EFFECT OF DEPRESSION ON QUALITY OF LIFE OF PATIENTS WITH SPINAL CORD INJURY ATTENDING AT CRP

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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.

EFFECT OF DEPRESSION ON QUALITY OF LIFE OF PATIENTS WITH SPINAL CORD INJURY ATTENDING AT CRP

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

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DECLARATION

I declare that the work presented here is my own. All sources used here 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 Head of the Department of Physiotherapy of Bangladesh Health Professions Institute (BHPI).

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Acronyms

ADL :	Activity of Daily Living
BHPI :	Bangladesh Health Profession's Institute
BMRC :	Bangladesh Medical Research Council
CES-D :	Centre for Epidemiologic Studies Depression Scale
CRP :	Centre for the Rehabilitation of the Paralysed
IRB :	Institutional Review Board
MDD :	Major Depressive Disorder
QoL :	Quality of Life
SCI :	Spinal Cord Injury
SPSS :	Statistical Package for the Social Sciences
USA :	United State of America
WHO :	World Health Organization

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ABSTRACT

Purpose : The purpose of this study was to evaluate the effect of depression on quality of life patients with spinal cord injury attending at CRP.

Objectives : The objectives of this study were to evaluate the level of depression, to know about whether there is any association between depression and overall quality of life (QoL) in people after having SCI. Objectives also were to know about any association in between depression and socio-demographic information (age, sex, types of injury, cause of injury, severity of injury).

Methodology : The cross sectional study was chosen to carry out this study among 120 participants who were selected according to inclusion criteria. The "Centre for Epidemiologic Studies Depression Scale" (CES-D) and "World Health Organization Quality of Life-BREF" (WHOQOL-BREF), this two standard structured questionnaires were used to assess the depression and quality of life among 120 participants. The study was conducted by using quantitative descriptive analysis.

Results : This study found the level of depression among patients who experienced the SCI. The mild level of depression was 60.8%, moderate 27.5% & severe 11.7%. A significant association had found in between depression & quality of life after SCI. Statistically significant association also found in between depression & some socio-demographic information such as Age, gender, types of injury, severity of injury.

Conclusion : Spinal cord injury is a condition which has an influence on physical and psychological aspects of Quality of life (QoL). Spinal cord injury negatively can raise depression. Depression has an relationship with QoL. After SCI when depression becomes high, it adversely affects overall QoL directly or indirectly. It seems like that if depression levels become lower or reduced it may high the overall QoL. So early detection and proper management of this condition is essential during rehabilitation to prevent more complications and to improve quality of life for individuals with spinal cord injury.

Key words : Spinal cord injury, Depression, Quality of life.

CHAPTER-I INTRODUCTION

1.1 Background

Spinal cord injury (SCI) is a medically complex and life disrupting condition (WHO & International spinal cord society, 2013). It is considered as one of the biggest problems and catastrophic events related to the health of people; This injury is one of the major health problems of human societies leading to numerous physical and mental problems for disabled person and his family (Moghimian et al., 2015). Spinal cord injury (SCI) causes several health problems that negatively affect not only the patient's physical condition but also all aspects of their lives including their goals and communications and more importantly their mental status and quality of life (QoL) (Saadat et al., 2010).

Spinal cord injury (SCI) is a demolishing neurological disorder which has an influence on human from different perspectives such as physical, psychological and socioeconomic perspectives; It is a major life event may either traumatic or non traumatic that leads to serious physical disability which is permanent and causes other secondary medical problems (Al-owesie et al., 2012).

Globally the prevalence of SCI is between 15 - 40 people per million persons and the incidence rate ranges between 10.4 and 83 cases per million in one year (Moghimian et al., 2015); According to the National Spinal Cord Injury Association, as many as 450,000 people in the U.S. are living with a spinal cord injury (SCI); Every year, an estimated 11,000 SCIs occur in the U.S (American Association of Neurological Surgeons, 2017) and in Europe, the incidence is from 10.4 per million per year to 29.7 per million per year (Moghimian et al., 2015); Lim et al., (2017) stated that the highest prevalence of SCI is 906 per million in the US; On the other hand in Asia the incidence rates of SCI range from 12.06 - 61.6 per million (Ning et al., 2012) but after 3 years later Moghimian et al., (2015) stated again in his other literature that the incidence rate is 27.1 per million per year in Asia. Anyone can be a victim of accepting SCI in the society but males are more represented specially active younger males (Craig, 2014).

Spinal cord injury (SCI) is a chronic neurological disorder that involves the cord being severely bruised, lacerated or severely injured during a traumatic injury or damaged as a result of disease; In most spinal cord injuries in adults, there is also involvement of damage to the surrounding protective vertebral column, consisting of the cervical, thoracic, lumbar, sacral and the coccygeal vertebrae (Guest et al., 2014).

Extreme damage to the spinal cord leads to motor, sensory and autonomous changes that cause partial or total loss of voluntary movements or sensitivity (tactile, painful, and deep) of the upper and/or lower limbs resulting in reduced mobility and independence, inactivities of daily living and impairment of social and vocational skills; There is also negative influences on respiratory, cardiovascular, urinary, gastrointestinal and reproductive systems and the complications are pneumonia, septicemia, urinary tract infections, bowel and bladder incontinence, cardiac diseases and chronic pain as well as the disruption of tasks, goals, and dreams of the patient which may increase the clinical severity of their medical conditions and ultimately leads to lower quality of life (QoL); There are common secondary conditions that contribute to decreased quality of life (QoL) including chronic fatigue, chronic pain and mental health dysfunction such as depression (Craig et al., 2009; Lim et al., 2017; De Almeida et al., 2013).

