QUALITY OF LIFE OF PEOPLE USING LOWER LIMB PROSTHESIS AFTER RETURNING TO THE COMMUNITY

Abdullah Shuchorit
Bachelor of Science in Physiotherapy (B.Sc. PT)
DU Roll No.: 932
Registration No: 1737
Session: 2011-2012
BHPI, CRP, Savar, Dhaka

Bangladesh Health Professions Institute (BHPI)
Department of Physiotherapy
CRP, Savar, Dhaka-1343
Bangladesh
August’ 2016

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

Quality of life of people using lower limb prosthesis after returning to the community

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

....

Md. Obaidul Haque
Associate Professor & Head
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka
Supervisor

....

Mohammed Anwar Hossain
Associate Professor & Head
Department of Physiotherapy
CRP, Savar, Dhaka

Habib
....

Mohammad Habibur Rahman
Assistant Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

Shofiq
....

Md. Shofiqul Islam
Assistant Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

....

Md. Obaidul Haque
Associate Professor & Head
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

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 for any publication, presentation or dissemination of information of the study. I would be bound to take written consent from Department of Physiotherapy of Bangladesh Health Professions Institute (BHPI)

Signature: Abdullah Shuchorit **Date:** 22.02.17

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Acknowledgement

First of all, I would like to pay my gratitude to Almighty Allah who has given me the ability to complete this Research project in time with great success. I would like to pay my gratitude towards my parents who constantly used to encourage me to carry out this project.

I would like to express my gratitude to Md. Shofiqul Islam, Assistant Professor of Department of Physiotherapy of BHPI, for his valuable classes and guidelines.

I am also obligated to my honourable teachers Mohammad Anwar Hossain, Associate Professor, Department of Physiotherapy, BHPI as well as Mohammed Sohrab Hossain, Associate Professor & Head of Program, CRP and Nasirul Islam, Acting Principle & Associate Professor, BHPI.

I would like to give special thanks Mohammad Habibur Rahman, Assistant Professor, Department of Physiotherapy, BHPI and Ehsanur Rahman, Assistant Professor, Department of Physiotherapy, BHPI for valuable suggestion in this research. I would like to pay my highest gratitude to my honourable seniors and colleagues those who cooperate and response which was beyond my expectation.

I would like to reimburse my special appreciation all of respondents of my research project who supported me through smooth conversation during data collection. My special thanks to Noor Jahan Shapla, Clinical Physiotherapist, Department of Prosthetics and Orthotics and Waliul Islam, Clinical Physiotherapist, Department of Prosthetics and Orthotics, CRP for their kind contribution. I would also like to give special thanks to BHPI librarian Mrs. Mohosina to her heartily help and library assistant Mr. Anis for their positive help during the project study.

Finally I would like to state my highest gratitude to my research supervisor Md. Obaidul Haque, Associate Professor & Head of the Department of Physiotherapy of BHPI for his guidance, support and suggestion in every single step of my study.

Abstract

The study identifies the quality of life of people using lower limb prosthesis. It also finds out the demographic factors (age, sex, income, diagnosis) contributing Physical and Psychological level of satisfaction among the participants. The study was conducted through descriptive study design among 30 participants who were selected by purposive sampling technique by a structured questionnaire with face to face interview. There are many general instruments available to measure quality of life. The World Health Organization (WHO) has developed a quality of life instrument, the WHOQOL, which captures many subjective aspects of quality of life. It has been adopted in the United State of America, Netherlands, Poland, Bangladesh, Thailand, India, Australia, Japan, Croatia, Zimbabwe and many other countries. WHOQOL-BREF and Demographic questionnaire was analysed and discussed about the demographic factors such as age, gender, occupation marital status etc. WHOQOL-BREF questionnaire was also discussed about Physical and Psychological level of satisfaction of quality of life. In WHOQOL- BREF, there are 26 questions. The scale grade has distributed into 1-5 (Very poor- very good) with overall quality of life and level of mental satisfaction. In case of overall quality of life of the persons using lower limb prosthesis about 37.7% of the participants had poor quality of life, about 56.7% of the participants had neither poor nor good quality of life and only 6.7% had good quality of life. However, no one led a very good quality of life. There was a significant reminder about type of disabilities, diagnosis and current occupation. In this study, among all participants, 70% felt negative feelings such as blue mood, despair, anxiety, depression very often. On the other hand 6.7% of the participants felt negative feelings such as blue mood, despair, anxiety, depression always while 23.3% of the participants felt the negative feelings quite often. In association between the type of prosthesis and quality of life indicates that most of the participants lead neither good nor poor quality of life with lower limb prosthesis. This research shows a statistical overview of using lower limb prosthesis following lower limb amputation. But in the end these statistical results are not appropriate and powerful way to know the persons' quality of life not being in their positions.

Key words: Quality of life, amputation, prosthesis, lower limb prosthesis.

Acronyms

BHPI	Bangladesh Health Professions Institute
BMRC	Bangladesh Medical Research Centre
CRP	Centre for the Rehabilitation of the Paralysed
CVD	Cardiovascular Disease
HRQOL	Health-Related Quality of Life
ICF	International Classification of Functioning
IRB	Institutional Review Board
LLA	Lower Limb Amputation
PTSD	Post-traumatic Stress Disorder
PVC	Polyvinyl Chloride
PVD	Peripheral vascular disease
QoL	Quality of Life
SPSS	Statistical Package for Social Science
WHO	World Health Organization
WHOQOL	World health organization Quality of Life

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CHAPTER I INTRODUCTION

1.1 Background

An amputation is the elimination 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 acquired disabilities (Kohler et al., 2009). Anatomical loss is also manifested by the consequential loss of the function, change of the distribution of body mass, coordination disorder and psychosocial disorders. The most common causes of surgical amputations are the complications caused by diabetes (diabetic foot) including a number of vascular complications in the form of ischemia and peripheral artery disease (Feinglass et al., 2012).

The global frequency of amputation is challenging to determine, as rates vary widely both between and within countries (Holman et al., 2012). Evaluation of outcomes is further hindered by the wide range of methods and definitions of amputation used by researchers, attached with substantial alterations in the key characteristics of the populations (Fosse et al., 2009). The Global Lower Extremity Amputation Study used a standard procedure to measure the frequency of lower limb amputation in ten different locations worldwide, and after twelve years remains the largest multinational study of its kind. For example, the yearly frequency of first major amputations amongst males ranged from 2.8 cases per 100,000 of the population in Madrid, Spain, to 43.9 cases per 100,000 among the Navajo population in the United States. The significant variation observed across regions was attributed primarily to differences in the prevalence of diabetes and peripheral vascular disease (PVD).

Around 185,000 amputations are calculated every year in the U.S. as a whole with an assessed one out of every 190 persons currently living with limb loss (Ziegler-Graham et al., 2008). In the United Kingdom, almost 5,000 new cases are mentioned to prosthetics service centers annually (National Amputee Statistical Database, 2009).

Lower limb amputation is significantly more common than amputation of the upper limb, accounting for 65% of all existing cases of amputation in the U.S. (Ziegler-Graham et al., 2008). Over 90% of amputations carried out in the U.K. in 2006/07 involved the lower limb, with 53% executed at the trans-tibial level, and a further 39% at the transfemoral level (National Amputee Statistical Database, 2009).

Postoperative mortality rates after amputation are high and it is ranging between 8% and 23% within thirty days of the procedure and long-term survival rates have a tendency to to be quite poor. The existence of comorbid disorders such as diabetes or end-stage renal disease and consuming a higher level of amputation are linked with an increased risk for mortality in this patient group (Moxey et al., 2010).

The World Health Organization defines the quality of life as one's own perception of their own life in the context of the culture and value systems in which they live, but also in relation to their own goals, expectations, standards and interests. The quality of life is a broad concept and consists of physical, mental and social health of an individual, his/her financial independence, i.e. level of independence and the personal attitude towards important developments in the society (Wan et al., 2011).

Mobility and living daily life are significant fundamentals of Health-Related Quality of Life (HRQOL). Therefore, weakening mobility may drive into a greater negative impression on HRQOL than any other different conditions. Therapeutic effects cannot be associated established only on functional recovery causing from the use of a prosthetic device but should also be based on the satisfaction of a new and highly significant benchmark factor, namely "quality of life (QOL)"(Schofield et al., 2006). Another significant feature of amputee health is that of psychological well-being. People with lower limb amputation experience anxiety, depression and frustration resulting amputation of the lower extremity. These psychological responses associate significantly with age and marital status. There is no connection with level of amputation, mode of ambulation and sign for amputation (Murray et al., 2010).

Troubling everyday activities, amputation is a life-altering incident with an instant and obvious effect on a person's movement, containing many daily activities. During the last centuries, new metals and plastics, as well as computer- aided strategy and new progresses in microprocessors, have suggestively affected the development of lower limb prosthetics, creating it potential for amputees to be more self-determining and physically dynamic (Moxey et al., 2011).

1.2 Rationale

After any catastrophic situation national and international welfare organizations are ready to provide fund for immediate response or early recovery but a very few number of organizations follow the sustainability development or empowerment of the injured or disabled people. The survivors suffer a lot after any devastation especially they suffer with post-traumatic stress related disorder as well as job dissatisfaction. In this study the investigator is interested to find out the quality of life of the persons with lower limb prosthesis after returning to the community. The result could be ensured us about quality of life, level of satisfaction after using lower limb prosthesis. However, Investigator feels that there have still limitations and basically not well quality of life in any uncertain natural or manmade disaster. Investigator is interested to find out survivors day to day lives, wellbeing and satisfaction in their community after any injuries and psychological trauma. In this case, usually the survivors remain in a state of depression and dissatisfaction because most of them cannot go back to their job and also get affected by other influences like- jobless, family burden. However, it should be on focused that the survivors did not get m support during this crisis period what they really deserve. The persons with lower limb prosthesis are still having mild to severe difficulty leading everyday life, therefore it is essential to investigate their quality of life. It could be making aware for further any hazardous incident and predicting impact. It could help to take precautionary management for the prosthesis users. Still now there is no statistics about their social, physical or economic status after returning to the community. For this reason, the investigator is interested to know about their physical, psychological, social and environmental quality of life separately to find out the status of their life after this terrible incident.

1.3 Research question

What is the quality of life of people using lower limb prosthesis after returning to the community?

1.4 Objectives

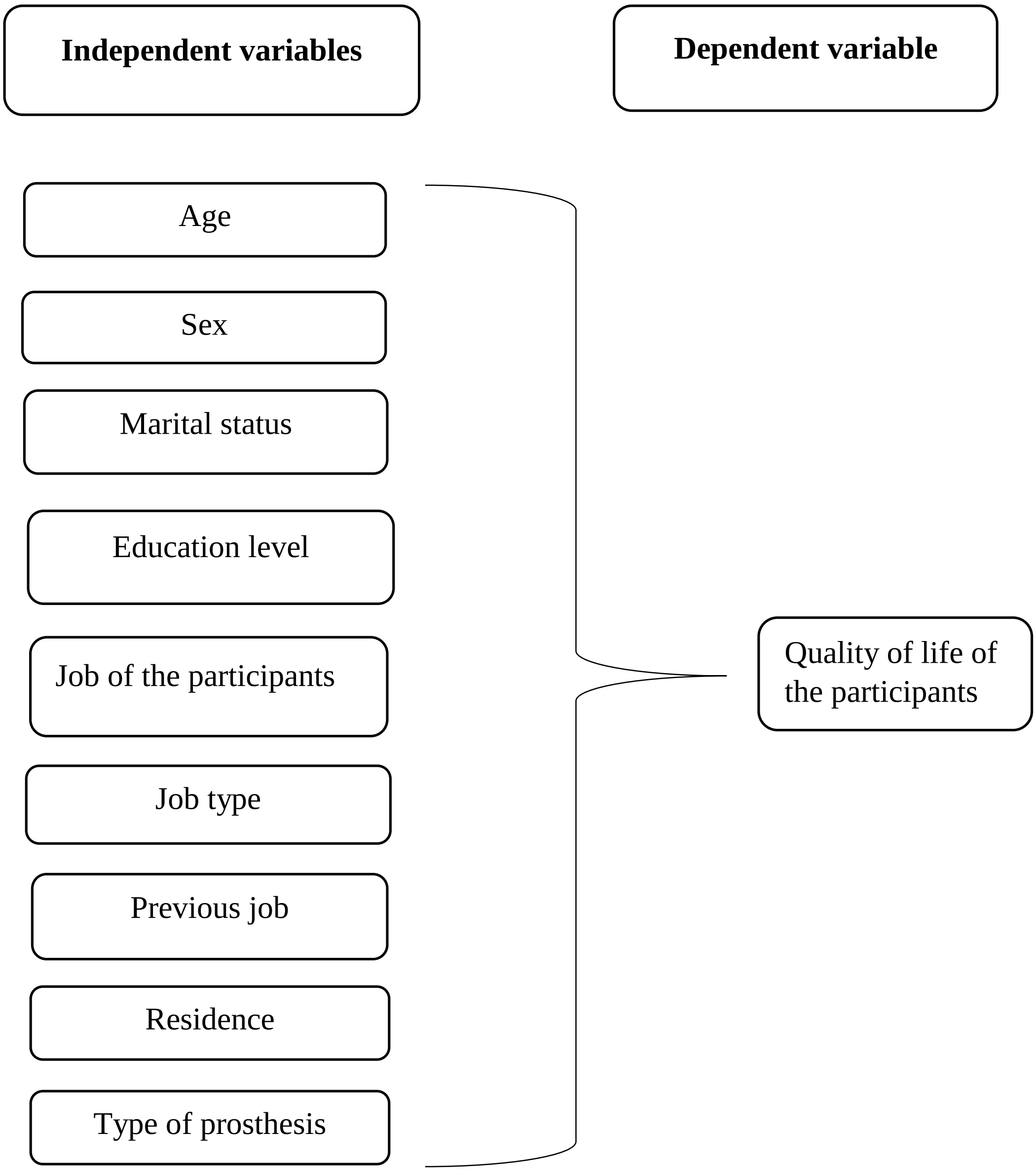
1.4.1 General objectives

To identify the quality of life of people using lower limb prosthesis after returning to the community.

1.4.2 Specific objectives

1) To identify the demographic factors of the participants.
2) To identify the participants’ health satisfaction.
3) To identify the mental satisfaction of the participants.
4) To find out the quality of life of the participants.
5) Association between type of prosthesis and quality of life.

1.5 Conceptual framework



CHAPTER - II LITERATURE REVIEW

Amputation leads a man to endless disability. It carries an affectedly alteration in the life, function and mobility of the sufferers. These transformed situations are experienced more by lower limb amputees than by upper limb amputees. The frequency of lower limb amputation is also higher than the upper limb (Ziegler-Graham et al., 2008).

Amputation may possibly include a single limb (unilateral), both upper and lower limbs (bilateral), or a combination of upper and lower limb amputations (multiple amputations). Amputation may be performed at different functional levels. Lower limb amputation may comprise amputation of one or more toes, part of the foot, ankle disarticulation (disarticulation means amputation of a body part through a joint), trans-tibial (below the knee) amputation, knee disarticulation, trans-femoral (above the knee) amputation, hip disarticulation and hemi-pelvectomy (removal of half of the pelvis). Upper limb amputation may include the removal of one or more fingers, wrist disarticulation, below elbow amputation, elbow disarticulation, above elbow amputation, shoulder disarticulation and forequarter amputation. Dysvascularity is the foremost cause of amputation in high income countries (Ziegler-Graham et al., 2008).

Lower limb amputation is a common chronic health condition and a cause of long-term disability. Lower limb amputation has a major impact on almost every aspect of a person’s life. The numerous clinical studies and research reports on function and health-related quality of life following amputation describe a wide range of outcomes. There are multiple interactive variables that contribute significantly to the functional outcome, including medical co-morbidities, the surgical level of amputation, cognition, age, pre-morbid level of function, personal coping style, level of social support environmental factors and financial resources available (Asano et al., 2008).

There are many possible reasons of amputation. The four primary etiological aspects requiring these - vascular disease and infection, trauma, tumors and congenital abnormalities (National Amputee Statistical Database, 2009). Dysvascularity follow-on cardiovascular disease (CVD) and diabetes mellitus is the leading cause of amputation in most developed countries, followed by trauma. (Ziegler-Graham et al., 2008).

The typical dysvascular patient with an amputation is older than 60 years of age and commonly experiences comorbidities, postoperative morbidity and mortality rates are high (Dillingham et al., 2008). A newly published five-year review of lower limb amputation prevalence rates in England found that 39% of patients who underwent major amputations during this period had a primary diagnosis of diabetes. Moreover 43% had a diagnosis of CVD, with just 13.9% of measures being secondary to injury or trauma (Moxey et al., 2010).

