 65. Their mean was 33.09 and standard deviation is 11.13. The study also found that 65.70% of participants have partners and most of them are got injured after their marriage. They are receiving higher level of family support which make good environment to make them engage in rehabilitation, and prosthetic fitting as well to have good satisfactory level of life after amputation. Previous studies have found that that higher number of males experience lower limb amputation rather than females (Knežević et al. 2016, p. 103). This study also found the same results and that is 82.9% male participants. In the living area distribution 55.70% participants lived in rural area which is the maximum. 25.70% in semi urban and 18.60% in urban area.

Esfandiari et al. (2017, p. 348) found that prevalence of phantom pain is 63%. This study also found that prevalence of phantom pain is 15.7%. Though studies claimed that

phantom symptoms are decline over years. Esfandiari et al. (2017, p. 348) this study also shows that phantom pain exist after longer duration of amputation. Though the prevalence of phantom pain is higher among the participants, quantitative and qualitative data of the study found that phantom pain and its' severity do not significantly impact of their monthly income or psychological status or the usage of prosthesis. Nevertheless, other studies shows contrast findings to his study (Heszlein-lossius et al. 2019, p.02).

After amputation most of participants change their occupation because of their physical condition. 48 Of the participant were changed their occupation and 22 of participant stayed in the same occupation after injury. However, a follow-up study conducted by the review authors found that quality of life was lower in their sample of lower-limb amputees than for the general population, and that higher quality of life was associated with employment status, use of a prosthesis, non-use of assistive devices other than a prosthesis (canes, crutches), lower residual limb and phantom pain, and other comorbidities (Sinha et al. 2011, p. 90). In this study we show that maximum participants had below knee amputation that is 48.6% and the cause of the injury was road traffic accident 62.9%.

This study shows that 42.9% of participants are using prosthesis always with 54.3% of high level of satisfaction. The results further shows that prosthetic usage and satisfaction of prosthetic usage is significantly associated with the level of amputation and show that individuals with below knee amputation have higher level of prosthetic usage and prosthetic usage satisfaction compared to individuals with above knee amputation.

The study found that according to the locomotor capability index 43.07% individual can perform their daily basic activity individually without any assistive device it had reduced up to 15.90% when individuals engaged in advanced activities based on LCI findings. On the other hand 49.40% individual can perform their daily basic activity with the help of helping aids or assistive device. The percentage was increased when it came to advance score and its 65.50%. Nevertheless, study conclude that the participants have higher level of physical functioning. There are several factors which significantly impact on physical functional level such as level of amputation, years since amputation, time gap between amputation surgery and the date of admission for rehabilitation, prosthesis usage and

prosthetic usage satisfaction, mobility hours per day. A study by Knezevic et al. (2015, p. 105) showed that, patients with lower extremity amputation scored lower than the control group on all SF- 36 variables ($p < 0.05$). Seventeen (61%) patients were with transfemoral, and 11 (39%) with transtibial level of amputation. The patients with transtibial amputations scored higher on physical functioning and general health status variables. Here in my study, I have not seen association between type of amputation and physical functioning. Among 70 participants of unilateral lower limb amputation on the basis of total score 0.80% participants in level 1 or fully dependent, 3.80% participants in level 2, 13.87% participants in level 3, 65.50% people in level 4 which is the maximum and 15.91% participants in level 5. In the figure we saw that maximum participants can walk with the help of aids. In study we saw that there was significant correlation between gender, current occupation and satisfaction level of using prosthesis with locomotor capability index(LCI). There p value was 0.014, 0.001 and 0.009 which is less than 0.05.

Many studies have investigated the depression and anxiety among individuals with lower limb amputations. Most patients who lose a limb as a result of traumatic or surgical procedures encounter a series of complex psychological responses. Psychological reactions to amputation depend on a number of factors, which include age and sex, type and level of amputation, lifelong patterns of coping with stress, value placed on the lost limb, and expectations from the rehabilitation program. The individuals affected by the traumatic loss of a limb are required to face a redefined body and self as well as a new reality (Hawamdeh et al. 2008, p. 627). In this study, the level of depression and anxiety in each participating patient was assessed by the Hospital Anxiety and Depression Scale (HADS). The result of this study shows that, the prevalence of anxiety and depressive symptoms were 37% and 20%, respectively.