Individuals with SCI will experience depression where depression is an inevitable consequence of spinal cord injury (SCI) and required a stage toward adjustment (Anderson et al., 2009). Craig, (2014) stated that there is a relationship between psychological dimensions such as personality, behaviour, perceptions and SCI.

Depression is one of the ten leading global causes of disability because it limits the physical, personal and social activities and it can affect anyone, anytime, at any age and it is also the most common psychological problem in spinal cord injury (SCI) patients where they have depressed mood, loss of energy, concentration difficulties and sleep or appetite disturbances (Shin et al., 2012; Arango-Lasprilla et al., 2011; De Almeida et al., 2013).

Depression typically begins at the time of injury and extends throughout the individual's life having SCI, demanding new adjustments as the individual progresses and faces new experiences (ASCoN, 2015).The severity of depression ranges from minor depression to major depression (Shin et al., 2012).

The estimated prevalence of depression after SCI varies from study to study, depending on the type of measurement and the period during which the measurement was actually taken (Shin et al., 2012). The prevalence of probable depression after SCI ranges from 9.8% to 63.9% among inpatients and the people living in the community (Khazaeipour et al., 2015). It is a risk for up to 40% of adults with SCI living in the community; This high prevalence rate highlights the need for careful screening of SCI patients (Tran et al., 2013) and approximately 25% to 30% of people with spinal cord injury (SCI) living in the community experience significant depressive symptoms (Bombardier et al., 2012).

Depressive symptoms are estimated to be highly prevalent in spinal cord injury patient which are associated with negative outcomes among persons with SCI including longer lengths of hospital stay and fewer functional improvements as well as less functional independence and poorer mobility at discharge; Depression is also associated with the occurrence of pressure sores and urinary tract infections, poorer self-appraised health , less leisure activity, greater unemployment, poorer community mobility and social integration and fewer meaningful social pursuits and increased risk of mortality and morbidity; Persons with SCI and significant depression spend more days in bed and fewer days outside the home, require greater use of paid personal care and require greater medical expenses; Moreover, symptoms consistent with depression such as documented expressions of despondency, hopelessness, shame and apathy, are the variables most predictive of suicide 1 to 9 years after SCI (Kalpakjian et al., 2009; Graves & Bombardier, 2008; Huang et al., 2015; Tulsky et al., 2015).

Depression has correlations with the quality of life (QOL) because the high level of depression in individuals with SCI further decrease their quality of life (QOL) (Shin et al., 2012). Depression levels may change over time since injury and depression has also been correlated with prolonged rehabilitation and fewer functional gains (Arango-

Lasprilla et al., 2011). Depression presents in about 40% of people with a recent onset of spinal cord injury where people with SCI have increased risk of significantly lowered quality of life (Craig, 2014).

The World Health Organization has described Quality of life (QOL) as "Person's perception of position in their life within the context of the culture and value systems in which they lives and in relation to their goals, expectations, standards and concerns. The person's physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to the environment consists the Quality of Life" (WHO, 1999).

Quality of life is an important issue after Spinal cord injury. Spinal cord injury can limit a person's better quality of life (QOL); QOL is both the ultimate goal of rehabilitation following SCI and a key outcome to be used in determining the effectiveness of rehabilitation programmes (Huang et al., 2015). Khazaeipour et al., 2015 stated that depressive symptoms also interfere with the ability of individuals to participate in activities and decrease life satisfaction in both healthy and disabled persons and it is an important risk factor in reducing quality of life (QOL) and poor daily functioning.

Quality of life is a multidimensional construct that involves self-perception, composed of multiple positive, negative and bidirectional dimensions such as physical function, emotional and social well-being (Moghimian et al., 2015). Ebrahimzadeh et al., (2014) also stated that Quality of life is multidimensional concept, which is physical, mental, social and spiritual functioning of the people and depends on their political, cultural, economic and spiritual beliefs.

SCI negatively affects the physical and psychological aspects of health and QOL where this injury has a poor impact on independence and lifestyle of a patient which causes loss of motor and sensory function with some associated problems like bladder, bowel and sexual dysfunction, chronic pain, increased risk of mental health problems and drug dependence, increased risk of re-hospitalization, relationship and marital difficulties, and poor vocation prospects (Middleton., 2007).

As the spinal cord is responsible for conducting afferent and efferent stimuli between the periphery and the brain, when this organ is injured, organic structures and functions are compromised, resulting in limitations to perform Activities of Daily Living (ADLs), aspects that affect victims QoL (Rahimi-Movaghar et al., 2013).

There is controversy on impact of SCI on mental health and psychological function; Studies have defined that depression is more prevalent in the SCI population than in the general population; Studies report that depressive symptoms have been associated with increased stays in hospital, less functional improvement in SCI rehabilitation and increased mortality and morbidity (Al-owesie et al., 2012).