Patients with amputations secondary to dysvascularity tend to be older, they face more comorbid health conditions, and are at increased risk of postoperative morbidity and mortality, whereas traumatic limb loss is more dominant among younger, otherwise healthy persons (Dillingham & Pezzin, 2008).

In developed countries, vascular complications are the major factors to lower limb amputations. But in the developing countries, it is more possible that the traumatic accidents are the major causes of amputation. Vascular complications and diabetes are increasing health issues in developing countries, and diabetic ulcers are ancestors of lower limb amputation (Hossain et al., 2007).

Lower limb amputation (LLA) is done for a variety of reasons that change from disease to trauma. Lower limb amputation (LLA) results in a wide range of consequences. Amputation generally results in reduced physical function, poor physical performance, lack of social gathering, liveliness, general health, and more pain compared to population standards. Amputation is devastating factor for both males and females but males usually have better physical function than females. People who consume the following features are usually not able to live independently in their homes after the amputation (Robinson et al., 2010).

Amputation is a distressing experience that is likely to pose considerable challenges in terms of psychological and social adjustment. Not only does this procedure experience permanent physical loss, it may also lead to restrictions in many other important life domains. Limb amputation can lead to significant psychological and social dysfunction among some individuals, while many others adjust and function well (Desmond & MacLachlan, 2006).

Prostheses are adaptive and enabling entities used by a significant number of individuals worldwide. The word itself has roots in Greek, meaning ‘an addition’, from ‘pros’ meaning towards and ‘tithenai’ to place (Oxford University Press, 2014). A prosthesis can therefore take any shape or form in providing something that would not normally be there. In particular, this thesis is concerned with limb prostheses. These are used by individuals who have an absence of one or more limb regions, and so the ‘addition’ that the prosthesis provides is for an absent arm or leg, or part of these.

One of the primary goals of prosthesis following lower-limb amputation is the successful fitting of the prosthetic device and use of the prosthesis to achieve functional mobility. Greater prosthesis use has been associated with higher levels of function and independence via improved self-care and mobility as well as improved perceived quality of life and employment success (Schaffalitzky et al., 2011).

Prosthesis is one of the earliest invention of human civilization. Bryant (2014) notes some of the earliest uses of prosthetic limbs. The first written record of an artificial leg was made by the Greek historian Herodotus; this record was a documented story of a prisoner who escaped by amputating his foot. The prisoner found and used a wooden limb to assist him in walking. In a later discovery, researchers found a prosthetic device in Egypt which was used to replace a big toe; this prosthesis was made out of leather and carved wood. Researchers believe that it is approximately 3000 years old. An artificial leg, made of wood and copper, was found in Italy in 1858.

In the primitive era of prosthetic limbs, wooden or iron rods were attached to the stump of the leg. Straps were usually used to keep the rod in place. During the middle Ages, peg legs and hook arms were available for amputees to use. During the age of the Renaissance, prosthetic device construction improved, and prostheses were beginning to be made out of materials such as iron, copper, steel, and wood. Ambroise Paré, a surgeon who lived in France during the sixteenth century, was dedicated to treating injured soldiers who had lost limbs in battle (Bryant, 2014). Paré also created new methods of amputation. Instead of cauterizing arteries, which was the common practice at the time, he suggested tying off the arteries. Additionally, he developed the first mechanical hand, as well as the first artificial leg with locking knees. At this time in history, materials such as leather were being used in the construction of prosthetic limbs in order to make them lighter. During the seventeenth century, a Dutch surgeon by the name of Pieter Verduyn invented the first non-locking, below-knee prosthesis (DeMello, 2009).

Later, prosthetic technology began to advance after World War I and World War II due to the increase in amputees. A special sock, which improved comfort and stability, was invented for above-knee prosthesis. In the years that followed, better materials were synthesized to construct prosthetics. Carbon fiber was a stronger and more lightweight material. Also, silicone was used to produce realistic-looking skin (Bryant, 2014).

Technology has progressed, and there are now bionic prostheses. In simplest terms, the prosthesis contains sensors that send signals to the brain, and, in the case of an upper limb prosthesis, the user is able to activate individual fingers and work through a full range of motion. Some patients will undergo a surgical procedure called re-innervation. This procedure uses sensors that are implanted in the patient's shoulders, pectoral muscles, and residual limbs. There are also other methods that do not require invasive surgery (Ramos, 2016).

The most commonly used materials in current prosthetic devices are leather, metal, wood, thermoplastic and thermosetting materials, foamed plastics, and viscoelastic polymers. Five characteristics are considered when deciding what materials to use to construct a prosthesis: strength, stiffness, durability, density, and corrosion resistance. Prosthetic limbs are often made from materials that preserve heat, thereby creating the problem of perspiration; it is better to make prostheses out of materials which are resistant to moisture. Prostheses that are made of materials that are resistant to moisture are more readily cleaned than porous substances (Lusardi, et al., 2013).

A report in 2005 indicated that 1 in 190 people live with limb loss in the US, and estimates suggest this currently summates to two million individuals, a figure projected to reach 3.6 million by 2050 (Ziegler-Graham et al., 2008). In the UK, statistics concerning limb absence are not currently collected, but the United National Institute for Prosthetics & Orthotics Development (2013) reported that nearly 6,000 individuals with limb absence were referred to prosthetic centers in 2010-11. Limb absence statistics are also not officially collected in the Republic of Ireland, but a national representative organization recently claimed that there are over 5,000 individuals living with limb absence in this country (Amputee Disability Federation Ireland, 2014).

Physical rehabilitation requires the coordination and involvement of numerous medical disciplines. The rehabilitation process can be divided into four stages: presurgical, immediate postoperative, prosthetic rehabilitation, and continuing care. Following the postoperative period, the first task is to determine whether prosthetic rehabilitation is suitable for the patient. (O'Keeffe, 2011).

Not all persons with limb absence will use a prosthesis. Statistics quantifying proportions of persons that use and do not use prostheses are largely non-existent, though in a market analysis white paper, McGimpsey and Bradford (2010) claim that of the nearly two million individuals in the US that are estimated to be living with limb absence, 1.5 million are users of prostheses, leaving a quarter of a million that are not. Frequency of usage has been explored separately for upper- and lower-limb prosthesis use. Some prosthesis user had 'once in a while' or 'never', and found that there was a moderate association between the amounts of time spent wearing a limb and satisfaction with the limb. In a further study in the US, 107 upper-limb prosthesis users were surveyed about their limb usage, the results of which indicated that having a proximal amputation and lesser level of phantom limb pain were associated with increased usage of an artificial limb (Raichle et al., 2008).

The frequency of lower-limb prosthetic usage has also been measured under varying criteria in the literature. Lesser use was associated with older age, being female, possessing a wheelchair, level of physical disability, cognitive impairment, poorer perceptions of health and dissatisfaction. However, Kauzlarić and Kolundžid (2007) have reported an average of 5.5 hours use for individuals they surveyed in Croatia, which ranged between 3-10 hours. Greater frequency of usage, however, has been correlated in the US with younger age, employment, being married, distal amputation, amputation due to trauma, and a lack of phantom limb pain.

The incidence of prosthesis use, including the frequency of use to complete abandonment for both upper- and lower-limb prosthesis users, varies significantly, and while some predictors of these have been put forward, they have not been adequately accounted for in the literature (Raichle et al., 2008). Given that a prosthesis can be viewed as a fundamentally enabling technology, or 'adjustment in daily-life activities' (Vasluian et al., 2013), as it provides a level of function for persons with limb absence that they would not otherwise have without a limb, being without a prosthesis indicates being deficient of this function. (Schaffalitzky et al., 2012).

In the field of prosthetics, there is an increasing acknowledgement by practitioners, clinicians and therapists of the need to measure the outcomes of their practice. The goals of assessing health outcomes are to improve the quality of care, the quality of health, and thus ultimately the quality of life (QoL) of patients. As the aim of providing people with more effective body functioning is central to the fitting of a limb prosthesis most outcomes research is concerned with ensuing physical adjustment (Deans et al., 2008).

The loss of a limb can be a life-changing event, and the research literature details a diverse and widespread range of extensive effects that are associated with acquired limb absence, affecting the person at the physical, psychological and social functioning level (Desmond et al., 2014).

In particular, the permanent loss of a limb means that persons experience functional impairment, finding themselves physically restricted they may experience pain as a consequence of the amputation alterations to their body image, their self-concept (Grobler et al., 2006), their sexuality and relationships with others (kohler et al., 2009) and restrictions from community and wider social participation (Gallagher et al., 2011).

Studies have also indicated the presence of depressive symptomatology post-amputation in 13-35% of cases (Atherton & Robertson, 2006). In particular, the two years following an amputation are reported to present an elevated risk (Singh et al., 2009), but some have noted that depression may remain elevated for up to 10 years after the loss of a limb. The experience of depression in limb absence has also been found to be linked with other negative psychosocial outcomes that include elevated general anxiety (Atherton & Robertson, 2006), body image anxiety, feelings of vulnerability diminished self-esteem, phantom limb pain and neuroticism (Badura-Brzoza et al., 2006), general pain, lower levels of perceived health and social support (Ikram et al., 2014), greater self-awareness of impairment, lower identification with the impairment (Senra, 2013), and lower perceived quality of life (Asano et al., 2008).

Individuals with acquired limb absence are also often reported to express dissatisfaction with their body image (Holzer et al., 2014). In addition to being linked with depression and general anxiety, dissatisfaction with one's body image after the loss of a lower limb has been associated with lower levels of self-esteem, lower levels of life satisfaction as well as reduced levels of physical activity (Tatar, 2010) and elevated phantom limb sensations (Alessandria et al., 2011).

Amongst the psychosocial correlates of adjustment, variables such as hope optimism, perceived control sense of coherence (Badura-Brzoza et al., 2008), self-esteem, illness perceptions (Callaghan et al.,2008), balance confidence (Asano et al., 2008), public self-consciousness, vulnerability and perceived social stigma have been found to be significantly associated with psychosocial adjustment (Unwin et al., 2009).

There is therefore a pressing need to develop a richer picture of prosthesis use in order to understand what may account for variable usage. Doing so involves a deeper understanding of the person that uses a prosthesis, and this involves exploring factors related to adaptation and adjustment to the loss of a limb as well as to the acquisition and adjustment to an artificial limb (Gallagher et al., 2007).

The process of post amputation recovery inevitably takes place at least partially within the clinical setting of a rehabilitation centre. The replacement of an amputated limb with a prosthetic device and the successful integration of this device into the individual’s daily life forms a central role in the rehabilitation process. While an understanding of the individual’s experience of limb loss and subsequent prosthesis use is vital. (Ononeze et al., 2009). In relation to the specific relationship of prosthetists and individuals with lower limb amputation, research in this area is limited to a small number of studies concerned with the practicalities of prosthesis prescription (Schaffalitzky et al., 2011) and phantom limb pain. Several studies have revealed areas of the patient-prosthetist relationship which individuals found to be less than satisfactory including overall communication and interpersonal skills and the exchange of information (Murray, 2013).

Finally, a number of psychosocial factors have been associated with improved adjustment to an artificial limb, including greater social support, lower social discomfort, lower perceived social stigma, the meaning attributed to and the acceptance of an amputation, and lower public self-consciousness (Gallagher & Desmond, 2007).

A full exploration of the experience of losing a limb and living with a prosthetic device, from the perspective of the individual is still needed in order to gain a subjective understanding of this phenomenon. This has been partially explored through a series of studies investigating the experience of limb loss and prosthesis use from a phenomenological perspective (Hamill et al., 2010).

A prosthesis enables or enhances function towards that which a biological limb would otherwise provide, and thus the use of a limb will have an impact on a person who would otherwise be without this, across a range of domains (Cook & Miller, 2012). To consider the framework of the WHO's International Classification of Functioning, Disability and Health (ICF; 2011), the enabling properties of a prosthesis can be considered to support individuals across all three domains of body functions and structures, activities, and participation. For example, a prosthesis can provide a sense of bodily completeness and support gendered identities (Murray, 2009), it can facilitate activities of daily living, as well as support socializing and participation, and gesturing and partaking in rituals. Furthermore, studies exploring lower-limb prosthesis use have determined that an improved quality of life is associated with use of a prosthesis but not with other assistive technologies, indicating that there is something distinctive about the use of an artificial limb compared to use of other aids such as walking sticks or crutches (Sinha et al., 2014).

In recent years, quality of life instruments have been recognized as very important in the evaluation of health care. Health-Related Quality of Life (HRQOL) refers to individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad-ranging concept affected in a complex way by the individual's physical health, psychological state, and level of independence, social relationships, and their relationships to salient features of their environment (Vahedi, 2010).

There are many general instruments available to measure quality of life. The World Health Organization (WHO) has developed a quality of life instrument, the WHOQOL, which captures many subjective aspects of quality of life. The WHOQOL-BREF is one of the best known instruments that has been developed for cross-cultural comparisons of quality of life and is available in more than 40 languages. It has been adopted in the United State of America, Netherlands, Poland, Bangladesh, Thailand, India, Australia, Japan, Croatia, Zimbabwe and many other countries. During the development of the WHOQOL, it was emphasized that quality of life is a multidimensional concept.

A higher quality of life was associated with an absence of comorbidities, lower residual limb and phantom limb pain, employment status and non-use of assistive devices other than a prosthesis, but also found associations with younger age, lower functional restriction, and greater adjustment to limitation, increased social adjustment and lower restrictions in athletic ability (Sinha et al., 2014).

However, there may also be associated issues with the use of a prosthesis, given that it is an imperfect substitute for a biological limb. For example, issues of comfort and limitations in physical functioning often leave individuals disappointed with the state of the technology, and this has been linked to device abandonment (Biddiss & Chau, 2007).

Quality of life has been advocated as an outcome measure for assessing the effect of treatment and quality of care. QoL is described as a multidimensional concept and as an emotional and cognitive judgment about the persons' well-being, life satisfaction, and happiness and as such may be best assessed by the person himself. Therefore, a multitude of facets need to be taken into consideration to comprehensively assess QoL. Assessing QoL in its entirety is challenging because of its multifaceted nature. At the same time, the instrument being used to assess QoL should not be too long which will make its administration time-consuming, and at the same time, it should not be too short, so that it does not adequately capture the essence of QoL (Horne & Neil, 2009).

Depressive symptomatology is the most commonly documented mood disturbance following amputation, estimates suggest that between 13% and 32% of individuals with limb amputations might experience significant depressive symptoms at any one time (Phelps et al., 2008). The presence of depressive symptomatology has been linked with a wide variety of negative outcomes such as increased pain intensity, activity restriction, anxiety, public self-consciousness, vulnerability, body image anxiety, and reduced quality of life (Asano et al., 2008). Increased anxiety is common in the early postoperative period and amongst inpatients. However, similar findings also emerge in other patient groups and are considered an 'appropriate' response in light of potentially life threatening surgery or injury and prolonged hospitalization. Anxiety does not appear to persist in the long term following limb amputation. Potential for post-traumatic stress disorder (PTSD) following limb amputation is widely recognized yet poorly researched, even amongst those with traumatic limb loss (Wegener et al., 2011).

In general, quality of life (QOL) is the perceived quality of an individual's daily life that is an assessment of their well-being or lack thereof. This includes all emotional, social and physical aspects of the individual's life. Health-related quality of life

(HRQOL) is an assessment of how the individual's well-being may be affected over time by a disease, disability or disorder. WHO stated that Quality of life is a model of integrated objective and subjective indicators. It is a broad range of life domains, and individual values. It takes account of concerns that externally derived norms should not be applied without reference to individual differences. Factors that play a role in quality of life vary according to personal preferences, but they often include financial security, job satisfaction, family life, health and safety.

The Quality of life healthcare, it is noted that the concept of health-related quality of life acknowledges that subjects (like people, patient and survivors) put their actual situation in relation to their personal expectation. The latter can vary over time, and react to external influences such as length and severity of illness, family support, etc. As with any situation involving multiple perspectives, patients' and data collectors' rating of the same objective situation have been found to differ significantly. Consequently, health-related quality of life is now usually assessed using patient questionnaires. These are often multidimensional and cover physical, social, emotional, cognitive, work- or role-related, and possibly spiritual aspects as well as a wide variety of disease related symptoms, therapy induced side effects, and even the financial impact of medical conditions in any trouble situation. Although often used interchangeably with the measurement of health status, both health-related quality of life and health status measure different concepts (CDC, 2011).