Factors associated with high prevalence of psychological symptoms included female gender, lack of social support, unemployment, traumatic amputation, shorter time since amputation. Among 70 participants of unilateral lower limb amputation, 34.3 % respondents has no notable depressive symptoms, 50.0% respondents are faced mild depression, 11.04% respondents are faced moderately depression, 4.3% faced moderately severe depression and there was no severely depressed participant. One study

estimated that When using the PHQ-9 ordinal categories, 42.9%, of patients suffered from minimal depressive symptoms, 35.7% ,14.3% , 4.9% and 2.2 % suffered from mild, moderate, moderately severe and severe depression symptoms respectively (Chilcot et al. 2018,p. 15). , 37.1% respondents were minimal anxious, 55.7% respondents were mild anxious, 7.1% respondents were moderate anxious and no participant was severely anxious. One study estimated that when using the GAD-7 ordinal categories, 69.2% of patients had minimal anxiety symptoms, 20.3%, 7.7% and 2.7% had mild, moderate, and severe anxiety symptoms respectively (Chilcot et al. 2018, p. 18).

Anxiety was found more in females than males than depression. Most studies have found no 42 difference in psychosocial outcome between men and women. The data from their study revealed that females suffered from more reactive depression and anxiety symptoms than males. People whose amputation followed by trauma showed higher scores of HADS Anxiety and depression were found slightly higher among this group though not significant statistically. They were poorly adjusted in comparison to people amputated due to other causes.

Young adults with traumatic amputation may be at higher risk of major depression compared with individuals with disease-related amputations. Unemployed people showed higher scores of HADS. The amputees have a large number of psychosocial concerns which need to be addressed to provide a holistic care and a better QOL. It is essential to sensitize the community, the health care providers and the patient's family to the additional psychosocial needs of the amputee (Bhutani et al. 2016, p. 09). This cross-sectional study included subjects who had undergone traumatic amputations. Fifty subjects participated in this study. The mean anxiety and depression scores were 5.68 ± 2.41 and 5.93 ± 3.14 respectively.

Limitation of the study:

The current study had some potential limitations. Regarding this study, there were some limitations or barriers to consider the result of the study. The limitation of this study was small sample size. It was taken only 70 samples. The physical and psychological outcome with unilateral lower limb amputation could not be measured through small sample size. More samples could not be collected by hospital base selection because, there were not adequate subjects and study period was short. The one of major limitation was time. To conduct the research project on this topic, time period was very limited. As the study period was short so the adequate number of samples could not be arranged for the study. Time and resources were limited which have a great deal of impact on the study. As a first researcher, may be the lack of knowledge and experience. In this type of relevant study are not available in Bangladesh so the research related information is limited.

6.1 Conclusion:

Amputation is a devastating and life threatening incident of a person's life. This leads a man to whole new challenging stages of life. It is one of the leading causes of poor functioning, hampered daily living activities and a socioeconomic challenge. This is particularly true for developing countries like Bangladesh, where health support system including the rehabilitation system is not within the reach of ordinary people. It is clear that, this destructive condition not only affect the patient physically but also mentally. Bangladesh is a developing country with low socio-economic condition health services is not sufficient in the Government and non-government sector. Although amputation is one of the most serious problems that a person can survive, it is possible to return to a healthy, happy, and productive life after even completing rehabilitation. From the moment of injury onward, specialized care is essential for maximization of health as well as psychosocial and functional adaptation. Measurement of the physical and psychological outcome is not sufficient to describe the situation for individual of unilateral lower limb amputation. Through my study I've wanted to find out the physical and psychological outcome of unilateral lower limb amputee. In my study I've found that lower limb amputees reported neither good nor poor which is mostly near to fair physical functioning and they facing mild anxiety and depression in their psychological life. The important role of employment status and use of assistive devices were the key findings of this study. Through this study the authentic physical and psychological function is measured fully, the inner and day to day situations cannot be visible in this study. Assessing physical functioning and psychological situation entirety is challenging because of its multidimensional nature. In the short period of time, it cannot adequately capture the heart of physical and psychological outcome. This study shows at a glance of the participants' physical and psychological life.