It has been demonstrated in a study that individuals with SCI having high depression scores spent more days in bed, fewer days outside the home and greater general medical expenses than those with lower scores and the risk of depressive symptoms after discharge from rehabilitation has been estimated to be around 15-60% (Al-owesie et al., 2012).

Rehabilitation is a time in which both physical and psychological growth is important; Following discharge, it is essential that the person who has sustained a SCI has the psychological skills to actively participate socially and vocationally in the community and in the society; this includes the ability to maintain health and to direct care givers as needed in order to reduce the possibility of secondary complications where self-management is an important asset to be learned early in the rehabilitation process (ASCoN, 2015).

This study is conducted to evaluate the level of depression and to explore the relationship between Depression, Quality of life and Spinal cord injury. This study will be an attempt to find out the effect of depression on Quality of Life of spinal cord injury in the perspective of Bangladesh.

1.2 Rationale

Spinal cord injury (SCI) is a devastating and life threatening condition which affects every facet of life. Globally about 15 - 40 people per million persons are affected in one year. It is considered as a catastrophic event that can be limited a person's better quality of life (QOL). QOL is an important issues after SCI. QOL is both the ultimate goal of rehabilitation following SCI and a key outcome to be used in determining the effectiveness of rehabilitation programs.

Different types of psychological factors affect to achieve better QOL. After SCI psychological issues such as depression are very common and known to have correlations with the QOL. The heightened level of depression in individuals with SCI further decrease their QOL. The changes in resilience as a result of the SCI are also believed to have correlation with satisfaction of life, onset of depression, and functional independence during inpatient rehabilitation after SCI. Still there is no study about the relationship in between depression and QOL following SCI in Bangladesh. Depression have been found to have a major impact on health, lower performance of activities of daily living after SCI. From this study Physiotherapist will get an idea about the level of depression that the patient will have after spinal cord injury and the relation in between depression and QOL after SCI. Enhancing quality of life is the goal of all health promotion, treatment and service provision for people with disabilities. The study will help professionals to provide better quality service to these patients in future.

To minimize the impact of depression, it must be correctly identified and successfully treated. By this study Physiotherapist and other professionals will aware about the depression and can understand about the effect of depression on QOL after SCI on Bangladeshi perspectives.

1.3 Research Question

What is the effect of depression on quality of life patients with spinal cord injury attending at CRP?