The world health organization Quality of Life (WHOQOL) project was initiated in 1991. It assesses the individual's perceptions in the context of their culture and value systems and their personal goals, standards and concerns. The WHOQOL instruments were developed collaboratively in a number of centers worldwide and have been widely field-tested. The scale is using rapidly in health sector. The WHOQOL-BREF instrument comprises 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. The WHOQOL-BREF is a shorter version of the original instrument that may be more convenient for use in large research studies or clinical trials. The WHOQOL-100 is a rating scale where survivors ensured the quality from 0 to 100. Better score defined better quality of life.

WHO (2014) mentioned that the WHOQOL assessments has value where disease prognosis is likely to involve only partial recovery or remission, admin which treatment may be more palliative than curative. Therefore, the WHOQOL assessments will allow detailed quality of life data to be gathered on a particular population, facilitating the understanding of diseases, and the development of treatment methods. The international epidemiological studies that would be enabled by instruments such as the WHOQOL-100 and the WHOQOL-BREF will make it possible to carry out multi-center quality of life research, and to compare results obtained in different centers. Such research has important benefits, permitting rehabilitation and other related variables.

CHAPTER - III METHODOLOGY

3.1 Study design

The study was descriptive cross - sectional Study. This was a non-experimental study design. The studies were carried out at one time point or over a short period. A cross-sectional study design is used when the purpose of the study is descriptive, often in the form of a survey. Usually there is no hypothesis as such, but the aim is to describe a population or a subgroup within the population with respect to an outcome and a set of risk factors". Cross-sectional methods are studies aimed at determining the frequency of a particular attribute, such as a specific exposure, disease or any other health-related event, in a defined population at a particular point in time. Data can also be collected on individual characteristics, alongside information about outcome. In this way cross-sectional studies provided a "snapshot" of the outcome and the characteristics associated with it, at a specific point in time.

3.2 Study population:

A population refers to the entire group of people or items that meet the criteria set by the investigator. Amputee patient with prosthetic rehabilitation is the study population from the community.

3.3 Sampling technique

After taking permission from the ethical body of BHPI, the investigator had to find out the people with prosthetic limb following lower limb amputation. Those participants had fulfilled inclusion criteria as they are the participants of the study. The investigator had chosen Dhaka district as a study area for collecting data. Researcher has called the participants by mobile phoning and meet with them inside Dhaka district. The investigator met the participants in CRP too. All the people with prosthetic limb following lower limb amputation were selected for this study and that fulfilled the inclusion criteria. The investigator explained every participant about the research aim and objectives. The investigator had taken sampling from those who willingly participated in this research. The investigator had selected them through purposive sampling that are available in between the days of data collection. Only 30 numbers of participants have found physically and collected data through face to face interview.

A purposive sample is a non-probability sample that is selected based on characteristics of a population and the objective of the study. Purposive sampling is that a researcher do not simply study whoever is available, but use his/her judgment to select a sample that he/she believes based on prior information, will provide the data need. In this type of sampling the sample is statistically representative. Therefore, those people who fulfilled the inclusion criteria, they were the samples of the study and 30 people with prosthetic limb following lower limb amputation had selected to participate in the study.

3.4 Sample size

The equation of sample size calculation are given below-

$$n = \{\frac{z\left(1-\frac{\alpha}{2}\right)}{d}\}^2 \times pq$$

Here,

$z(1-\frac{\alpha}{2})$ = 1.96

P= .5

q= (1-p)

=1-.5

=0.5

d= Sampling errors which is 5%=0.05

According to this equation the sample should be more than 384 people but due to time consuming and the availability of the sample, the study is conducted with 30 participants are selected according to the inclusion and exclusion criteria.

3.5 Inclusion Criteria

a. People with prosthetic limb following lower limb amputation.
b. Both male female are selected.
c. People who are willing to participate in the study.

3.6 Exclusion Criteria

a. Those who are not interested to attend the program at the time of data collection.
b. People who have mental illness.

3.7 Data collection Method

Data collection method was questionnaire and before collecting data, the study aims, objectives and study procedures were explained to participants. They were given the opportunity to ask questions and once they were satisfied they were asked to sign the written consent form. Once they signed the consent form, the researcher completed the WHOQOL-BREF along with the demographic data. Researcher collected data from 05-09-2016 to 12-10-2016. Researcher went to every participant's house, workplace and training institute for collecting data. In this stage researcher took help from in-charge of training institute and persons who were participants in this research. In certain instances, the individual being assessed may not be able to complete the questionnaire (e, g, due to expressive or receptive language deficits, memory impairment, post traumatic distress etc.). In these instances, a person who was familiar with the individual being assessed could complete the form, provided that the individual being assessed was present when the form was completed.

3.8 Data collection tools

Demographic information of the respondents was collected by using questionnaires. Demographic information included age, sex, educational level, marital status, previous occupation, new job. Therefore, researcher added some points in demographic questionnaire like- type of prosthesis, satisfaction with money. Moreover pen, papers, consent form were also included in the list of data collection tools.

3.9 Data Analysis

Data was entered into Statistical Package for Social Science (SPSS) software Version 20 and excel spread sheet. Data also analyzed by SPSS software. WHOQOL-BREF and Demographic questionnaire was analyzed and discussed about the demographic factors such as age, gender, occupation marital status etc. WHOQOL- BREF questionnaire was also discussed about physical, psychological, social relation and environmental health of quality of life. In WHOQOL- BREF, there are 26 questions. The scale grade has distributed into 1-5 (Very poor- very good) with overall quality of life and level of health satisfaction. The domains have graded with very poor, poor and fair. According WHO guideline, there are converter page from raw score to transformed score. All transformed scores were assessed as good when it above the mean and greater than one standard deviation, scores were regarded as poor when below the mean and less than one standard deviation, while scores that fall between them were assessed to be fair. In Nigeria, similar method was used by Olusina (2008) to assess the QOL of people with schizophrenia (Nuhu et al., 2013). It has also divided that the type of support and amount of support received by victims.

The investigator collected the information about types of disabilities and satisfaction of their life. Beside, researcher found out the results by SPSS software-version 20 that analyzed in excel and showed in column. Results were discussed and presented through figures and tables as applicable.

3.10 Ethical consideration

The proposal was submitted and prepared to the Institutional Review Board (IRB) and Bangladesh Health Profession Institute (BHPI) and approval was obtained from the board. The World Health Organization (WHO) and Bangladesh Medical Research Council (BMRC) guideline was al followed to conduct the study. A written/verbal consent was taken from participate before collecting of data. During the course of the study, the samples who were interested in the study had given consent forms and the purpose of the research and the consent form were explained to them verbally. The study did not interfere with their jobs. They were informed that their participation was fully voluntary and they had the right to withdraw or discontinue from the research at any time. They were also informed that confidentiality was maintained regarding their information. It should be assured the participant that his or her name or address would not be used. The participants were also informed that the research result would not be harmful for them.

3.11 Reliability and validity

The World Health Organization Quality of Life (WHOQOL-BREF) questionnaire is a reliable and valid instrument and other different authors have used it in their study. The reliability is excellent for the total WHOQOL-BREF and the ICC range is 0.84-0.93. On the other hand, correlation of the WHOQOL-BREF subscales with the satisfaction with well-being is adequate to excellent (psychological – Pearson's r=0.75, physical- Pearson's r=0.63, social- Pearson's r=0.45, environment Pearson's r=0.59).

The WHOQOL-BREF was individually discussed with each participant and for questionnaire enough time was given to them for completing the form. There was 10-15 minutes time limitation in filling out the WHO-QOL BREF and socio-demographic questions.

WHO-QOL questionnaire is a perfect selection for assessing person with physical disabilities who are suffering problem related health and quality of life.

CHAPTER - IV RESULTS

Demographic data shows that among 30 participants, most of the participants were male 80% rather than female 20%. It also shows there were 24 males and only 6 females. (Figure 4.1)

Sex of the participants

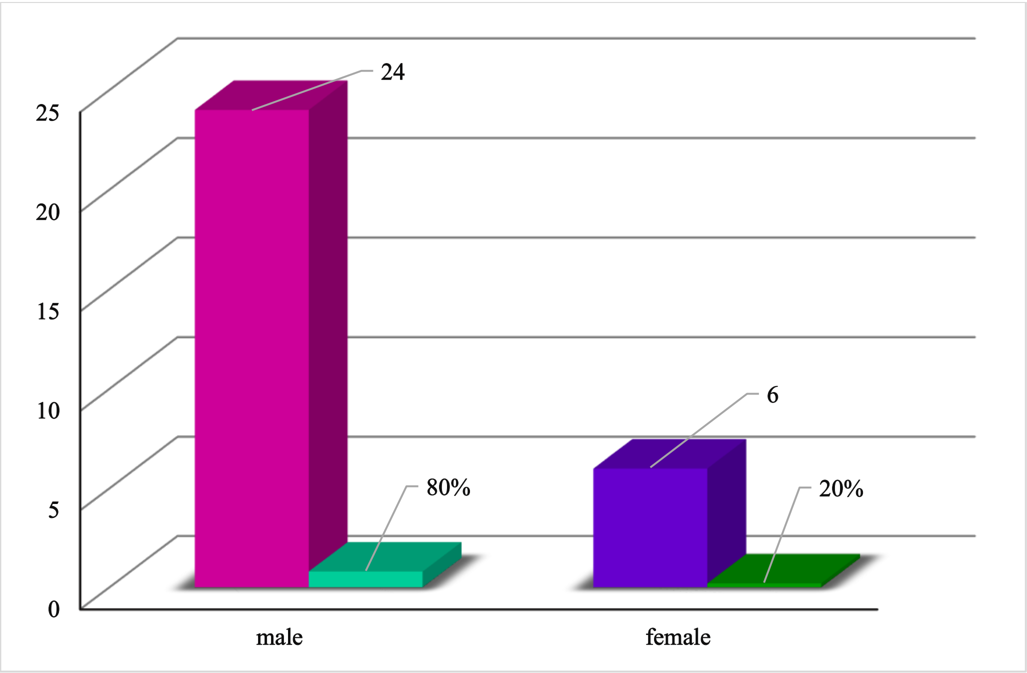


Figure 4.1

In between 15-25 years of age about 26.7% of participants or 8 participants, about 43.3% of participants or 13 participants are between 26-35 years of age range. In between 36-45 years of age range the participants are 16.7% or 5 participants and in between 46-55years of age range the participants are 3.30% or only one participant. And 10% participants or 3 participants are in the age ranged 56-65 years. (Figure 4.2)

Age of the participants

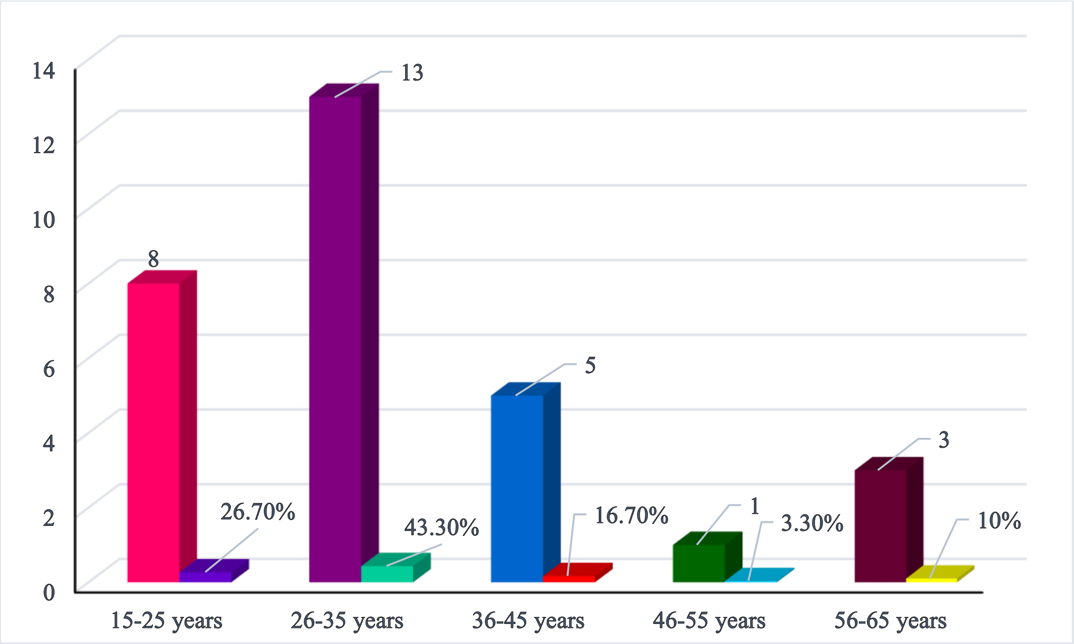


Figure 4.2

Among all of lower limb prosthesis users, about 10% participants or 3 participants have never attended on any formal education. About 36.7% of the participants or 11 participants have completed primary education where only 30% of the participants or 9 participants have finished their high school education and 13.30% or 4 participants have completed college education. Among the participants 6.7% or 2 participants have completed graduation degree. Among all 3.3% or only one participant have gained higher education degree. (Figure 4.3)

Highest education of the participants

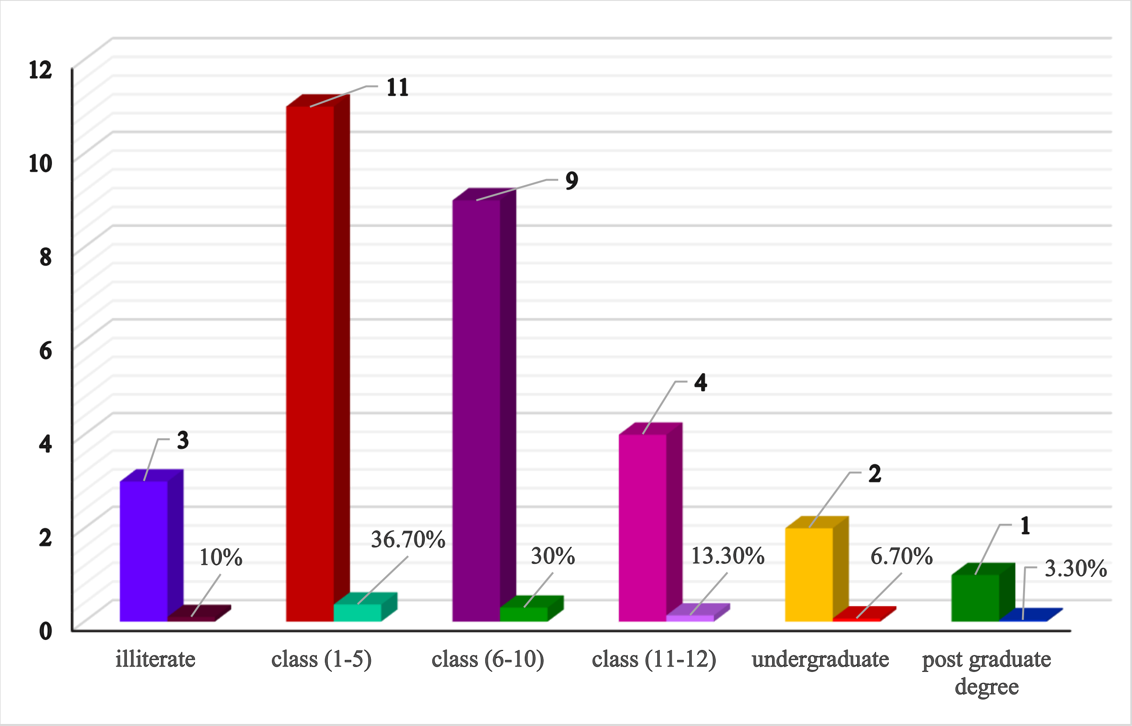


Figure 4.3

In case of their marital status about 40% were single or unmarried, 60% were married. It also shows there were 18 married participants and 12 unmarried or single participants. (Figure 4.4)