6.2 Recommendations:

This study tries to assess the functional and psychological outcome of unilateral lower limb amputation patients. However, the study had some limitations. Some steps were identified that might be taken for the better accomplishment for further study. The main recommendations would be as follow:

- Researcher used only 70 participants as the sample of this study, in future the sample size should be more.
- Future studies should examine the time course of changes in functional and psychological status.
- Sample should collect from different hospital, clinic, institute and organization in different district of Bangladesh to generalize the result.
- This was a cross sectional study. Experimental study will recommend.
- There will conduct a study to show relationship between functional and psychological status. Should find out the factors causing depression and anxiety among lower limb amputee patients.

This is an undergraduate study and doing the same study at graduate level will give more precise output. There were some limitation of this study mentioned at the relevant section; it is recommended to overcome those limitations during further study. So for further study it is strongly recommended to increase sample size with adequate time to generalize the result in all of the amputee patients in Bangladesh for better results and perspectives.

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APPENDIX

Informed Consent

(Please read out to the participants)

Assalamualaikum,

My name is Suchita Subrin. I am conducting this research study which is the part of B.Sc. in Physiotherapy program and my research title is “**Functional and psychological outcome of patient with unilateral lower limb amputation** ” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding functional activity and psychological status of unilateral lower limb amputation. You have to answer some questions which are mention in the attached form. This will take approximately 30-40 minutes.I would like to inform you that this is a purely professional study and will not be used for any other purpose. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don’t like or do not want to answer during interview.If you have any query about the study or your right as a participant, you may contact with researcher Suchita Subrin or my supervisor Shazal Kumar Das, Lecturer & Head of Department , Department of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before I start?

So may I have your consent to proceed with the interview?

Yes

No

Signature of the Participant’s..... Date.....

Signature of the data collector’s.....Date.....

Signature of the Researcher..... Date.....

Questionnaire (English Version)

Title: Functional and psychological outcome of patient with unilateral limb amputation

Part-1

Personal details:

Patient ID:

Patients name:

Age:

Gender:

Telephone No:

Marital status:

1. Married
2. Unmarried
3. Other

Address:

1. Rural
2. Urban
3. Semi-urban
4. Other

Educational status:

1. No formal education
2. Primary education
3. Secondary education
4. Higher secondary
5. Bachelor degree or above

Current occupation:

Are you engaging in the same occupation which you did before the amputation?

1. Yes
2. No

Cause of injury:

1. Road traffic accident
2. Industrial accident
3. War
4. Others (Please Specify)

Side of Amputation:

1. Right
2. Left

Level of amputation:

1. Through Hip
2. Above knee
3. Through knee
4. Below knee
5. Through ankle

Phantom pain/ symptoms present at current stage:

1. Yes
2. No

Use of prosthesis:

1. 24/7
2. Usually
3. Rarely

Satisfaction with prosthesis:

1. High
2. Moderate
3. Low

Part-2

Locomotor Capabilities Index in Amputees (LCI)

ITEM	NO	Yes, if someone helps me	Yes, if someone is near me	Yes, alone, with ambulation aids	Yes, alone, without ambulation aids
1. Get up from a chair	0	1	2	3	4
2. Walk in the house	0	1	2	3	4
3. Walk outside on even ground	0	1	2	3	4
4. Go up the stairs with a handrail	0	1	2	3	4
5. Go down the stairs with a handrail	0	1	2	3	4
6. Step up a sidewalk curb		1	2	3	4
7. Set down sidewalk curb	0	1	2	3	4
Basic Activities Score					
1. Pick up an object from the floor (when you are standing up with your prosthesis)	0	1	2	3	4
2. Get up from the floor (if you fall)	0	1	2	3	4
3. Walk outside on uneven ground (e.g.	0	1	2	3	4

grass, gravel, slope)					
4.Walk outside in inclement weather(e.g. snow, rain, ice)	0	1	2	3	4
5.Go up a few steps (stair) without a handrail	0	1	2	3	4
6.Go down a few steps (stairs) without a handrail	0	1	2	3	4
7.Walk while carrying an object	0	1	2	3	4
Advanced Activities Score					
Total Score					

Part 3

Anxiety related questionnaire (Generalized anxiety disorder)

Over the last 2 week , how often have you been bothered by following problems? Please mark to indicate your answer.