1.4 Study Objectives

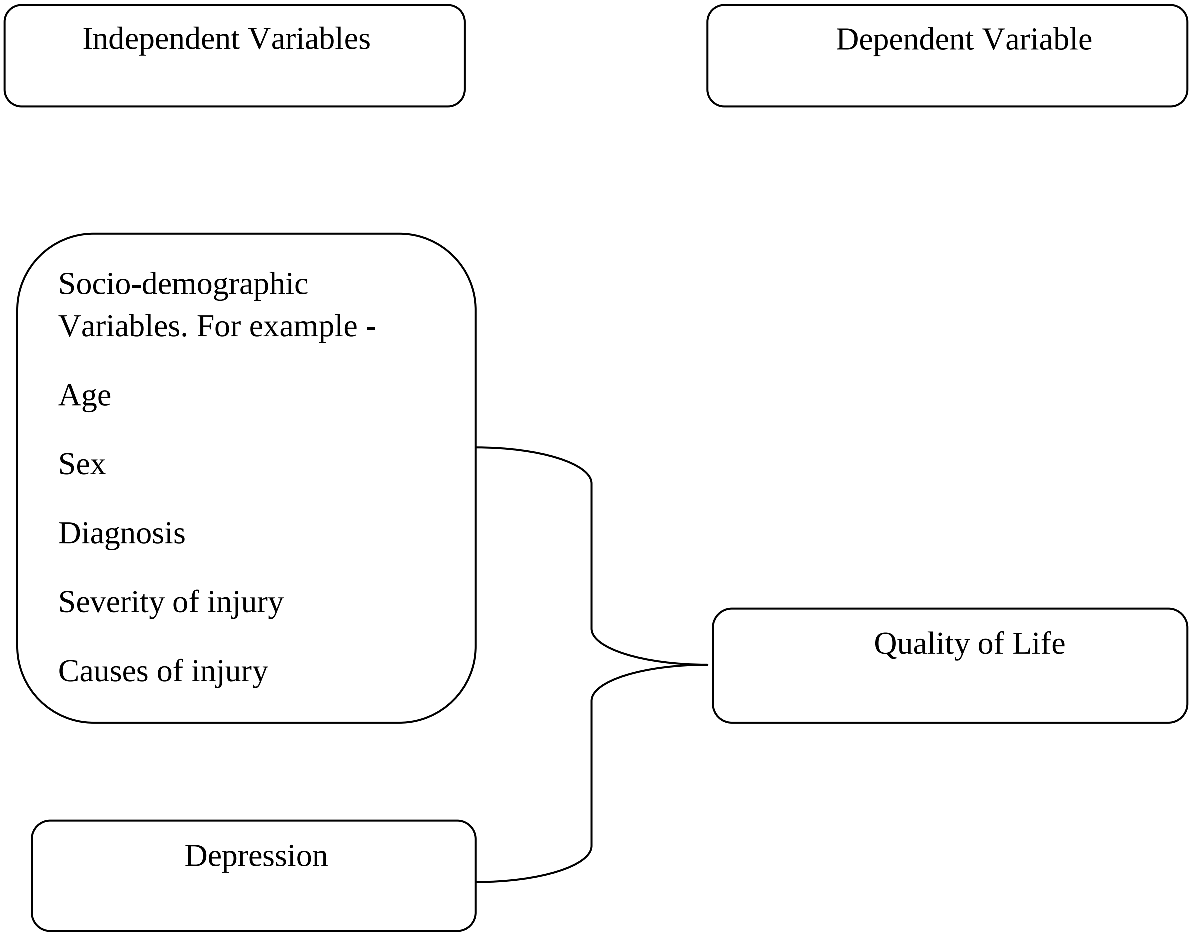
1.4.1 General objective

To evaluate the effect of depression on quality of life patients with spinal cord injury attending at CRP.

1.4.2 Specific Objectives

- To evaluate the level of depression of patient with spinal cord injury;
- To know about whether there is any association in between depression and QOL of patient with spinal cord injury;
- To know about any association in between depression and socio-demographic information (age, sex, types of injury, cause of injury, severity of injury).

1.5 Conceptual Framework



1.6 Operational Definition

Spinal cord injury

Spinal cord injury (SCI) is defined as damage to the neural elements in the spinal canal (spinal cord and cauda equina) which can be traumatic or non-traumatic that results in temporary or permanent loss of motor and/or sensory function.

Quality of life

Quality of life (QOL) is the general well being of individuals and societies, outlining negative and positive features of life. It observes life satisfaction, including everything from physical health, family, education, employment, wealth, religious beliefs, finance and the environment.

Depression

Depression is a low state of mood and unwillingness to activity that can affect a person's thoughts, behaviour, feelings and sense of well being.

Paraplegia

Impairment or loss of motor or sensory function / partial or complete paralysis of the lower half of the body with involvement of both legs that is usually due to damage to the spinal cord in the thoracic or lumber or sacral regions.

Tetraplegia

Tetraplegia is also known as Quadriplegia. It means paralysis of all four limbs, motor and/or sensory function in the cervical spinal segment is impaired or lost due to damage to that part of the spinal cord resulting in impaired or loss of function in the upper limbs, lower limbs, trunk and pelvic organs.

CHAPTER-II LITERATURE REVIEW

Spinal cord injury (SCI) is an event which can be traumatic or non-traumatic that results in disturbances to normal sensory, motor or autonomic function and ultimately impacts a patient's physical, psychological and social well-being (Singh et al., 2014). This is a major public health problem in Bangladesh (Hoque et al., 2012).

The spinal cord is situated within the spinal column; Spinal cord is 42-45 cm long & it extends down from the brain to the L_1–L_2 vertebral level, ending in the conus medullaris, continuing from the end of the spinal cord in the spinal canal, is the cauda equina (or "horse's tail"); The spinal cord itself has neurological segmental levels that correspond to the nerve roots that exit the spinal column between each of the vertebrae; There are 31 pairs of spinal nerve roots. Among them 8 cervical, 12 thoracic, 5 lumbar, 5 sacral and 1 coccygeal; Owing to the difference in length between the spinal column and the spinal cord, the neurological levels do not necessarily correspond to the vertebral segments (International perspective on spinal cord injury; WHO, 2013).

Damage to the spinal cord may be traumatic or non-traumatic; Traumatic SCI can result from many different causes – including falls, road traffic injuries, occupational and sports injuries and violence; On the other hand, non-traumatic SCI, usually involves an underlying pathology – such as infectious disease, tumour, musculoskeletal disease such as osteoarthritis and congenital problems such as spina-bifida which is a neural tube defect that arises during development of the embryo (International perspective on spinal cord injury; WHO, 2013; Guest et al., 2014).

The symptoms of spinal cord lesion depend on the extent of the injury or non-traumatic cause but they can include loss of sensory or motor control of the lower limbs, trunk and the upper limbs, as well as loss of autonomic (involuntary) regulation of the body; This can affect breathing, heart rate, blood pressure, temperature control, bowel and bladder control and sexual function; Cervical SCI commonly causes sensory and motor loss (paralysis) in the arms, body and legs which is referred to as tetraplegia (the alternative term quadriplegia is now less used); Thoracic SCI commonly causes sensory and/or motor loss in the trunk and legs, this condition is called paraplegia; Lumbar SCI typically causes sensory and motor loss in the hips and legs; According to the International Standards for Neurological Classification of SCI with the American Spinal Injury Association (ASIA) Impairment Scale (AIS), SCI is considered complete if there is no sensory and motor function at S4−S5; While some sensory and or motor function is preserved below the level of injury in incomplete SCI including the lowest sacral segments S4-S5, it is no less serious and can still result in severe impairments (International perspective on spinal cord injury; WHO, 2013; Craig et al., 2009; Lim et al., 2017; De Almeida et al., 2013).

Estimated global SCI incidence is 40 to 80 new cases per million population per year. This means that every year, between 250 000 and 500 000 people become spinal cord injured (International perspective on spinal cord injury; WHO, 2013). Study related to SCI done in Bangladesh shows that among the traumatic spinal cord lesions, 60% were paraplegics and 40% tetraplegic; Among the non-traumatic spinal cord lesions cases 84% were paraplegic and 16% tetraplegic; The male and female ratio was 7.5 : 1.0 (Hoque et al., 2012).