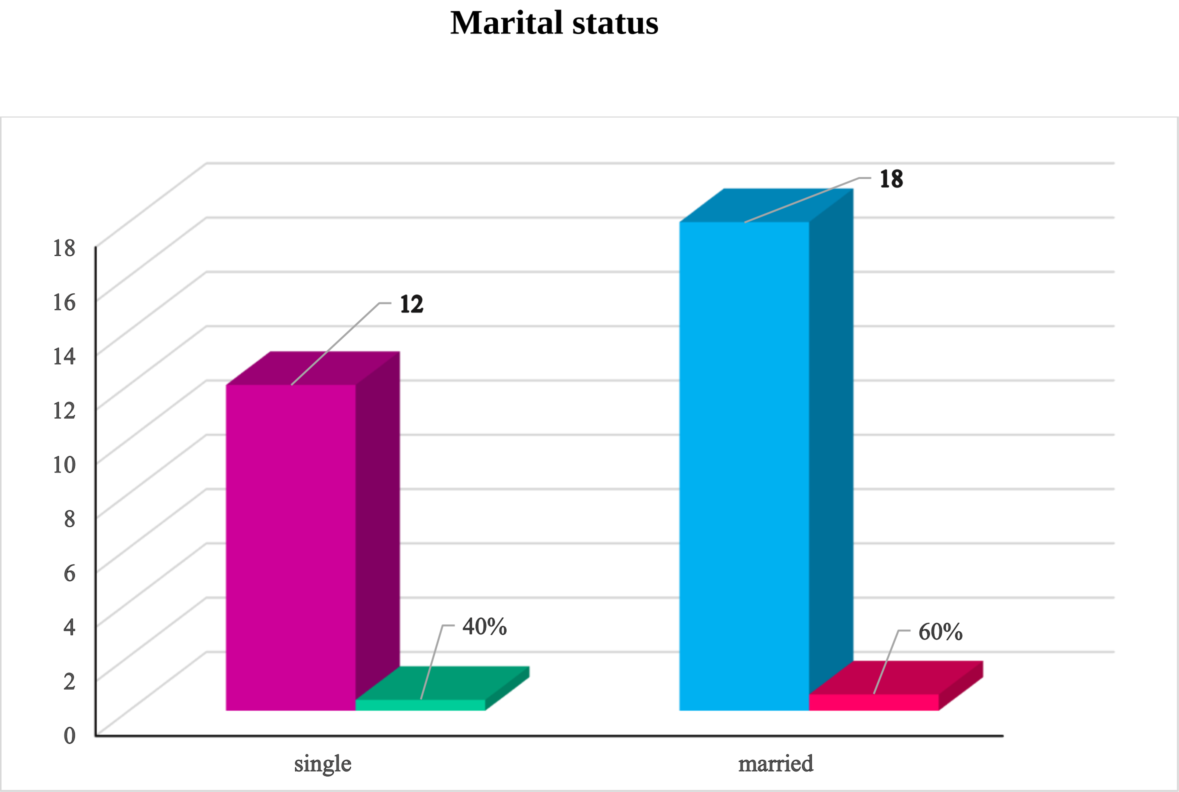


Figure 4.4

Among all the participants 13.3% or 4 participants were self-employed, 3.3% Or 1 participant was nonpaid, and 16.7% or 5 participants were student. On the other hand, 13.3% or 4 participants were homemaker. And 6.6% or 4 participants were homemaker. While 10% or 3 participants were unemployed(able to work). But 36.7% or 11 participant were involved at other activities. (Figure 4.5)

Job of the participants

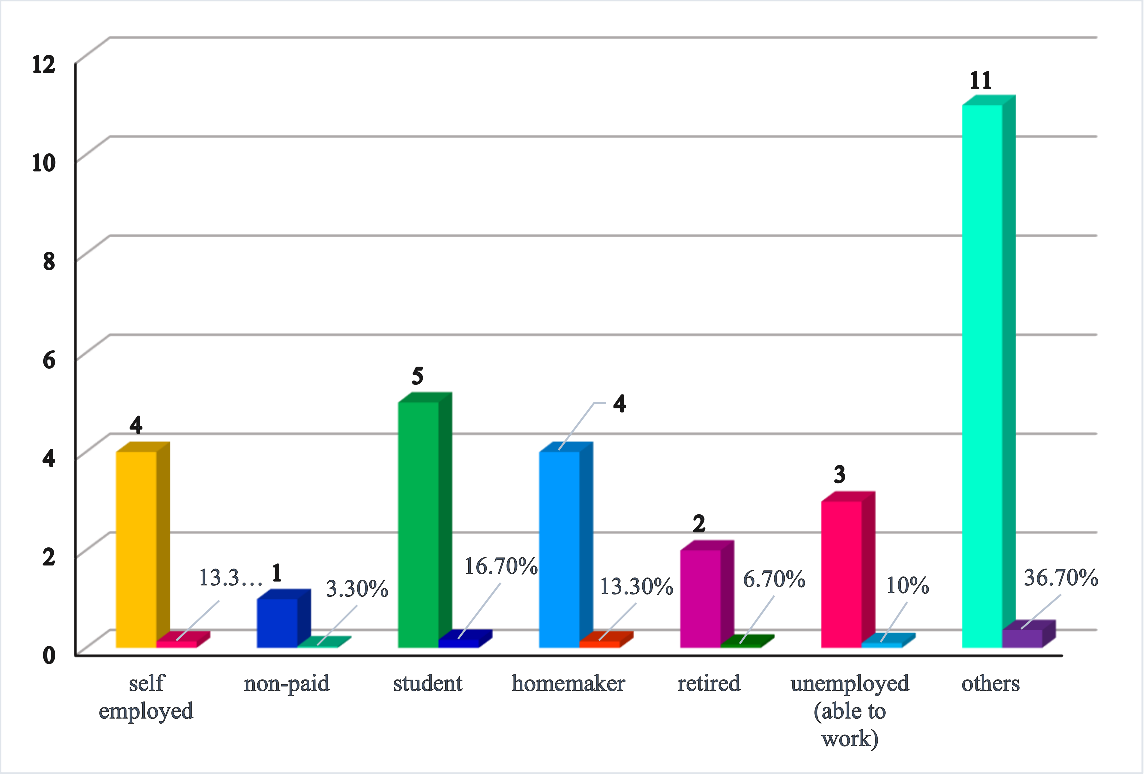


Figure 4.5

In case of types of disability, most of the participants, about 83.3% or 25 participants are mostly involved in physical effort and about 16.7% or 5 participants were having mental effort. (Figure 4.6)

Job type of the participants

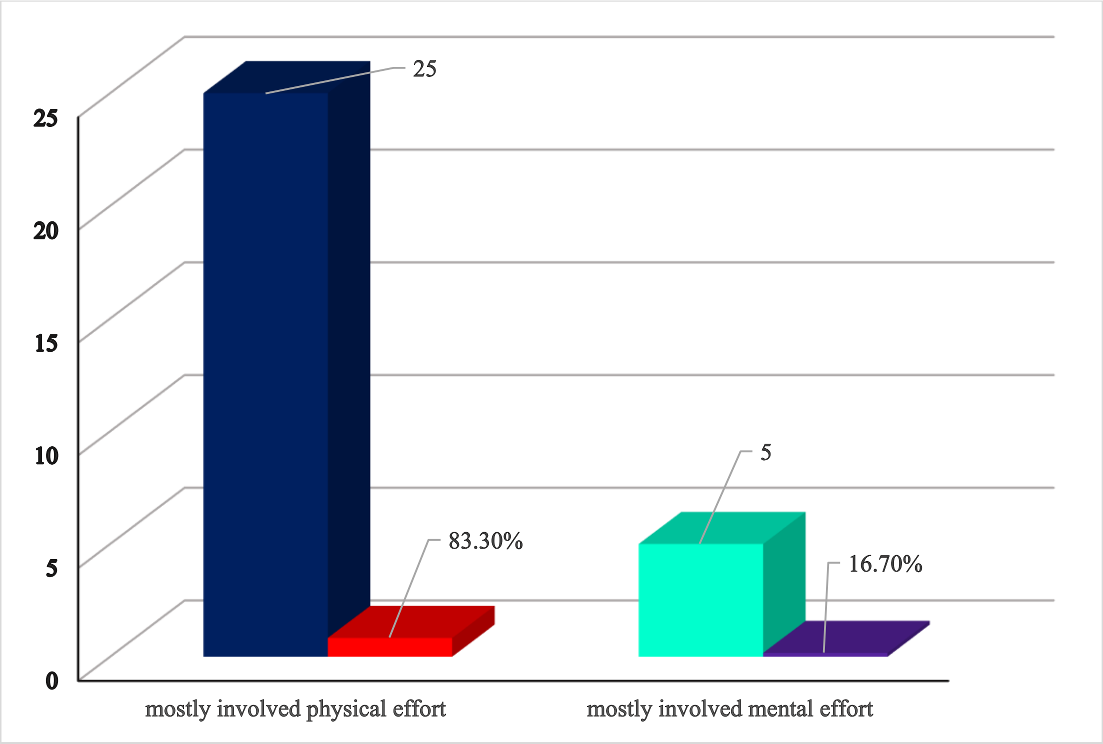


Figure 4.6

In this study, 3.3% of the participants or 1 participant was unemployed(able to work) before amputation, 20% of the participants or 6 participants were student, 13.3% of the participants or 4 participants were homemaker, 1 participant or 3.3% of the participants was guard, 23.3% of the participants or 7 participants used to be worker, 1 participant or 3.30% of the participants was supervisor. On the other hand, 13.3% of the participants or 4 participants were shopkeeper, 10% or 3 participants were officer, 6.7% or 2 participants were self-employed and 3.3% of the participants or 1 participant was involved in other job/work. (Figure 4.7)

Previous job of the participants

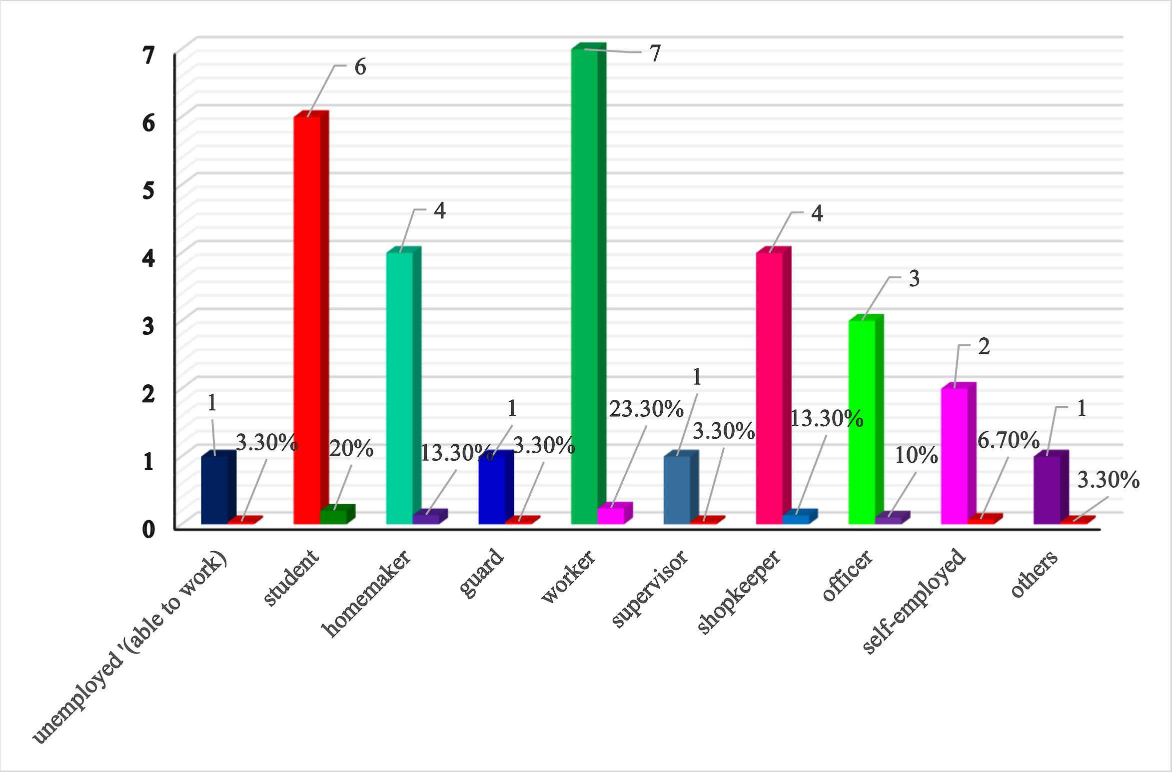


Figure 4.7

In this study, the data shows that among 30 participants' 18 participants or 60% participants are urban. And rest of them, 12 participants or 40% participants are rural. (Figure 4.8)

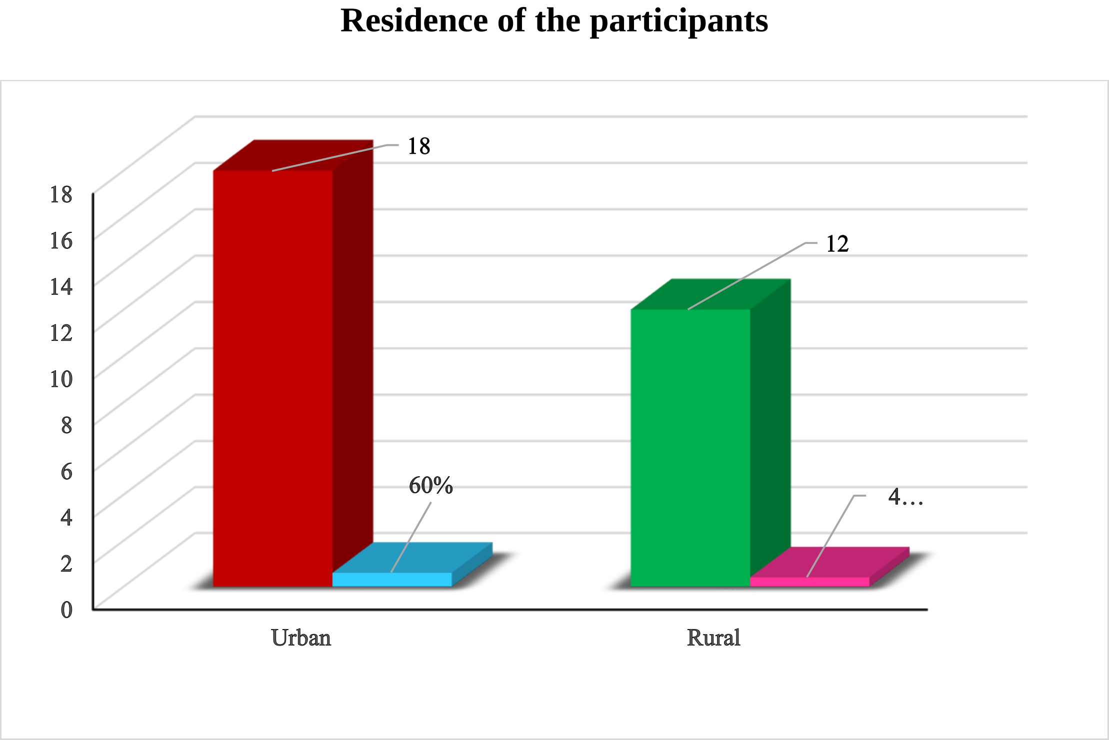


Figure 4.8

In this study, 30% of the participants or 9 participants were using trans-femoral prosthesis on the other hand 70% of the participants or 21 participant were using trans-tibial prosthesis. (Figure 4.9)

Type of prosthesis of the participants

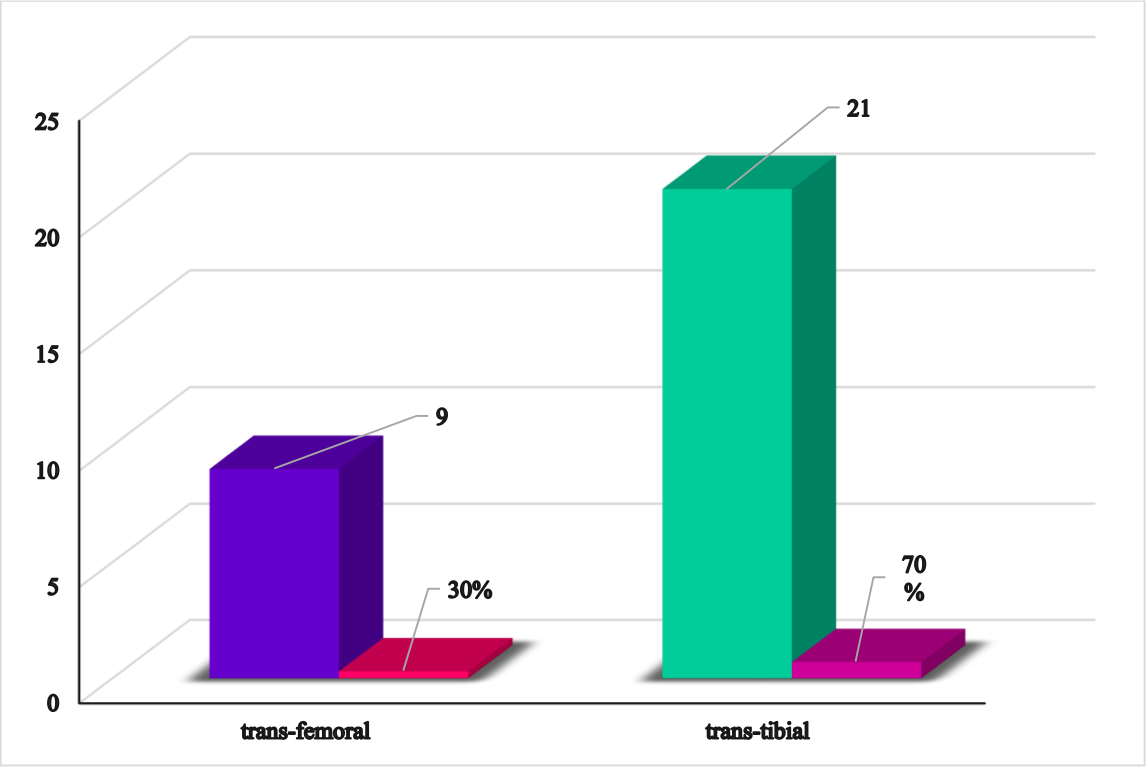


Figure 4.9

In case of overall quality of life of the persons using lower limb prosthesis about 37.7% of the participants or 11 participants had poor quality of life, about 56.7% of the participants or 17 participants had neither poor nor good quality of life and only 6.7% or 2 participants had good quality of life. However, no one led a very good quality of life. (Figure 4.10)