Serial No	Not at all sure	Several days	Over half the days	Nearly every day
1. Feeling nervous, anxious or on edge Worrying	0	1	2	3
2. Not being able to stop or control	0	1	2	3
3. Worrying too much about different things				
4. Trouble relaxing	0	1	2	3
5. Being so restless that its hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3
Total Score				

Part 4

Depression related questionnaire (Patient Health questionnaire)

Serial No	Not at all sure	Several days	Over half the days	Nearly every day
1.Little interest or pleasure in doing things	0	1	2	3
2.Feeling down, depressed or hopeless	0	1	2	3
3.Trouble falling or staying asleep or sleeping too much	0	1	2	3
4.Feeling tired or having little energy	0	1	2	3
5.Poor appetite or overeating	0	1	2	3
6.Feeling bad about yourself or that you are a failure or have let yourself or your family down	0	1	2	3
7.Trouble concentrating on things, such as reading the newspaper or watching TV	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite being so figety or restless that you have been moving around a lot more than usual	0	1	2	3

9.Thoughts that you would be better off dead or of hurting yourself	0	1	2	3
Total score				

আনুমতি পত্র

(অংশগ্রহণকারীকে পড়ার জন্য অনুরোধ করা হলো)

আসসালামু আলাইকুম

আমি শুচিতা সাবরিন, ঢাকা বিশ্ববিদ্যালয় এর চিকিৎসা অনুষদের অন্তর্ভুক্ত বাংলাদেশ হেণথ প্রফেশন ইন্সটিটিউট এর বিএসসি ইন ফিজিওথেরাপি কোর্সের ২০১৭-২০১৮ সেশনের শিক্ষার্থী। বিএসসি ইন ফিজিওথেরাপি ডিগ্রী অর্জনের জন্য আমাকে একটি গবেষণা সম্পূর্ণ করতে হবে। আমার গবেষণাটির শিরোনাম হল “ একপার্শ্বিক অঙ্গবিচ্ছেদ (পা) রোগীদের ক্রিয়ামূলক এবং মানসিক ফলাফল”। এই গবেষণা অধ্যয়নের মূল লক্ষ্য হচ্ছে একপার্শ্বিক অঙ্গবিচ্ছেদের পরে রোগীদের ক্রিয়ামূলক এবং মানসিক অবস্থার কি পরিবর্তন হচ্ছে তা নিরূপণ করা। এই গবেষণাটি সম্পূর্ণ করার জন্য আমি আপনাকে আপনার শারিরিক ও মানসিক অবস্থা সম্পর্কিত কিছু প্রশ্ন করব। আপনাকে আশ্বস্ত করছি, আমার ও আমার প্রশ্নের দ্বারা আপনার কোনরূপ ক্ষতি হবে না। আপনার দেওয়া তথ্য গোপন রাখা হবে এবং শুধুমাত্র গবেষণার উদ্দেশ্য ব্যবহার করা হবে। যে কোন সময় গবেষণায় আপনার আংশগ্রহণ বন্ধ করার অধিকার রয়েছে। পাশাপাশি আপনি যদি কোন প্রশ্নের উত্তর দিতে অস্বস্তি বোধ করেন তবে আপনি সেই প্রশ্নটি এখানে যেতে পারেন। প্রশ্নাবলী পূরণ করতে ৩০ মিনিট থেকে ৪০ মিনিট সময় লাগবে। অনুগ্রহ করে আমাকে প্রশ্নগুলির সঠিক উত্তর দিন এবং আপনার স্বাস্থ্যের মূল্যায়ন করতে ডেটা সংগ্রহকারীকে যথাসাধ্য সহযোগিতা করুন। আপনার কোন প্রশ্ন থাকলে আমার সুপারভাইজারের সাথে যোগাযোগ করতে পারেন। সজল কুমার দাস, বিএইচপিআই এর প্রভাষক, ফিজিওথেরাপি ডিপার্টমেন্ট, বিএইচপিআই, সিআরপি। আপনি যদি অনুগ্রহপূর্বক আপনার সম্মতি দেন, তবে আমরা শুরু করতে পারি।