Seven studies related to SCI in Europe (Turkey, Russia, Portugal, The Netherlands, and France) shows the incidence variation from 10.4 per million per year to 29.7 per million per year; Five studies in Northern America (Alaska, Mississippi, Kentucky, Indiana, Ontario, and Alberta), showing an incidence between 27.1 per million per year and 83 per million per year; Four studies in Asia (Jordan, Japan, Taiwan, and Fiji Islands) shows the incidence between 18.0 per million per year and 40.2 per million per year; From Australia, there was one study, the incidence is 14.5 per million per year; In Portugal, the incidence is 57.8 per million per year, 77 per million per year in Mississippi (USA), 52.5 per million per year in Alberta (Canada); The prevalence in Australia ranges between 370 - 1987 and 681 per million in 1998; In western Europe, two countries only have reported prevalence data - Finland 280 per million and Iceland 316 per million; In North America, USA 721-1009 per million & in Canada , 1173 per million (Wyndaele & Wyndaele, 2007).

According to Furlan et al. (2013) traumatic SCI can result in motor, sensory and autonomic dysfunction, all of which can be devastating for the individual, both socially and economically. Paraplegia affects the lower extremities of the body. It refers to motor and sensory impairment at the thoracic, lumber, or sacral segments of the cord. Paraplegia results in sparing of arm function and, depending on the level of the lesion, impairment in the trunk, legs, and pelvic organs (Radomski and Latham,2008).

Spinal cord injury (SCI) can result in considerable disability; The highest risk of SCI occurs during adolescence and early adulthood for both males and females with the ratio of males to females roughly 4:1; Spinal cord injuries can have a significant adverse effect on mental health; There is an inevitable risk of experiencing an emotional disorder such as depression after SCI (Guest et al., 2014).

Depression may be described as feeling sad, blue, unhappy, miserable or down in the dumps; Most of us feel this way at one time or another for short periods; True clinical depression is a mood disorder in which feelings of sadness, loss of interest, decreased energy, disturbed sleep, disturbed appetite, poor concentration, anger, or frustration interfere with everyday life for weeks or longer (Ducharme et al., 2012). SCI studies have defined depression as a mood state, a collection of symptoms that frequently occur together, and a diagnosed psychiatric disorder (Kalpakjian et al.,2009). Depression may be described as feeling sad, blue, unhappy, miserable, or down in the dumps. Most of us feel this way at one time or another for short periods. True clinical depression is a mood disorder in which feelings of sadness, loss, anger, or frustration interfere with everyday life for weeks or longer (Zieve & Merrill 2011).

Depression is a mood disorder accompanied by low self-esteem, feeling of inadequacy, lack of self-sufficiency, and unfavorable self-impression. It is a painful experience that depends either on a violent blow or expectation of coming danger from an unknown source (Pashang et al., 2012).

Depressive disorders are the most common form of psychological distress after SCI and appear to be more common in disabled person than in nondisabled person; Depression affects 25% of men and 47% of women (Craig, 2014).

A diagnosable depressive syndrome refers to a constellation of observable symptoms that may surround tearfulness, apathy, irritability, loss of appetite, disturbed sleep, lack of energy, death thoughts etc. in addition to depressed mood; For an individual, a depressive syndrome is recognized when the behavioral characteristics deviate from the norm in several state of functioning (Elliot, 2011).

A recent study shows that up to 26% of individuals meeting the criteria for Major Depressive Disorder (MDD) (Kraft & Dorstyn., 2015). Major depression (MD) is a highly prevalent with spinal cord injury which is range from 9.8% to 35% among inpatient and 13% to 31% among people residing in community (Graves & Bombardier, 2008).

Depression is typically reported to occur in 20% to 40%, depending on the definition of depression, the time since injury, and the duration of the study (Craig et al., 2013). In a review, Bombardier et al., (2008) found that the rates of major depression or probable major depression following SCI vary widely across studies and can range from 7% to 31% of persons, with estimates of major depressive disorder typically reported in 15%-23% of individuals; Depressive symptoms has been reported in 31%, mild depression in 45% and evidence of clinical depression in 15%; In a recent survey of 568 adult SCI inpatient rehabilitation clients, approximately 22% met self-reported symptoms consistent with major depressive disorder on average less than two months post injury; Bombardier et al., (2008) surveyed 849 SCI outpatients at one-year post injury and found 11.4% met criteria for MDD. Shin et al., (2012) suggest a 42% overall rate of depression with a 21% probable rate of major depression is indicative of a 4-fold increase of depressive disorders among individuals with SCI when compared with samples of non-disabled individuals.

Depression affects people with SCI in many ways; People with SCI who are depressed often have more difficulty looking after themselves and managing their medical condition; For example, they may have difficulty in drinking sufficient water, taking care of their skin, taking medications and eating properly; It affects mood, ambition, outlook, problem solving and energy levels; It works against wellness, health and having a good quality of life (Ducharme, 2012).

QOL in persons with SCI is related to mental health, mobility, employment, overall participation, accessibility of the external environment, social support and coping; QOL assessment is vital for persons with SCI, as it is a condition where different degrees of physical limitations and related complications (for example: pain, bowel, bladder and sexual problems, and so on) can cause significant restrictions in daily activities, health and well-being (Tramonti et al., 2014).