Quality of life of the participants

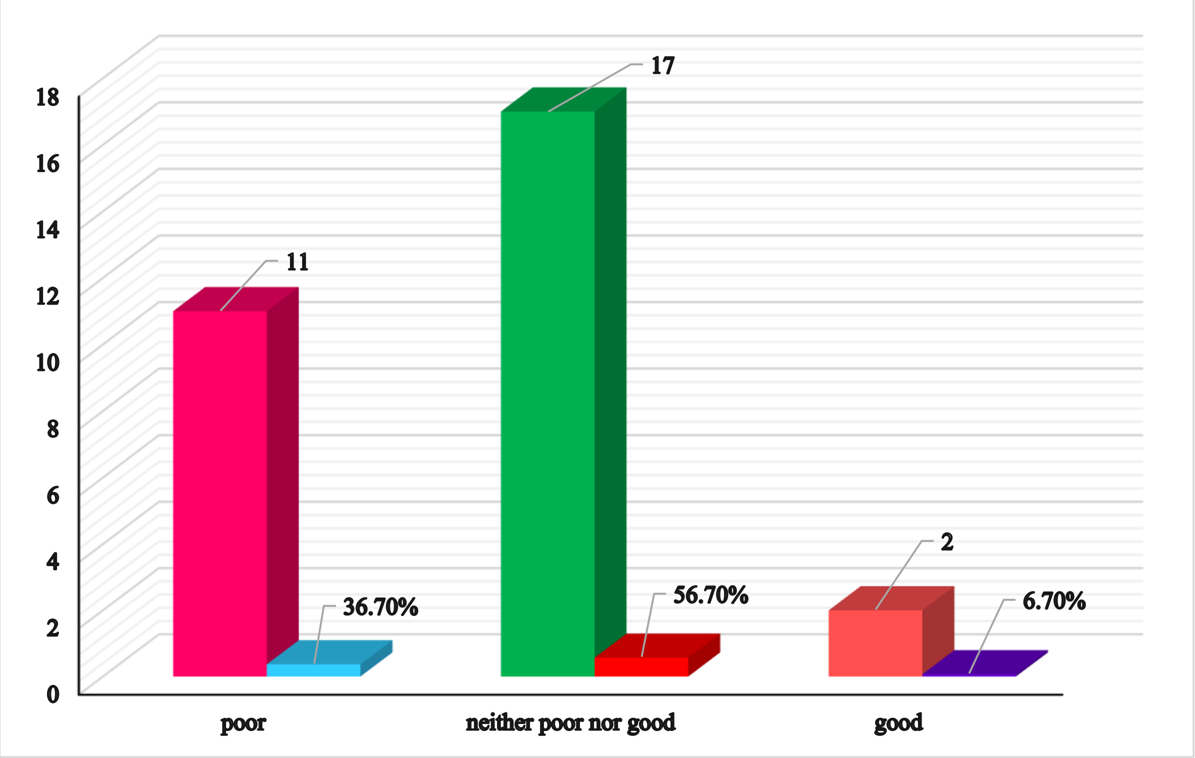


Figure 4.10

After using lower limb prosthesis, the level of health satisfactions has analyzed. Along all of participants about 53.3% of the participants or 16 participants were neither satisfied nor dissatisfied with their health satisfaction where 23.3% or 7 participants were satisfied and dissatisfied too with their health status. And the number of dissatisfied participants were similar to the number of satisfied participants. (Figure 4.11)

Health satisfaction of the participants

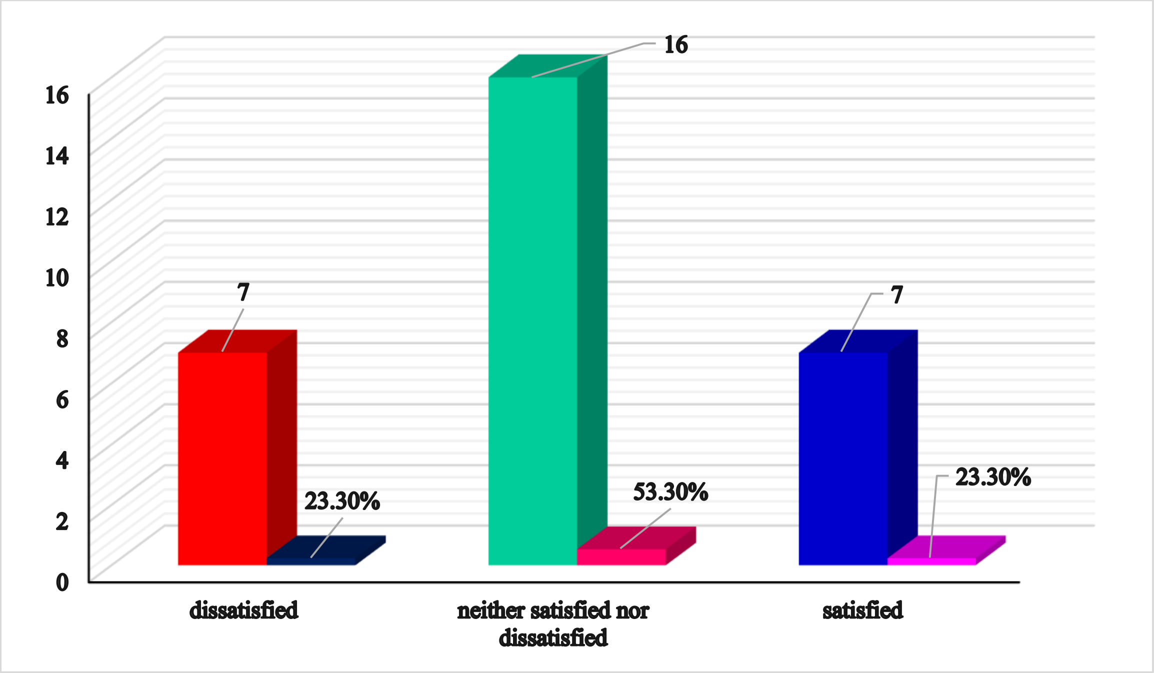


Figure 4.11

This study shows the psychological level of the participants. In this study, among all participants, 70% or 21 participants felt negative feelings such as blue mood, despair, anxiety, depression very often. On the other hand 6.7% of the participants or 2 participants felt negative feelings such as blue mood, despair, anxiety, depression always while 23.3% of the participants or 7 participants felt the negative feelings quite often. (Figure 4.12)

Psychological level (blue mood, despair, anxiety, depression etc.) of the participants

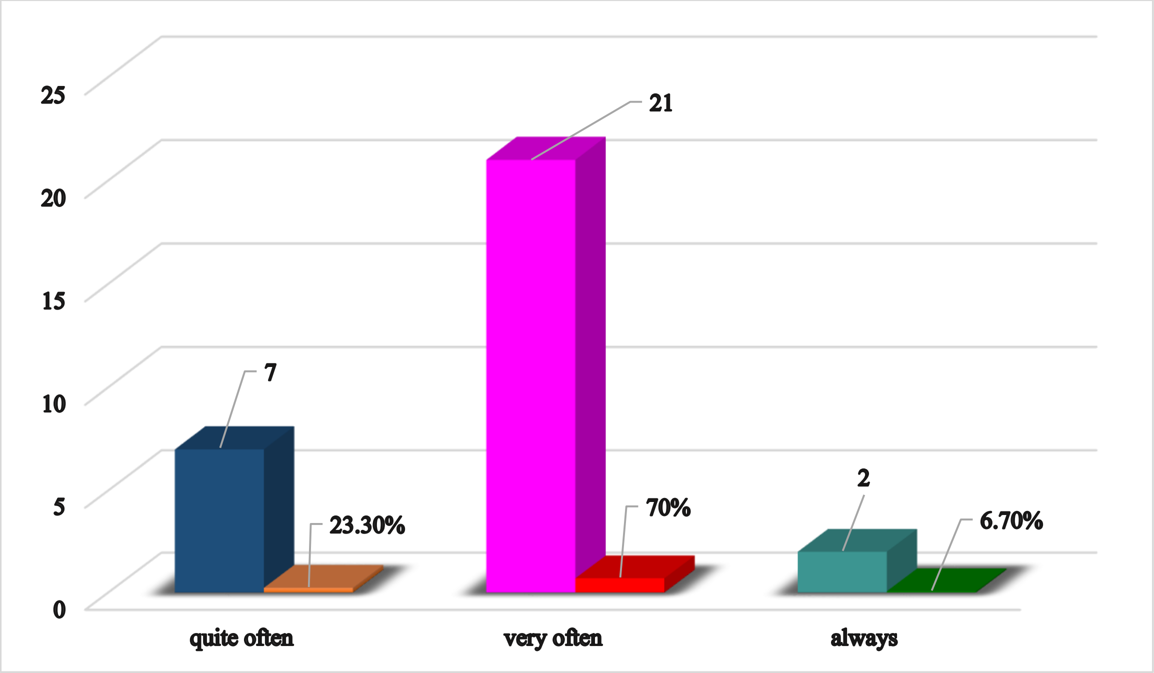


Figure 4.12

This table shows the association between type of prosthesis and quality of life of the participants. Among all participants, 9 participants use trans-femoral prosthesis and 21 participants use trans-tibial prosthesis. Among 9 participants with trans-femoral prosthesis, only 3 participants had poor quality of life, 5 participants had neither poor nor good quality of life and only 1 participants had good quality of life. On the other hand among 21 participants with trans-tibial prosthesis, 8 participants had poor quality of life, 12 participants had neither good nor poor quality of life and only 1 participant had good quality of life. (Table 4.1)

Association between type of prosthesis and quality of life

Type of the lower limb prosthesis?	quality of life			Total
	Poor	neither poor nor good	Good	
Trans-femoral	3	5	1	9
Trans-tibial	8	12	1	21
Total	11	17	2	30

Table 4.1

The Chi-Square Test was performed between type of prosthesis and Quality of life. Pearson Chi Square score is 0.8 ($P<0.05$), which indicates that the association between type of prosthesis and quality of life is not significant. The quality of life of the participants does not depend on the type of prosthesis.

CHAPTER - V DISCUSSION

People with lower limb amputation had inferior QoL as compared to the general population. This finding has been documented by various other studies and shows that amputation is a major life event potentially affecting QoL many years after the event. In this study, use of a prosthesis and comorbidities were found to be the most important factors influencing the physical health component of QoL. A similar higher prevalence of amputation among males has been observed in other studies. The unemployed status of male members can have a direct impact on the family's income and living standards, since in India the male is traditionally the primary earning member of the family (Chandra et al., 2010). Even in our country males are the main earning member of the family. This might explain the important role of employment status in determining QoL in amputees, as unemployment may be distressing for an individual and potentially affect his mental functioning, as observed in this study. In case of their marital status, about 40% were unmarried, 60% were married. Among all of lower limb prosthesis users, about 10% participants or 3 participants have never attended on any formal education. About 36.7% of the participants or 11 participants have completed primary education where only 30% of the participants or 9 participants have finished their high school education and 13.30% or 4 participants have completed college education. Among the participants 6.7% or 2 participants have completed graduation degree. Among all 3.3% or only one participant have gained higher education degree. Generally, participant's educational level is poor in fact, educational status does not the result of this study very much. Mostly it is seen that mostly who has poor education background, suffer most according to this study. In a similar study with 100 participants with limb prosthesis in Pakistan, 18 participants had primary education, 33 participants had middle class education according to their country, 20 participants had secondary education, 8 participants had intermediate education, 10 participants had their graduation and only 2 participants had post-graduation degree (Malik et al., 2013). Among all the participants 13.3% or 4 participants were self-employed, 3.3% Or 1 participant was nonpaid, and 16.7% or 5 participants were student. On the other hand, 13.3% or 4 participants were homemaker. And 6.6% or 4 participants were homemaker. While 10% or 3 participants were unemployed (able to work). But 36.7% or 11 participant were involved at other activities. This suggests that using a prosthesis device has a significant impact on their livelihood. Amputation is devastating but prosthesis use may just add a little bit of hope to remain self-administered. About 13.3% has already self-employed. 10% of them are struggling with no job due to their physical impairment. After any accident, most of the survivors lead life with mild or moderate disabilities. This situation cannot make them stop. There are different vocational rehabilitation Centre work with those disable person and make them self-employed. Among all of the participants, at present 36.7% of participants are involved in others activities such vocational training for returning to their mainstream society with employment. In this study, 3.3% of the participants or 1 participant was unemployed (able to work) before amputation, 20% of the participants or 6 participants were student, 13.3% of the participants or 4 participants were homemaker, 1 participant or 3.3% of the participants was guard, 23.3% of the participants or 7 participants used to be worker, 1 participant or 3.30% of the participants was supervisor. On the other hand, 13.3% of the participants or 4 participants were shopkeeper, 10% or 3 participants were officer, 6.7% or 2 participants were self-employed and 3.3% of the participants or 1 participant was involved in other job/work. Most of the prosthesis user was laborer before the incident of amputation. In a similar study, among 100 participants, 39 participants were employed and 61 participants were unemployed (Malik et al., 2013). Using a prosthesis was found to affect the physical health component more positively than the mental health component of QoL. The importance of mobility on physical functioning has been reported in other studies. From this study, the data shows that among 30 participants' 18 participants or 60% participants are urban. And rest of them, 12 participants or 40% participants are rural. In a similar study in Pakistan, among 100 participants 62 participants were rural and 38 participants were from urban community. (Malik et al., 2013). In this study, 30% of the participants or 9 participants were using trans-femoral prosthesis on the other hand 70% of the participants or 21 participant were using trans-tibial prosthesis. Use of an assistive device might indicate an increase in the limitations experienced by amputees, and could be attributed to a lack of appropriate structure. Social acceptance of the use of assistive devices, delayed proprioception and lack of amputee confidence in prostheses might be additional precursors to the use of assistive devices. This brings forth the importance of patient-oriented and more aggressive gait training in order to develop confidence in walking with a prosthesis and attaining greater capabilities with the prosthesis on different terrains and when performing community or work activities.

In case of overall quality of life of the persons using lower limb prosthesis about 37.7% of the participants or 11 participants had poor quality of life, about 56.7% of the participants or 17 participants had neither poor nor good quality of life and only 6.7% or 2 participants had good quality of life. However, no one led a very good quality of life. Nuhu et al. (2013) has said that one-third of the participants had poor overall QOL at palliative care survivors with cancer. Though the participants with poor quality of life is 37.7% while good quality of life is 56.7%, the quality of life of the participant would become worse those who are using prosthesis device. After using lower limb prosthesis, the level of health satisfactions has analyzed. Along all of participants about 53.3% of the participants or 16 participants were neither satisfied nor dissatisfied with their health satisfaction where 23.3% or 7 participants were satisfied and dissatisfied too with their health status. And the number of dissatisfied participants were similar to the number of satisfied participants. But the satisfaction level is 53.3% as neither satisfied nor dissatisfied about their health status. Another study investigated psychological correlates after amputation. The results discovered significant differences in scores on the hospital anxiety and depression scale before and after therapy. These results indicate that it is beneficial for psychological intervention to be implemented into the rehabilitation and management after an amputation.