হ্যাঁ

না

ধন্যবাদ আপনার অংশগ্রহণের পাশাপাশি প্রশ্নগুলোর যথাযথ উত্তর দিয়ে সহযোগিতা করার জন্য।

অংশগ্রহণকারীর স্বাক্ষর

তারিখ

তথ্য সংগ্রহকারীর স্বাক্ষর

তারিখ

গবেষকের স্বাক্ষর

তারিখ

প্রশ্নাবলি (বাংলা)

শিরোনাম: একপার্শ্বিক অঙ্গবিচ্ছেদ (পা) রোগীদের ক্রিয়ামূলক এবং মানসিক ফলাফল

অংশ ১

ব্যক্তিগত বিবরণ:

রোগীর আইডি:

রোগীর নাম:

বয়স:

লিঙ্গ:

টেলিফোন নম্বর:

বৈবাহিক অবস্থা:

১. বিবাহিত
২. অবিবাহিত
৩. অন্যান্য

ঠিকানা:

১. গ্রাম
২. শহর
৩. উপশহর
৪. অন্যান্য

শিক্ষাগত অবস্থা:

১. কোন প্রাতিষ্ঠানিক শিক্ষা নেই
২. প্রাথমিক শিক্ষা
৩. মাধ্যমিক শিক্ষা
৪. উচ্চ মাধ্যমিক
৫. স্নাতক ডিগ্রি বা তার উপরে

বর্তমান পেশা: আপনি অঙ্গবিচ্ছেদের আগে যে পেশায় নিযুক্ত ছিলেন সেই পেশাতেই কী নিযুক্ত আছেন?

১. হ্যাঁ
২. না

আঘাতের কারণ:

- ১ . সড়ক দুর্ঘটনা
- ২ . শিল্প দুর্ঘটনা
- ৩ . যুদ্ধ
- ৪ . অন্যান্য (অনুগ্রহ করে উল্লেখ করুন)

অঙ্গচ্ছেদের দিক:

- ১ . ডান
- ২ . বাম

অঙ্গচ্ছেদের মাত্রা:

- ১ . নিতম্ব বরাবর
- ২ . হাঁটু উপরে
- ৩ . হাঁটু বরাবর
- ৪ . হাঁটুর নিচে
- ৫ . গোড়ালি বরাবর

বর্তমান পর্যায়ে উপস্থিত উপসর্গ:

- ১ . হ্যাঁ
- ২ . না

কৃত্রিম সংযোজিত পায়ের ব্যবহার:

- ১ . ২৪/৭
- ২ . সাধারণত
- ৩ . সচরাচর ব্যবহার করেন না

কৃত্রিম সংযোজিত পায়ের সাথে সক্ষমতা:

- ১ . উচ্চ
- ২ . মধ্যপন্থী
- ৩ . কম

অংশ ২

অঙ্গবিচ্ছেদ রোগীদের চলনবিধি নির্ণয় স্কেল (এলসিআই)

আইটেম	নং	হ্যাঁ যদি কেউ আমাকে সাহায্য করে	হ্যাঁ, যদি কেউ আমার কাছাকাছি থাকে	হ্যাঁ, একা, চলনে সাহায্যকারী যন্ত্র সহ	হ্যাঁ, একা, চলনে সাহায্যকারী যন্ত্র ছাড়া
১. চেয়ার থেকে ওঠা	০	১	২	৩	৪
২. বাড়ির মধ্যে হাঁটা	০	১	২	৩	৪
৩. বাইরে সমান মাটিতে হাঁটা	০	১	২	৩	৪
৪. সিঁড়ি দুপাশের হাতল ধরে উপরে ওঠা	০	১	২	৩	৪
৫. সিঁড়ি দুপাশের হাতল ধরে নিচে নামা	০	১	২	৩	৪
৬. ফুটপাতে ওঠা	০	১	২	৩	৪
৭. ফুটপাত থেকে নামা	০	১	২	৩	৪
মৌলিক কার্যকলাপ স্কেল					
১. মেঝে থেকে একটি বস্তু তোলা (যখন আপনি কৃত্রিম সংযোজিত পায়ের সাহায্যে দাঁড়ান)	০	১	২	৩	৪
২. মেঝে থেকে উঠুন (যদি আপনি পড়ে যান)	০	১	২	৩	৪