Negative outcomes associated with depression among persons with SCI include diminished quality of life, poor social integration, and increased secondary medical complications (Arango-Lasprilla et al. 2013).

Studies suggest that the incidence of urinary tract infections, pressure ulcers, and autonomic dysreflexia are significantly increased in SCI patients with depression, relative to non-depressed patients; Depression is also associated with the emergence of suicidal thoughts, with some studies suggesting that the suicide rate is five times greater in SCI patients than in the general population; These epidemiological studies indicate that not only SCI but also depression affect recovery of function and general health; According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), symptoms of major depressive disorder include diminished interest in pleasure activities, insomnia, or hypersomnia, significant changes in weight without diet modification, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness, diminished concentration and recurrent thoughts of death and suicide or suicide attempts (Lim et al., 2017).

Persons with SCI face many psychosocial and vocational adjustment problems with depression and anxiety, alcohol and drug abuse, unemployment, and lack of social support. These each problems have been found in various research as relating to a poorer quality of life (Singh et al., 2008).

The relationship between the period of time since sustaining the SCI and the onset of depression is complex. The depression scores were highest in patients who had lived the least number of years since the SCI happened and in those with the most number of years since the SCI. The high levels of depression among the most recently injured patients may reflect the adjustment process itself. In contrast, high depression levels in patients who lived the longest with the SCI may be because of their response to other changes, such as the onset of secondary conditions as a result of aging (Krause et al.,2009).

Depression does not signal any adaptive process in adjustment; it is best construed as a secondary complication that severely limits mobility, erodes quality of life, and occurs at expense to the person, to the family, and to health care delivery systems. Moreover, a variety of personal and social characteristics have been consistently and reliably predictive of depressive behavior among persons with SCI (White et al.,2010).

Depression affects people with SCI in many ways. It affects mood, ambition, outlook, problem solving and energy levels. It works against wellness, health and having a good quality of life. People with SCI who are depressed often have more difficulty looking after themselves and managing their medical condition. For example, they may have difficulty drinking sufficient water, taking care of their skin, taking medications and eating properly (Stanley, 2012).

Motor incomplete SCI patients were less depressed, had more life satisfaction, and experienced lesser stress levels. These results suggest that the capability to move a part of the body can make people less depressive and more satisfactory, even if it is insufficient to walk without assistance, especially in the early period of rehabilitation. This may also be attributed to the fact that motor incomplete SCI patients expect to recover their motor functions in the near future (White et al.,2010).

Research has shown that patients with spinal cord injury tend to have reduced self-esteem which can lead to lower self-worth and less motivation; Persistent low self-esteem is detrimental and has the potential to lead to long term depression and even suicide; Indeed, suicide has been cited as increasing rate of mortality in spinal injured patients under the age of 55 years; Emotional adjustment to SCI can vary considerably from person to person; Some could make satisfactory adjustments, while others remain chronically distressed (Dickson et al, 2008).

The SCI affects the psychological well-being of the patients; This is because SCI usually demand changes in almost every aspect of an individual's life, personal relationships, the physical structure of the home, employment, education, social and leisure pursuits and financial position are all influenced by the injury and also faced changes in physical functioning, functional capacities; accustomed activities, financial status, relationships; and plans for the future, these individuals' previous concepts of themselves has shifted; Personal identity is thus affected (Miglirioni et al., 2008).

The short and long-term management of spinal cord injury presents a considerable cost to the individual and society, largely due to its life-long burden and ongoing medical and ancillary treatment; Ongoing problems and conditions like frequent hospitalization, pressure ulcers, autonomic dysreflexia, bladder and bowel dysfunction, pulmonary health complications, spasticity, circulatory problems, sexual problems, chronic pain, chronic fatigue, and psychological morbidity (such as depression and anxiety disorders) are known to challenge and diminish QOL in people with SCI (Guest et al., 2014).

Acquired Spinal cord injury can generate feelings of loss; This loss is with regard to mobility, control, pleasure sensation, identity, independence, spontaneity and the threat of loss of life at the time of injury (Shin et al., 2012). A study conducted by Dickson et al., (2008) focusing on the experience of living with a spinal cord injury, found that participants, through individual in-depth interviews, reported an ongoing sense loss, characterized by largely diminishing sense of personal control. This loss of personal control manifested itself in incontinence, emotion and loss movement. Furthermore the study found that that helplessness and embarrassment were common responses; While a loss of independence was associated with inability to control bodily functions, but also with a loss of spontaneity (Dickson et al., 2008).

SCI results in diminished mobility, greatly reduced functional independence and difficulties with socialization and employment; Many survivors also experience serious psychological, psychosocial and neurobehavioral issues and are at increased risk of developing anxiety disorders, substance abuse problems, feelings of helplessness, poor coping skills, low self-esteem and depression (Arango-Lasprilla et al., 2011).

Depression is the most common psychological issue associated with SCI. Depression levels may change over time since injury and depression has also been correlated with prolonged rehabilitation and fewer functional gains because the presence or absence of depression can be a critical factor in the recovery process, researchers have sought to identify risk factors and predictors of depression among individuals (Arango-Lasprilla et al., 2011).