In this study about the quality of life of using lower limb prosthesis, the level of self-satisfactions has studied. Along all of participants about 43.3% of the participants or 13 participants were neither satisfied nor dissatisfied with themselves where 53.3% or 16 participants were dissatisfied with what they were. And only 3.3% of the participants or 1 participant was satisfied with himself. This indicates a lower quality of life after using lower limb prosthesis. In this study, among all participants, 70% or 21 participants felt negative feelings such as blue mood, despair, anxiety, depression very often. On the other hand 6.7% of the participants or 2 participants felt negative feelings such as blue mood, despair, anxiety, depression always while 23.3% of the participants or 7 participants felt the negative feelings quite often. From this study is is shown that most of the participant are not well balanced in their mind. They often feel depression, anxiety. This surely effect on the other aspects of life. Nuhu et al. (2013) has said that 66% reported poor health satisfaction in quality of life at palliative center. Wang et al. (2010) mentioned that the quality of life for the person of traumatized disability has improved day by day with reducing anxiety and depression. According to WHO Quality of Life questionnaire, there are four domains of quality of life and those are physical, psychological, social relationship and environmental. 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). A further study involving individuals with lower-limb absence similarly found that a higher quality of life was associated with an absence of comorbidities, lower residual limb and phantom limb pain, employment status and non-use of assistive devices other than a prosthesis, but also found associations with younger age, lower functional restriction, greater adjustment to limitation, increased social adjustment and lower restrictions in athletic ability (Sinha et al., 2014).

In association between type of prosthesis and quality of life of the participants, among all participants, 9 participants use trans-femoral prosthesis and 21 participants use trans-tibial prosthesis. Among 9 participants with trans-femoral prosthesis, only 3 participants had poor quality of life, 5 participants had neither poor nor good quality of life and only 1 participants had good quality of life. On the other hand among 21 participants with trans-tibial prosthesis, 8 participants had poor quality of life, 12 participants had neither good nor poor quality of life and only 1 participant had good quality of life. From this result, it is estimated that most of the participant had neither poor nor good quality of life and using trans-tibial or trans-femoral prosthesis couldnot increase their quality of life as they expected.

100% accuracy will not be possible in any research so that some limitation may exist. 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 30 samples. The quality of life of the persons with lower limb prosthesis could not be measured through small sample size. More samples could not able to collect by random 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 sample could not arrange for the study. Time and resources were limited which have a great deal of impact on the study.

CHAPTER - VI CONCLUSION & RECOMMENDATION

Conclusion:

Amputation is a devastating and life threatening incident of a person’s life. This leads a man to a whole new challenging stages of life. To assist amputees with independence, an early prosthesis is a feasible option to catch the flow of life as well as to make them maximum able to perform daily activities. The quality of life, health satisfaction, mental satisfaction level and the association between type of prosthesis and quality of life can be measured. Measurement of the quality of life is not sufficient in order to describe the situation for individuals using a prosthetic limb. Lower limb amputees reported neither good nor poor which is mostly near to the poor quality of life. The important role of employment status and use of assistive devices health satisfaction, mental satisfaction, negative feeling and overall quality of life in determining QoL were the key findings of this study. Through this study the authentic quality of life is measured fully, the inner and day to day situations cannot be visible in this study. Assessing QoL in its entirety is challenging because of its multidimensional nature. In the short period of time it cannot adequately capture the heart of quality of life. This study show at a glance of the participants’ quality of life. The study can help to know the prosthesis satisfaction, development need of the prosthetic device to enhance the quality of life of the persons with lower limb amputation.

Recommendation:

The finding could be generalized, if QOL could assess again further and follow-up it until five to ten years. The results also suggest that the physical impairments in different QOL dimensions are not universal. And there is less research about amputation along with quality of life with prosthesis in Bangladesh. However, most of the findings highlight the impact of any further disaster. The use and satisfaction with prosthesis device can show us the users' demand and the development of prosthesis in Bangladesh. The study could spread out some message for further preparatory action plans. It could help to take further necessary steps in recovery and rehabilitation activities for ensuring sustainability.

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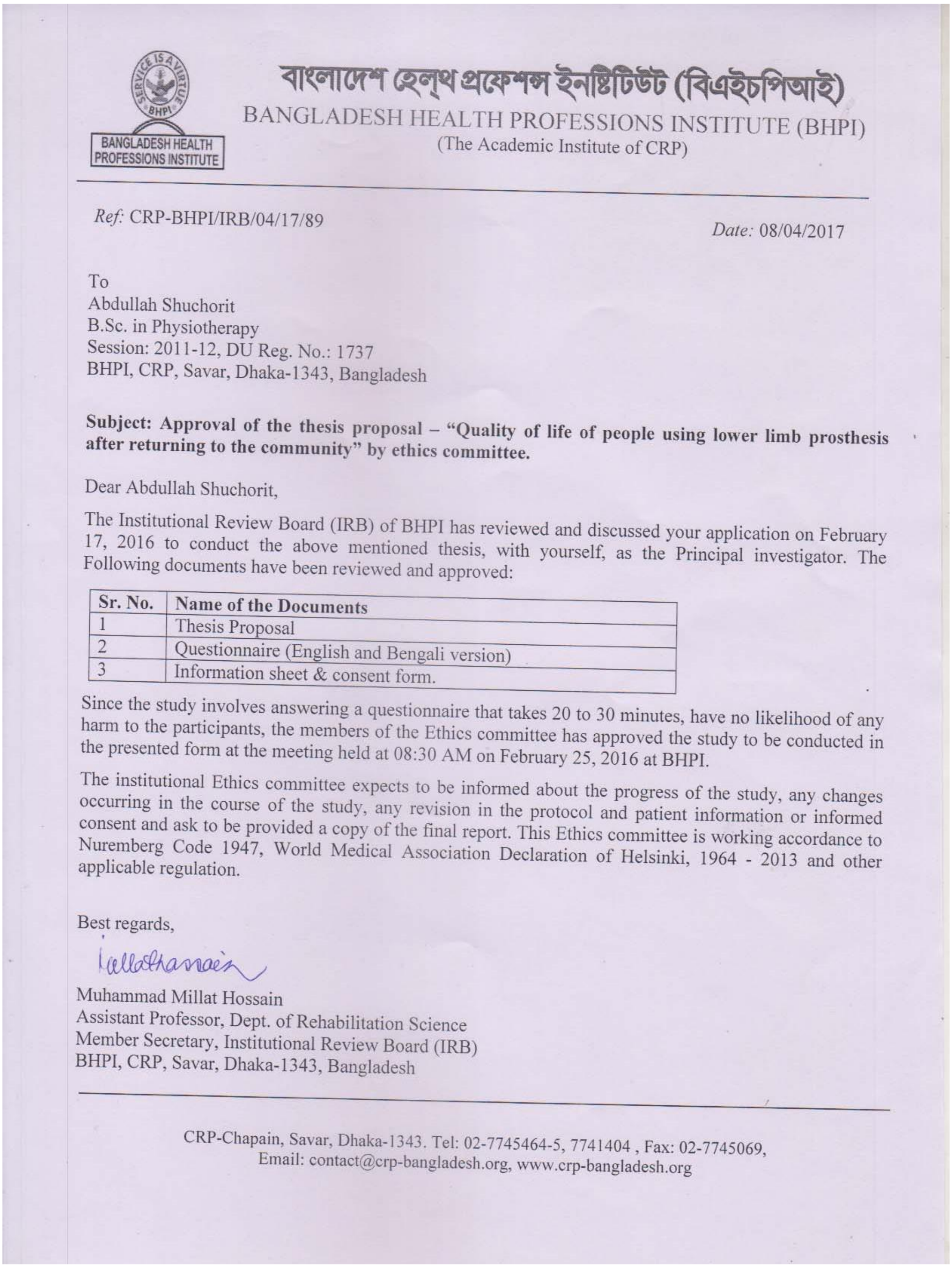
APPENDIX – 1

Approval of thesis proposal



BANGLADESH HEALTH PROFESSIONS INSTITUTE
বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/04/17/89

Date: 08/04/2017

To
Abdullah Shuchorit
B.Sc. in Physiotherapy
Session: 2011-12, DU Reg. No.: 1737
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal – "Quality of life of people using lower limb prosthesis after returning to the community" by ethics committee.

Dear Abdullah Shuchorit,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on February 17, 2016 to conduct the above mentioned thesis, with yourself, as the Principal investigator. The Following documents have been reviewed and approved:

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

Since the study involves answering a questionnaire that takes 20 to 30 minutes, have no likelihood of any harm to the participants, the members of the Ethics committee has approved the study to be conducted in the presented form at the meeting held at 08:30 AM on February 25, 2016 at BHPI.

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.

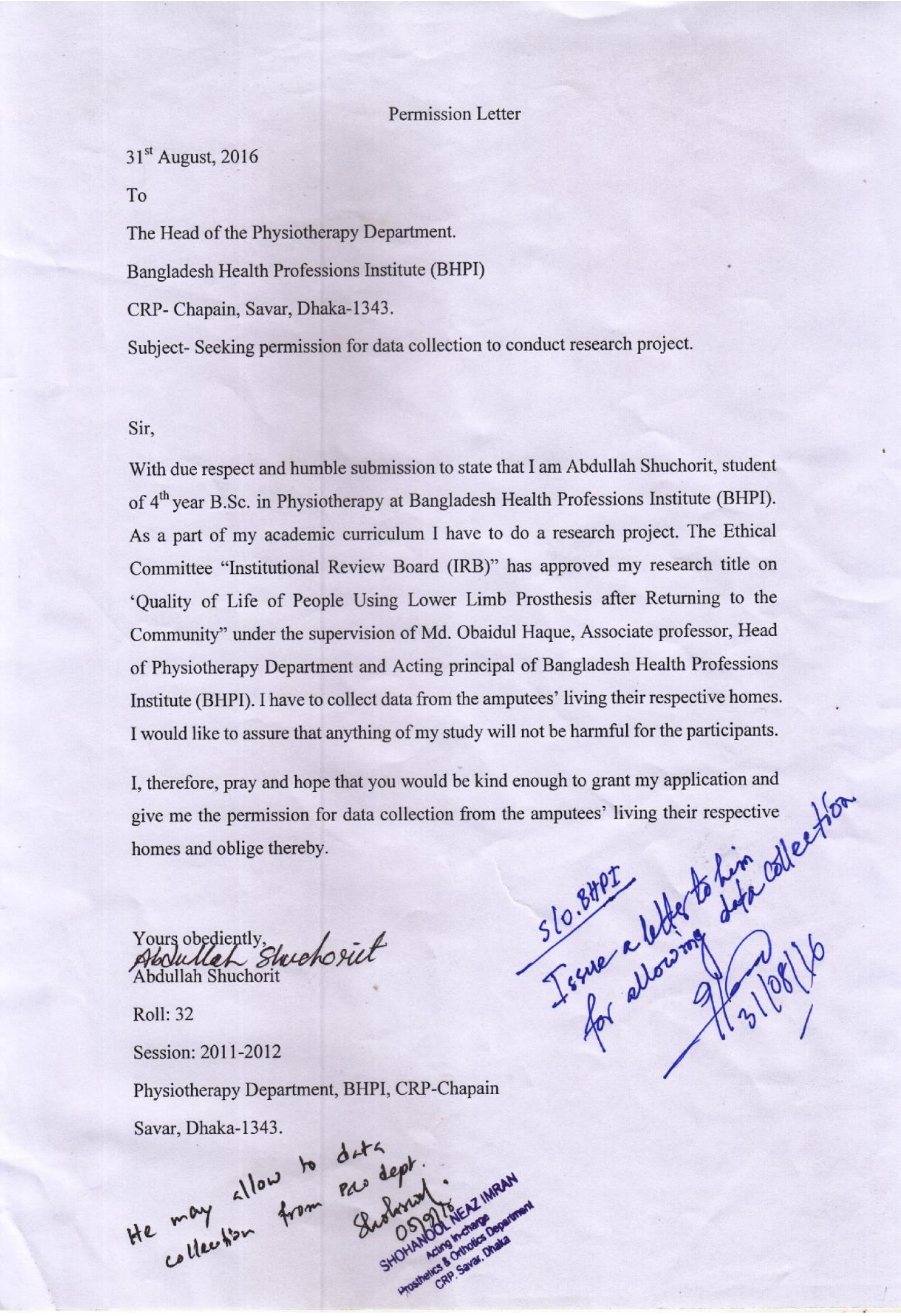
Best regards,

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

CRP-Chapain, Savar, Dhaka-1343. Tel: 02-7745464-5, 7741404 , Fax: 02-7745069,
Email: contact@crp-bangladesh.org, www.crp-bangladesh.org

APPENDIX- 2

Permission Letter



Permission Letter

31st August, 2016

To

The Head of the Physiotherapy Department.
Bangladesh Health Professions Institute (BHPI)
CRP- Chapain, Savar, Dhaka-1343.

Subject- Seeking permission for data collection to conduct research project.

Sir,

With due respect and humble submission to state that I am Abdullah Shuchorit, student of 4th year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). As a part of my academic curriculum I have to do a research project. The Ethical Committee "Institutional Review Board (IRB)" has approved my research title on 'Quality of Life of People Using Lower Limb Prosthesis after Returning to the Community" under the supervision of Md. Obaidul Haque, Associate professor, Head of Physiotherapy Department and Acting principal of Bangladesh Health Professions Institute (BHPI). I have to collect data from the amputees' living their respective homes. I would like to assure that anything of my study will not be harmful for the participants.

I, therefore, pray and hope that you would be kind enough to grant my application and give me the permission for data collection from the amputees' living their respective homes and oblige thereby.

Yours obediently,
Abdullah Shuchorit
Abdullah Shuchorit
Roll: 32
Session: 2011-2012
Physiotherapy Department, BHPI, CRP-Chapain
Savar, Dhaka-1343.

S/O. BHPI
Issue a letter to him for allowing data collection
31/08/16

He may allow to data collection from P&O dept.
Shohanool
05/09/16

SHOHANOOL NEAZ IMRAN
Acting In-charge
Prosthetics & Orthotics Department
CRP, Savar, Dhaka

APPENDIX – 3

Informed consent

Assalamu Alaikum, I am Abdullah Shuchorit, 4th Year B.Sc in Physiotherapy student, BHPI, CRP, Savar, Dhaka-1343. I am asking you to participate in a research study. This form is designed to give you information about this study. I want to describe this study to you and answer any of your questions. My project title is **"Quality of Life of People Using Lower Limb Prosthesis after Returning to the Community."** The purpose of this investigation is to find out the quality of life people using lower limb prosthesis after returning to the community. This will take approximately 20 - 30 minutes.

During the interview period if you fell any emotional disturbance, social and economic risk and any other discomfort physical risk please tell me, I will stop the interview immediately. I am committed that the study will not harmful or risk for you. There is no payment for taking part in the study. 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 me or my supervisor Mr. Md. Obaidul Haque, Associate Professor and Head of the Physiotherapy Department, BHPI, CRP, Savar, Dhaka. Do you have any questions before I start?

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

YES ☐ NO ☐

Signature of the Investigator & Date: …………………………………………………...

Signature of the Participant & Date: ………………………………………………….

Signature of the Witness & Date: ……………………………………………………..

APPENDIX – 4

সম্মতিপত্র (অংশগ্রহণকারীকে পড়ে শোনাতে হবে)

আসসালামু আলাইকুম,

আমার নাম আবদুল্লাহ সুচরিত, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইন্সটিটিউট (বিএইচপিআই), ঢাকা বিশ্ববিদ্যালয় – এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ফিজিওথেরাপি কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হল **“সমাজে ফিরে আসার পর কৃত্রিম পা ব্যাবহারকারীদের জীবন যাত্রার মান ”।** এই গবেষণার উদ্দেশ্য হলো সমাজে ফেরার পর কৃত্রিম পা ব্যাবহারকারীদের জীবনযাত্রার মান। আমি আপনাকে ব্যাক্তিগত এবং সমাজে ফেরার পর কৃত্রিম পা ব্যাবহার সম্পর্কিত কিছু প্রশ্ন করতে চাই। এতে আনুমানিক ২০-৩০ মিনিট সময় লাগবে।

সাক্ষাতের সময় যদি আপনি কোন কারনে বিরক্ত অনুভব করেন এমনকি আপনার মানসিক, আর্থিক, সামাজিক অথবা শারীরিক ঝুঁকির অতবা যেকোনো সমস্যার সম্ভাবনা থাকলে দয়া করে আমাকে বলবেন এবং তৎক্ষণাৎ আমি আমার সাক্ষাৎকার কার্যকলাপ বন্ধ করে দিব। আমি প্রতিজ্ঞাবদ্ধও যে, আমার এই গবেষণাতে আপনার কোন ক্ষতি হবে না, এর জন্য আপনাকে কোন আর্থিক সহায়তা দেয়া হবে না, আপনার সকল ধরণের তথ্য এবং চিকিৎসা বিষয়ক তথ্য এবং প্রতিবেদন গোপন রাখা হবে অথবা এই তথ্যের উৎসগুলো নামবিহীন রাখা হবে, এই গবেষণাতে আপনার অংশগ্রহণ হবে স্বেচ্ছাকৃত এবং আপনি নেতিবাচক ফলাফল ছাড়া এই গবেষণা থেকে যে কোন সময় নিজেকে প্রত্যাহার করতে পারবেন। এছাড়া আপনি পছন্দ করেন না এমন কোন নির্দিষ্ট প্রশ্নের উত্তর না দেওয়ার অধিকারও আপনার আছে।

যদি আপনার আরও কিছু জানার আগ্রহ থাকে, তাহলে আপনি আমার সাথে অর্থাৎ আবদুল্লাহ সুচরিত অথবা আমার তত্ত্বাবধায়ক মোঃ ওবায়দুল হক, সহযোগী অধ্যাপক এবং বিভাগীয় প্রধান , ফিজিওথেরাপি বিভাগ, বিএইচপিআই, সিআরপি, সাভার, ঢাকা তে যোগাযোগ করতে পারেন। শুরু করার পুর্বে আপনার কোন প্রশ্ন থাকলে আপনি করতে পারেন।

আপনার সম্মতি থাকলে আমি কি আপনার সাক্ষাত আরম্ভ করতে পারি ?