৩. বাইরে অমসৃণ মাটিতে হাঁটা (যেমন ঘাস, নুড়ি, ঢাল)	০	১	২	৩	৪
৪. প্রতিকূল আবহাওয়ায় বাইরে হাঁটা (যেমন তুষার, বৃষ্টি, বরফ)	০	১	২	৩	৪
৫. কয়েক ধাপ উপরে যাওয়া (সিঁড়ির দুপাশের হাতল ছাড়া)	০	১	২	৩	৪
৬. কয়েক ধাপ নিচে যাওয়া (সিঁড়ির দুপাশের হাতল ছাড়া)	০	১	২	৩	৪
৭. চলার সময় একটি বস্তু বহন করা	০	১	২	৩	৪
উন্নত কার্যকলাপ স্কেল					
মোট স্কোর					

পর্ব - ৩- উদ্বিগ্নতা নিরূপন

গত ২ সপ্তাহ ধরে আপনি কতটা ঘন ঘন নীচের এই সমস্যা গুলোর মুখোমুখি হয়েছেন? আপনার উত্তর চিহ্নিত করার জন্য টিক চিহ্ন দিন।

প্রশ্ন	একদমই না	কয়েক দিন	অর্ধেকেরও বেশি দিন	প্রায় প্রতি দিন
১. নার্ভাস, চিন্তিত বা অস্থিরতা বোধ করেন	০	১	২	৩
২. চিন্তা থামাতে বা নিয়ন্ত্রণ করতে পারেন না	০	১	২	৩
৩. বিভিন্ন বিষয় নিয়ে দুশ্চিন্তা করেন।	০	১	২	৩
৪. আরাম করতে পারেন না	০	১	২	৩
৫. এতটাই চঞ্চলতা বোধ করেন যে কোথাও স্থির হয়ে বসতে পারেন না	০	১	২	৩
৬. সহজেই বিরক্ত হয়ে পড়েন	০	১	২	৩
৭. সবসময় ভয়ে থাকেন যে, কোন খারাব কিছু ঘটতে পারে	০	১	২	৩
মোট স্কোর				

পর্ব - ৪- বিষন্নতা পরিমাপ

গত ২ সপ্তাহ ধরে আপনি কতটা ঘন ঘন নীচের এই সমস্যা গুলোর মুখোমুখি হয়েছেন? আপনার উত্তর চিহ্নিত করার জন্য টিক চিহ্ন দিন।

প্রশ্ন	একদমই না	কয়েক দিন	অধিকেরও বেশি দিন	প্রায় প্রতি দিন
১. কাজ করতে অল্প আগ্রহ বা আনন্দ পান	০	১	২	৩
২. মন খারাপ, বিষন্ন বা আশাহীন মনে হয় নিজেকে	০	১	২	৩
৩. আপনার ঘুমাতে অসুবিধা হয় বা বেশি ঘুম হয়	০	১	২	৩
৪. ক্লান্ত লাগে বা অল্প এনার্জী বা শক্তি পান	০	১	২	৩
৫. খাবার খেতে ইচ্ছে করে না বা বেশি খাওয়া হয়	০	১	২	৩
৬. নিজেকে ছোট লাগে-নিজেকে ব্যর্থ মনে হয় বা মনে হয় আপনি আপনার পরিবার বা নিজেকে ছোট করছেন	০	১	২	৩
৭. কোন কিছুতে মনোযোগ দেয়া সমস্যা হয়- যেমন সংবাদপত্র পড়া বা টেলিভিশন দেখা	০	১	২	৩

৮. এত আস্তে চলাফেরা করেন বা কথা বলেন যে অন্য মানুষেরা সেটা লক্ষ্য করে না বা একবারে উল্টা, এতটাই চঞ্চল যে আপনি সাধারণ মানুষের চেয়ে বেশি চলাফেরা করেন	০	১	২	৩
৯. আপনার মনে হয় যে মরে গেলে ভাল বা নিজেকে করলে ভাল	০	১	২	৩
মোট স্কোর				

July 17, 2023

The Head of the Physiotherapy Department
Centre for the Rehabilitation of the Paralyzed (CRP)
Chapain, Savar, Dhaka-1343
Through: Head, Department of Physiotherapy, BHPI

Subject: Seeking permission for data collection to conduct my research project.