The heightened stress levels in individuals with SCI further decrease their QOL. A better quality of life (QOL) is the ultimate goal of rehabilitation. QOL is a key outcome measure following the SCI, and psychological issues such as stress are known to have correlations with the QOL (Hammell,2009).

Depressive individuals, invariably, reported negative thoughts and beliefs including learned helplessness, lowered self-efficacy and self-control, distorted representations of SCI-related disability, heightened stress, fewer vocational interests and skills and a reduced sense of hope. Regardless of the prevalence and natural history of depression in individuals with SCI, there is no question that it has a serious impact on the affected individuals and their families (Orenczyk et al.,2010).

People with depression are often stigmatized by society and only a few receive proper treatment; The way symptoms of depression are identified in patients and theories related to etiology can influence their willingness to seek help and agree to treatment as well as influence the attitude and behavior of the community towards them (De Almeida et al., 2013).

So, it is important to treat depression because it can have such a harmful effect on a spinal cord injury person’s ability to function in day-to-day life; Depression can make pain worse, make sleep difficult, sap the energy, take away the enjoyment and make it difficult to take good care of health (Arango-Lasprilla et al., 2011).

The above further emphasize that spinal cord injury is a devastating disability which has long term negative consequences to one's life (Miglirioni et al., 2008). The injury occurs suddenly and often without warning, leaving the injured person and family with dramatically altered life situation (Miglirioni et al., 2008).

CHAPTER-III METHODOLOGY

3.1 Study Design

Cross-sectional studies were carried out at one time point or over a short period. Cross sectional study was selected by researcher to carry out the research. In this study a cross sectional study design used to find out the level of depression among the patient with spinal cord injury. This study design was appropriate to find out the objectives. The data was collected all at the same time or within a short time frame. A cross-sectional design provides a snapshot of the variables included in the study, at one particular point in time .

3.2 Study Site

Data was collected from patients with spinal cord injury attending at Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka in SCI Unit; the only specialized & largest hospital in Bangladesh .

3.3 Study population and sample population

A population is the total group or set of events or totality of the observation on which a research is carried out. In this study the people who had SCI and people who were receiving treatment and rehabilitation was selected to carry out the study. About 120 sample were selected for this study.

3.4 Sampling Technique

Sample were selected through convenience sampling method for conducting this study. A convenience sample is a group of individuals who (conveniently) were available for study.

3.5 Sample Size

When the sample frame is finite,

The equation of finite population correction in case of cross sectional study is :

$$n = \frac{Z2pq}{d2}$$

$$= \frac{(1.96)2 \times 0.5 \times 0.5}{(0.05)2}$$

= 384

Here,

Z (confidence interval) = 1.96

P (prevalence) =50% (Geyh et al., 2010)

And, q= (1-p)

= (1-0.5)

=0.5

The actual sample size was, n= 384.

As it is an academic thesis, self funding and data was collected from a single specialized hospital by considering the feasibility and time limitation 120 sample were selected conveniently.

3.6 Data Collection Tools

"World Health Organization Quality Of Life Questionnaire-BREF (WHOQOL-BREF)" and 'Center for Epidemiologic Studies Depression Scale (CES-D) were selected to collect data. CES-D is a depression measurement tool and consist of 20-items. QOL measurement tool is an established tool at SCI-related research; assessing QOL by using the WHOQOL- BREF, which consist of 26-item. The WHOQOL-BREF questionnaire was developed in the context of overall rate of QOL and overall rate of health status. There are also the four domains defining the QOL- physical, psychological, social, and environmental. The higher the QOL score the higher the life satisfaction. The WHOQOL-BREF contains a total of 26 questions. Some other necessary materials like pen, pencil, and white paper, clip board & note book are also needed.

3.7 Data Collection Procedure

For this study researcher was collected data from the participants by following the instructions given on the "WHOQOL-BREF" and "CES-D". This data collection tools were permitted from the authors to use this study. Participants who had the reading ability they administered the questionnaire own-self. Before collecting data the study aims and purpose explained to the participants. The participants or careers read (if they can) the information sheet and consent form. Who were unable to read researcher was explained the information sheet and the consent form. All the participants had the opportunities to ask any study related questions and they could show interest to participate in the study they could sign in the consent form willingly. The researcher was collected data by structured questionnaire, pen, pencil and paper.

3.8 Data Analysis

The researcher was analyzed data for evaluating the level of depression, to find out any relation in between depression and QOL, also the association with depression and socio demographic information. The data was collected and analyzed by using statistical package for social sciences (SPSS) 20.0 version. Researcher analyzed the data by descriptive statistics using Frequency, Percentage(%), Pie diagram, Bar diagram and also shown the association by non-parametric test which was Chi-Square test.

Chi square (χ2) Test

Chi square (χ2) Test is the most popular discrete data hypothesis testing method. It is a non-parametric test of statistical significance for bivibrate tabular analysis with a contingency table. In this study Chi square (χ2) test was done to measure the associations between two variables. It was used to test the statistical significance of results reported in bivariate tables.