হ্যাঁ ☐   না ☐

সাক্ষাৎকার গ্রহণকারীর স্বাক্ষর ও তারিখ : ....

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ : ....

সাক্ষীর স্বাক্ষর ও তারিখ : ....

APPENDIX - 5

Socio-demographic questionnaire

Name of Interviewer: ....

Date of interview: ……………………… Time of interview: ……………….

Part one: Respondent Identification

Name of Respondent: …………………………………… ID no:…………

Address: ……………………………………………………………………….

Contact number where possible: ………………………………

Part Two: Demographic Information

SN	Questions	Response	Code
01.	Sex	1.Male 2. Female	1 2
02.	How old are you?	Years:	
03.	What is the highest level of education you have completed?	1. Illiterate 2. Home education 3. Class (1-5) 4. Class(6-10) 5. Class(11-12) 6. Undergraduate 7. Post graduate degree	1 2 3 4 5 6 7
04.	What is your marital status?	1. Single 2. Married 3. Separated 4. Divorced 5. Unmarried	1 2 3 4 5

05.	Which one of this list best describes your main work status now?	1.Government employee 2.Non-government employee 3. Self-employed 4. Non-paid 5. Student 6. Homemaker 7. Trainee 8. Retired 9. Unemployed (able to work) 10. Unemployed (unable to work) 11. Others	1 2 3 4 5 6 7 8 9 10 11
06.	What is the nature of your work/job now?	1. Mostly involve physical effort 2. Mostly involve mental effort	1 2
07.	Which one of this list best describes your work before amputation?	1. Non-paid 2. Unemployed (able to work) 3. Student 4. Homemaker 5. Guard 6. Worker 7. Supervisor 8. Unit in-charge 9. Shopkeeper	1 2 3 4 5 6 7 8 9

		10. Officer 11. Manager 12. Self-employed 13. Others	10 11 12 13
08.	Type of disabilities	1. Permanent 2. Temporary	1 2
09.	Type of lower limb prosthesis	1. Trans-femoral 2. Trans-tibial	1 2
10.	What type of support has got from Govt. Or non-govt. organization?	1. Money 2. Shelter 3. Cattle 4. Accessories 5. Vehicle 6. Land 7. Others 8. No support	1 2 3 4 5 6 7 8
11.	Are the support was satisfactory for you?	1. Yes 2. No	1 2
12.	Have you utilized the support meaningfully?	1. Yes 2. No	1 2

APPENDIX- 6

জনসংখ্যাতাত্ত্বিক তথ্যাবলি

তথ্য গ্রহণকারির নাম :

....

তথ্য নিবন্ধনের দিন :

....

সময় : ....

পর্ব ১- তথ্য প্রদানকারীর পরিচিতি

তথ্য প্রদানকারীর নাম : ....আইডি নং :

....

ঠিকানা :

....

মোবাইল : ....

জনসংখ্যাতাত্ত্বিক তথ্যাবলি

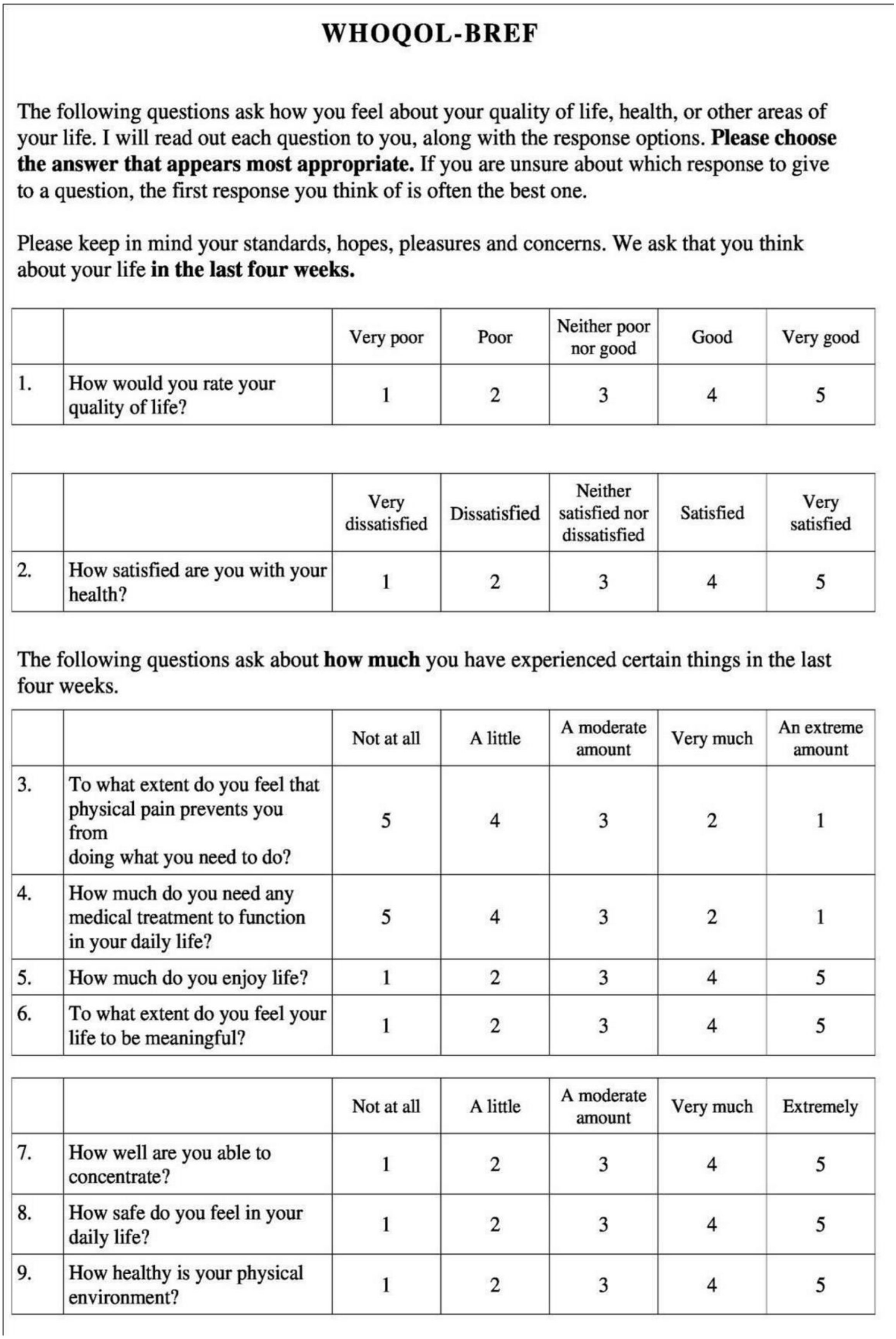
ক্রমিক নং	প্রশ্নসমূহ	উত্তর	কোড
০১	লিঙ্গ	১=পুরুষ ২=মহিলা	১ ২
০২	আপনার বয়স কত?	বয়স=	
০৩	আপনি সর্বোচ্চ কোন শ্রেণী পর্যন্ত লেখাপড়া করেছেন?	১=অশিক্ষিত ২=গৃহশিক্ষা ৩=শ্রেণী(১-৫) ৪=শ্রেণী(৬-১০) ৫=শ্রেণী(১১-১২) ৬=স্নাতক পাশ ৭=স্নাতকোত্তর পাশ	১ ২ ৩ ৪ ৫ ৬ ৭
০৪	আপনার বৈবাহিক অবস্থা কি?	১=অবিবাহিত ২=বিবাহিত ৩=তালাকপ্রাপ্ত ৪=বিধবা/বিপত্নিক	১ ২ ৩ ৪
০৫	পাশের তালিকায় বর্তমানে কোন পদমর্যাদা আপনার জন্য উপযুক্ত?	১=সরকারী চাকুরীজীবী ২=বেসরকারী চাকুরীজীবী ৩=আত্নকর্মসংস্থান ৪=সেচ্চাসেবী ৫=ছাত্র ৬=গৃহিণী ৭=প্রশিক্ষনাথী ৮=অবসরপ্রাপ্ত	১ ২ ৩ ৪ ৫ ৬ ৭ ৮

		৯=বেকার(কর্মক্ষম ব্যাক্তি) ১০=বেকার(কর্মে অক্ষম ব্যাক্তি) ১১=অন্যান্য	**৯** **১০** **১১**
০৬	আপনার বর্তমান কাজের ধরন কেমন?	১=অফিস/প্রতিষ্ঠানভিত্তিক ২=মাঠকর্মী	**১** **২**
০৭	কৃত্রিম পা ব্যাবহারের পূর্বে কর্মরত অবস্থায় আপনি কোন পদমর্যাদায় অন্তর্ভুক্ত ছিলেন?	১= সেচ্চাসেবী ২= বেকার(কর্মক্ষম ব্যাক্তি) ৩= ছাত্র ৪= গৃহিণী ৫= দারোয়ান(সিকিউরিটি) ৬= শ্রমিক ৭= সুপারভাইজার ৮= ইউনিটইনচার্জ ৯= দোকানদার ১০= অফিসার ১১= ম্যানেজার ১২= আত্নকর্মসংস্থান ১৩= অন্যান্য	**১** **২** **৩** **৪** **৫** **৬** **৭** **৮** **৯** **১০** **১১** **১২** **১৩**
০৮	কি ধরনের প্রতিবন্ধিতা?	১=স্থায়ী ২=সাময়িক	**১** **২**
০৯	কৃত্রিম পা সংযোজনের ধরণ নির্ণয় -	১= হাঁটুর উপরে ২= হাঁটুর নিচে	**১** **২**

১০	সরকারী বা বেসরকারী প্রতিষ্ঠান থেকে আপনি কি ধরনের সাহায্য পেয়েছেন?	১=অর্থ ২=বাসস্থান ৩=গবাদি পশুপাখি ৪=যানবাহন ৫=ভূমি ৬=অন্যান্য	**১** **২** **৩** **৪** **৫** **৬**
১১	আপনি কি সন্তুষ্ট?	১=হ্যাঁ ২=না	**১** **২**
১২	আপনি কি সাহায্য অর্থবহ ভাবে প্রয়োগ করতে পেরেছেন?	১=হ্যাঁ ২=না	**১** **২**

APPENDIX- 7

World Health Organization Quality of Life (WHOQOL-BREF)



WHOQOL-BREF

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

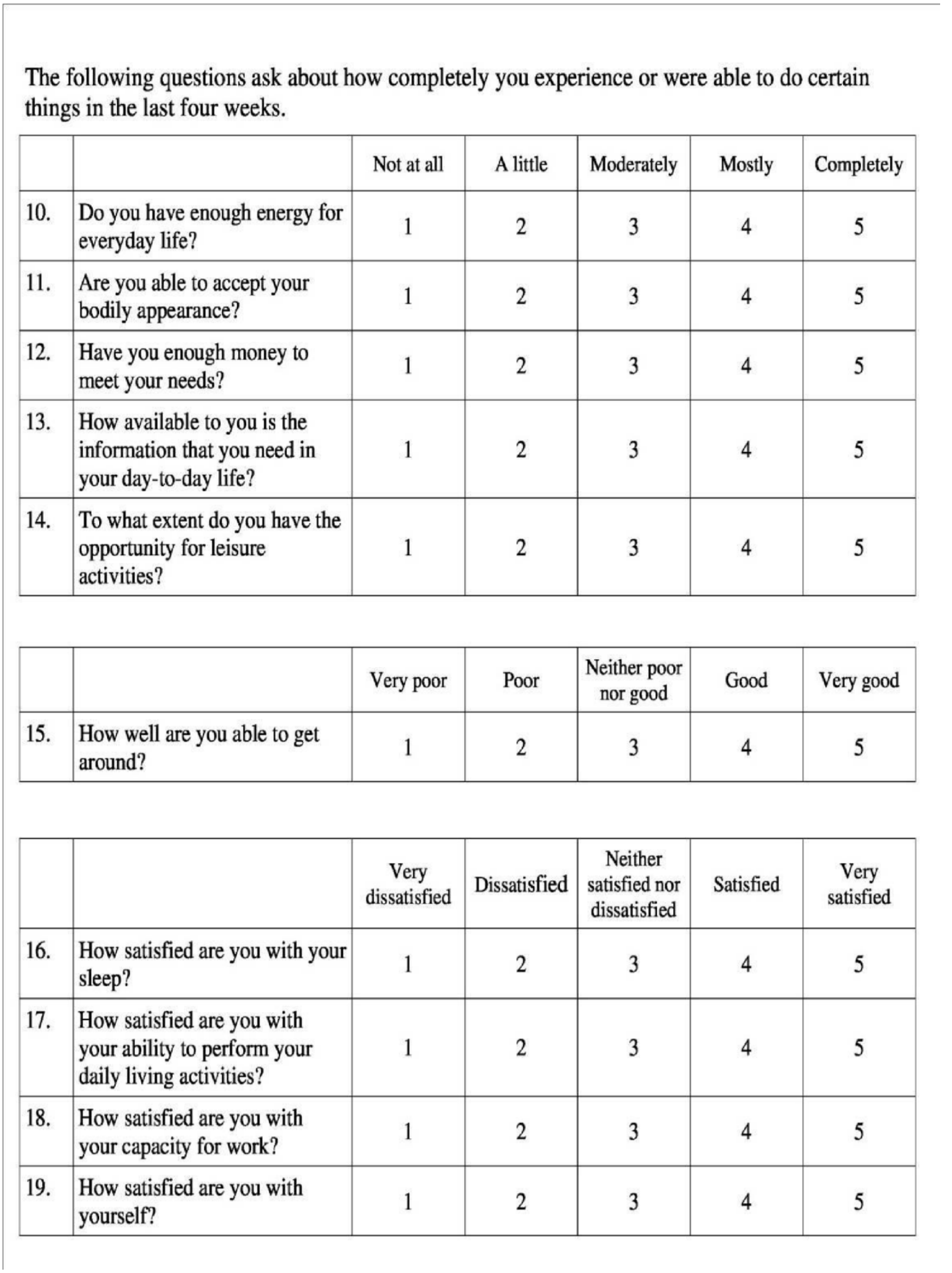
		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

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

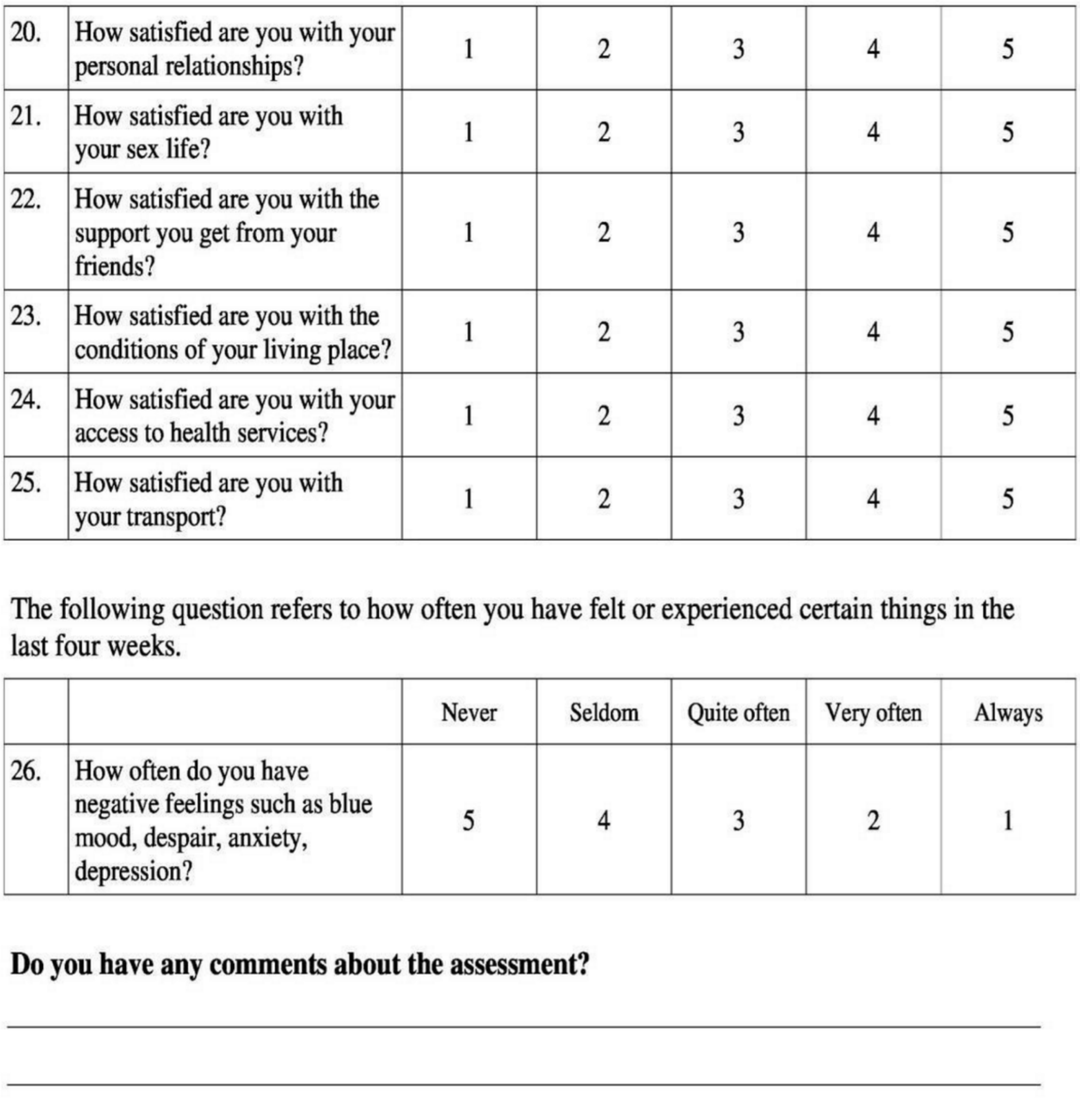


The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5



20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last four weeks.