Dear Sir,

With due respect and humble submission to state that I am **Suchita Subrin**, student of 4th Professional B.Sc in Physiotherapy at Bangladesh Health Professions Institute (BHPI). According to the course curriculum, we have to conduct research for the partial fulfillment of our degree. My research project entitled "**Functional and psychological outcome of patient with unilateral lower limb amputation**" under the supervision of **Shazal Kumar Das**, Lecturer, Department of Physiotherapy, BHPI, CRP. So I need to take permission to collect data for my research project from the Prosthetics & Orthotics Department, CRP-Savar. I would like to assure you that anything in my study will not be harmful to the participants.

I, therefore, pray and hope that you would be kind enough to grant my application & give me permission for data collection and oblige thereby.

Suchita
Sincerely Yours

Suchita Subrin
4th Professional B.Sc in Physiotherapy
Roll: 23, Session 2017-2018
Bangladesh Health Professions Institute (BHPI)

forwarded
Suchita

Shazal Kumar Das
Lecturer
Dept. of Physiotherapy
BHPI, CRP, Savar, Dhaka-1343

Approved
Dr. Mohammad Anwar Huseain, PhD
Senior Consultant & Head
Physiotherapy Department
Associate Professor, BHPI
CRP, Savar, Dhaka-1343



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)

(The Academic Institute of CRP)

Ref: CRP/BHPI/03/2023/704

Date: 13/03/2023

To
Suchita Subrin
B.Sc. in Physiotherapy,
Session: 2017-2018, DU Reg. No: 8644
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

Subject: Approval of the dissertation proposal “**Functional and Psychological Outcome of Patient with Unilateral Lower Limb Amputation**”- by ethics committee.

Congratulations

Dear

Suchita Subrin,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal Investigator Shazal Kumar Das, Lecturer, Bangladesh Health Professions Institute (BHPI) as dissertation supervisor. The following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation Proposal
2	Questionnaire (English and Bengali version)
3	Information sheet & consent form

The purpose of the study is to explore the impact of physical functioning of patient with unilateral limb amputation. Should there any interpretation, typo, spelling, grammatical mistakes in the title, it is the responsibilities of the investigator. Since the study involves questionnaire that takes maximum 20- 25 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on January 9, 2023 at BHPI, 34th IRB Meeting.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Associate Professor, Dept. of Rehabilitation Science Member
Secretary, Institutional Review Board (IRB) BHPI, CRP,
Savar, Dhaka-1343, Bangladesh

Date: 20th May 2023
The Chairman
Institutional Review Board (IRB)
Bangladesh Health Professions Institute (BHPI), CRP
Savar, Dhaka-1343. Bangladesh

Subject: Application for review and ethical approval.

Dear sir,

With due respect, I am Suchita Subrin, student of B.Sc. in physiotherapy program at Bangladesh Health Professions Institute (BHPI) the academic institute of Centre for the Rehabilitation of the Paralyzed (CRP) under the Faculty of Medicine, University of Dhaka. As per the course curriculum, I have to conduct a dissertation entitled “ **Functional and psychological outcome of patient with unilateral lower limb amputation** ” under the supervision of Shazal Kumar Das, Associate Professor, Department of Physiotherapy, BHPI.

The purpose of the study is to determine the functional and psychological outcome of patient with unilateral limb amputation. The study involves face-to-face interview by using semi-structured questionnaire to explore the functional and psychological outcome of unilateral limb amputation patient in Bangladesh that may take 20 to 30 minutes to fill in the questionnaire and there is no likelihood of any harm to the participants. Related information will be collected from the patients' guide books. Data collectors will receive informed consent from all participants and the collected data will be kept confidential.

Therefore, I look forward to having your kind approval for the dissertation proposal and to start data collection. I can also assure you that I will maintain all the requirements for study.

Sincerely,

Dissertation presentation date: 9th January, 2023

Suchita
Suchita Subrin
4th Year B.Sc. in Physiotherapy
Session: 2017-2018 Student ID: 112170395
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Shofiq
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