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

Do you have any comments about the assessment?

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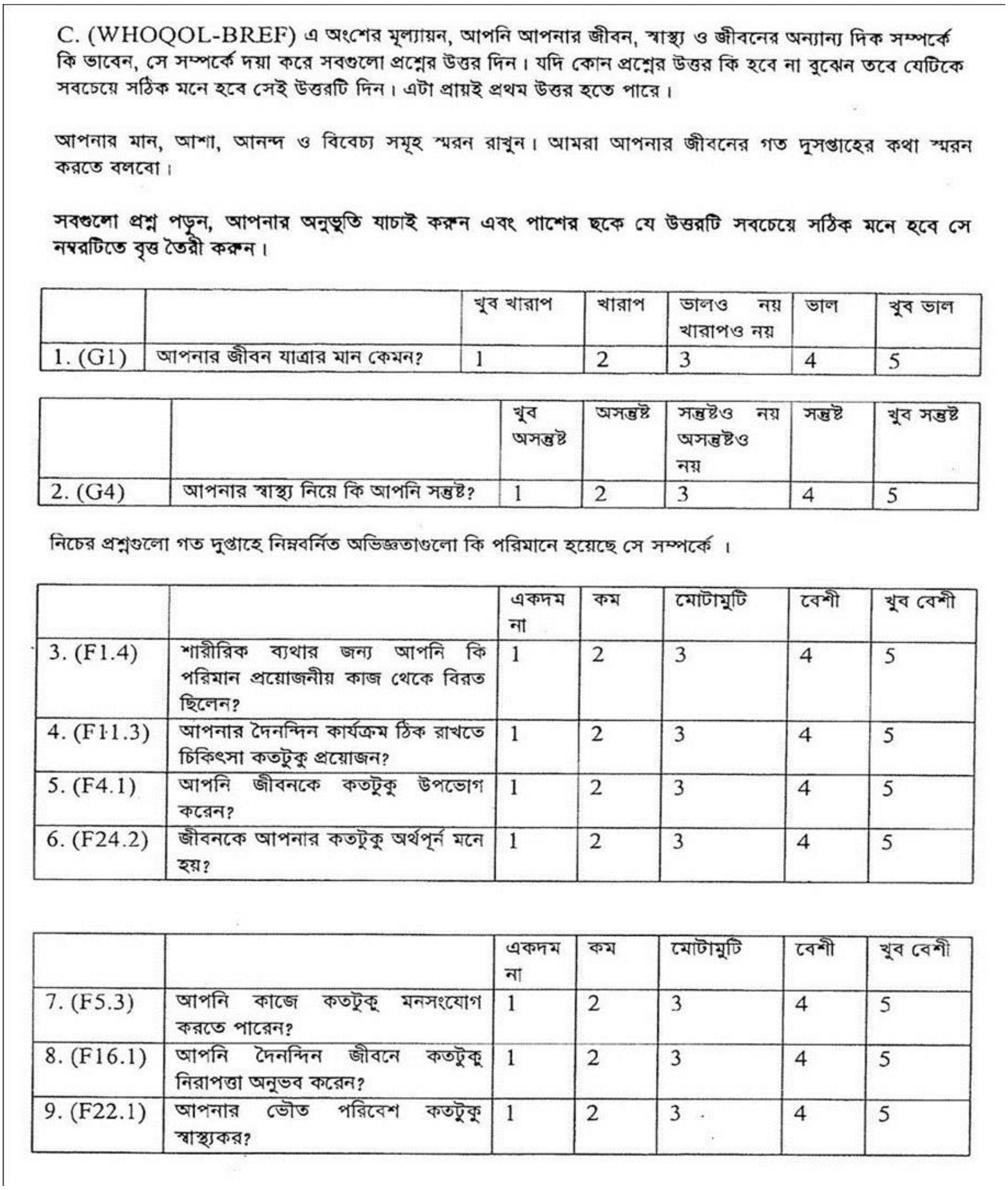
APPENDIX- 8

World Health Organization Quality of Life (WHOQOL-BREF) BANGLA



C. (WHOQOL-BREF) এ অংশের মূল্যায়ন, আপনি আপনার জীবন, স্বাস্থ্য ও জীবনের অন্যান্য দিক সম্পর্কে কি ভাবেন, সে সম্পর্কে দয়া করে সবগুলো প্রশ্নের উত্তর দিন। যদি কোন প্রশ্নের উত্তর কি হবে না বুঝেন তবে যেটিকে সবচেয়ে সঠিক মনে হবে সেই উত্তরটি দিন। এটা প্রায়ই প্রথম উত্তর হতে পারে।

আপনার মান, আশা, আনন্দ ও বিবেচ্য সমূহ স্মরন রাখুন। আমরা আপনার জীবনের গত দুসপ্তাহের কথা স্মরন করতে বলবো।

সবগুলো প্রশ্ন পড়ুন, আপনার অনুভুতি যাচাই করুন এবং পাশের ছকে যে উত্তরটি সবচেয়ে সঠিক মনে হবে সে নম্বরটিতে বৃত্ত তৈরী করুন।

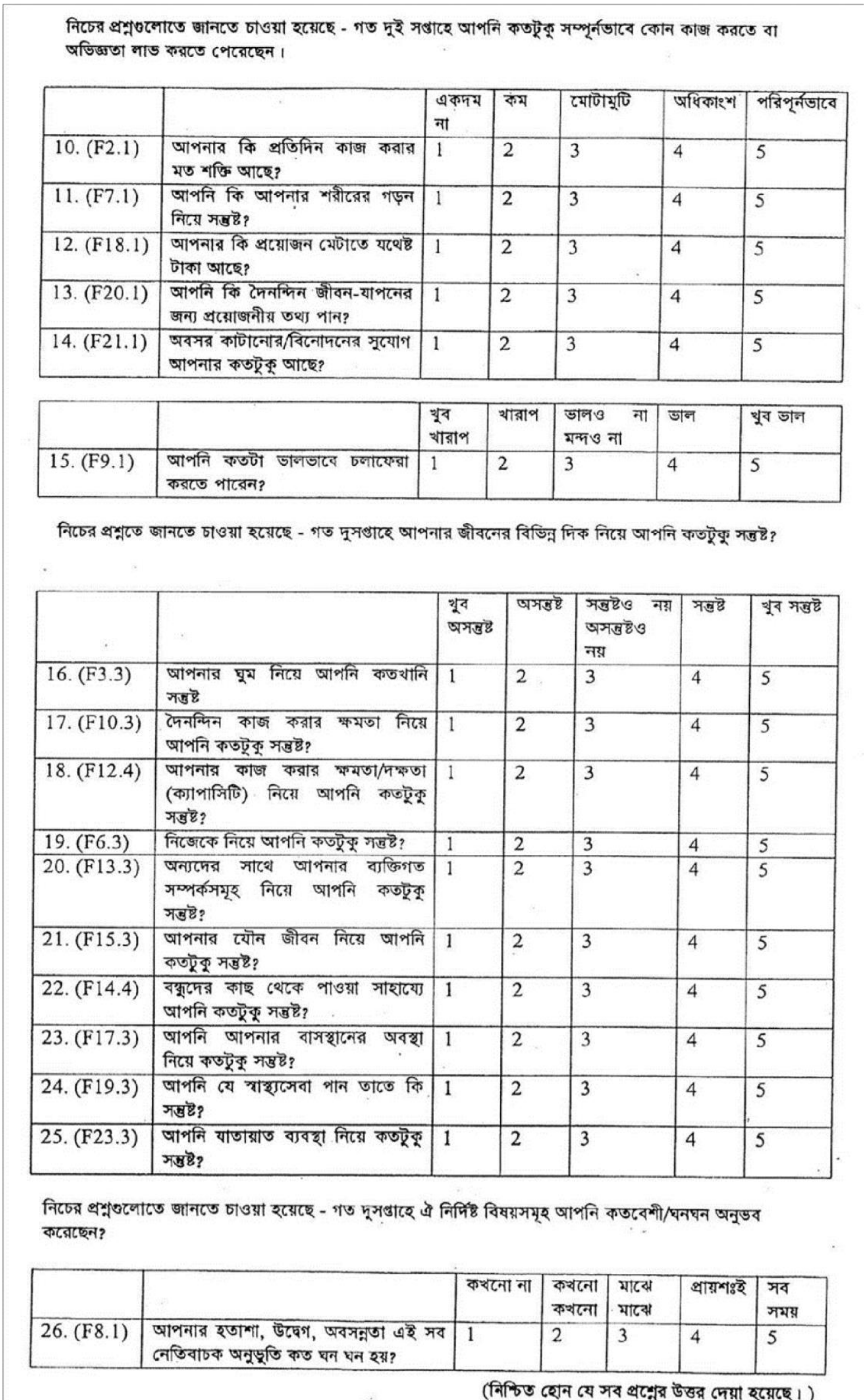
		খুব খারাপ	খারাপ	ভালও নয় খারাপও নয়	ভাল	খুব ভাল
1. (G1)	আপনার জীবন যাত্রার মান কেমন?	1	2	3	4	5

		খুব অসন্তুষ্ট	অসন্তুষ্ট	সন্তুষ্টও নয় অসন্তুষ্টও নয়	সন্তুষ্ট	খুব সন্তুষ্ট
2. (G4)	আপনার স্বাস্থ্য নিয়ে কি আপনি সন্তুষ্ট?	1	2	3	4	5

নিচের প্রশ্নগুলো গত দুপ্তাহে নিম্নবর্নিত অভিজ্ঞতাগুলো কি পরিমানে হয়েছে সে সম্পর্কে ।

		একদম না	কম	মোটামুটি	বেশী	খুব বেশী
3. (F1.4)	শারীরিক ব্যথার জন্য আপনি কি পরিমান প্রয়োজনীয় কাজ থেকে বিরত ছিলেন?	1	2	3	4	5
4. (F11.3)	আপনার দৈনন্দিন কার্যক্রম ঠিক রাখতে চিকিৎসা কতটুকু প্রয়োজন?	1	2	3	4	5
5. (F4.1)	আপনি জীবনকে কতটুকু উপভোগ করেন?	1	2	3	4	5
6. (F24.2)	জীবনকে আপনার কতটুকু অর্থপূর্ন মনে হয়?	1	2	3	4	5

		একদম না	কম	মোটামুটি	বেশী	খুব বেশী
7. (F5.3)	আপনি কাজে কতটুকু মনসংযোগ করতে পারেন?	1	2	3	4	5
8. (F16.1)	আপনি দৈনন্দিন জীবনে কতটুকু নিরাপত্তা অনুভব করেন?	1	2	3	4	5
9. (F22.1)	আপনার ভৌত পরিবেশ কতটুকু স্বাস্থ্যকর?	1	2	3	4	5



নিচের প্রশ্নগুলোতে জানতে চাওয়া হয়েছে - গত দুই সপ্তাহে আপনি কতটুকু সম্পূর্নভাবে কোন কাজ করতে বা অভিজ্ঞতা লাভ করতে পেরেছেন।

		একদম না	কম	মোটামুটি	অধিকাংশ	পরিপূর্নভাবে
10. (F2.1)	আপনার কি প্রতিদিন কাজ করার মত শক্তি আছে?	1	2	3	4	5
11. (F7.1)	আপনি কি আপনার শরীরের গড়ন নিয়ে সন্তুষ্ট?	1	2	3	4	5
12. (F18.1)	আপনার কি প্রয়োজন মেটাতে যথেষ্ট টাকা আছে?	1	2	3	4	5
13. (F20.1)	আপনি কি দৈনন্দিন জীবন-যাপনের জন্য প্রয়োজনীয় তথ্য পান?	1	2	3	4	5
14. (F21.1)	অবসর কাটানোর/বিনোদনের সুযোগ আপনার কতটুকু আছে?	1	2	3	4	5

		খুব খারাপ	খারাপ	ভালও না মন্দও না	ভাল	খুব ভাল
15. (F9.1)	আপনি কতটা ভালভাবে চলাফেরা করতে পারেন?	1	2	3	4	5

নিচের প্রশ্নতে জানতে চাওয়া হয়েছে - গত দুসপ্তাহে আপনার জীবনের বিভিন্ন দিক নিয়ে আপনি কতটুকু সন্তুষ্ট?

		খুব অসন্তুষ্ট	অসন্তুষ্ট	সন্তুষ্টও নয় অসন্তুষ্টও নয়	সন্তুষ্ট	খুব সন্তুষ্ট
16. (F3.3)	আপনার ঘুম নিয়ে আপনি কতখানি সন্তুষ্ট	1	2	3	4	5
17. (F10.3)	দৈনন্দিন কাজ করার ক্ষমতা নিয়ে আপনি কতটুকু সন্তুষ্ট?	1	2	3	4	5
18. (F12.4)	আপনার কাজ করার ক্ষমতা/দক্ষতা (ক্যাপাসিটি) নিয়ে আপনি কতটুকু সন্তুষ্ট?	1	2	3	4	5
19. (F6.3)	নিজেকে নিয়ে আপনি কতটুকু সন্তুষ্ট?	1	2	3	4	5
20. (F13.3)	অন্যদের সাথে আপনার ব্যক্তিগত সম্পর্কসমূহ নিয়ে আপনি কতটুকু সন্তুষ্ট?	1	2	3	4	5
21. (F15.3)	আপনার যৌন জীবন নিয়ে আপনি কতটুকু সন্তুষ্ট?	1	2	3	4	5
22. (F14.4)	বন্ধুদের কাছ থেকে পাওয়া সাহায্যে আপনি কতটুকু সন্তুষ্ট?	1	2	3	4	5
23. (F17.3)	আপনি আপনার বাসস্থানের অবস্থা নিয়ে কতটুকু সন্তুষ্ট?	1	2	3	4	5
24. (F19.3)	আপনি যে স্বাস্থ্যসেবা পান তাতে কি সন্তুষ্ট?	1	2	3	4	5
25. (F23.3)	আপনি যাতায়াত ব্যবস্থা নিয়ে কতটুকু সন্তুষ্ট?	1	2	3	4	5

নিচের প্রশ্নগুলোতে জানতে চাওয়া হয়েছে - গত দুসপ্তাহে ঐ নির্দিষ্ট বিষয়সমূহ আপনি কতবেশী/ঘনঘন অনুভব করেছেন?

		কখনো না	কখনো কখনো	মাঝে মাঝে	প্রায়শঃই	সব সময়
26. (F8.1)	আপনার হতাশা, উদ্বেগ, অবসন্নতা এই সব নেতিবাচক অনুভুতি কত ঘন ঘন হয়?	1	2	3	4	5

(নিশ্চিত হোন যে সব প্রশ্নের উত্তর দেয়া হয়েছে।)