Assumption

Different and Independent variable

Variables were quantitative

Normal Distribution of the variable

Formula: the test statistics follow-

$\chi 2 = \sum_{i=1}^{k} (O - E)^{2} / \mathrm{E}$

Here,

χ2 = Chi square value

∑ = The sum of

O = Observed count

E = Expected count

Chi square is the sum of the squared differences between observed (O) and the expected (E) data divided by expected (E) data in all possible categories.

Level of significance

The researcher has used 5% level of significant to test the hypothesis. If the p value for the calculated χ2 is $p<0.05$ conclude that there is significant association between the two variables. The χ2 value and the level of significance are presented through table-

<u>Example</u> :

Quality of life	**Depression**			**Chi-square value** (χ2)	**P-value**	**Significance**
	Mild	**Moderate**	**Severe**	17.096	0.009	Significant
Very Poor	20% (n=24)	4.17% (n=5)	2.5% (n=3)			
Poor	30% (n=36)	9.17% (n=11)	7.5% (n=9)			
Neither poor nor good	8.34% (n=10)	9.17% (n=11)	1.67% (n=2)			
Good	2.5% (n=3)	5.0% (n=6)	0.00% (n=0)			

3.9 Inclusion Criteria

People who were receiving treatment.

Information was taken only form the clients .

Both male and female patients with SCI.

People who willingly participate in the study.

3.10 Exclusion Criteria

People who had SCI with psychological disorders.

SCI patients with severe head injury.

SCI with speech problem & medically unstable patient.

Patient with cognitive problem.

Patient suffering from serious pathological disease e.g. tumors, tuberculosis etc.

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 infront 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 SCI unit of Savar, CRP. 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. 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.

3.12 Informed Consent

Written consent was given to all participants prior to completion of the questionnaire. The investigator explains to the participants about his or her role in this study. The investigator received a written consent form every participants including signature. So the participant assured that they could understand about the consent form and their participation was on voluntary basis. The participants were informed clearly that their information would be kept confidential. The investigator assured the participants that the study would not be harmful to them. It was explained that there might not a direct benefit from the study for the participants but in the future cases like them might get benefit from it. The participants had the rights to withdraw consent and discontinue participation at any time without prejudice to present or future care at the community. Information from this study was anonymously coded to ensure confidentiality and was not personally identified in any publication containing the result of this study.

3.13 Rigor of the study

The rigorous manner was maintained to conduct the study. The study was conducted in a clean and systemic way. During the data collection it was ensured that participants were not influenced by experience. The answer were accepted whether they were in negative or positive impression. No leading questions were asked. The participant information was coded accurately checked by the supervisor to eliminate any possible errors. The entire information was handled with confidentiality. In the result section, outcome was not influenced by showing any personal interpretation. Every section of the study was checked & rechecked by research supervisor.

CHAPTER-IV RESULTS

4.1 Gender of the participants

Among 120 participants, most of them were male 85.0% (n=102) and Female were 15.0% (n=18).

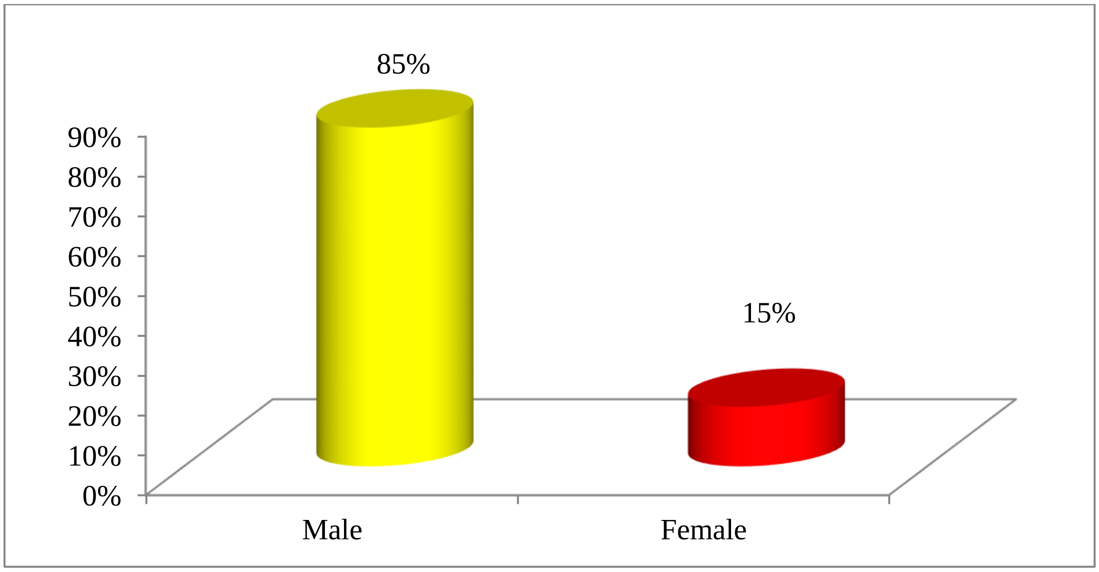


Figure-1 : Gender of the participants

4.2 Age group of the participants

There were several age groups among 120 participants. The participants with 10-20 years were 12.5% (n=15), 21-30 years were 37.5% (n=45), 31-40 years were 22.5% (n=27) , 41-50 years were 16.7% (n=20), 51-60 years were 8.3% (n=10), 61-70 years were 2.5% (n=3).

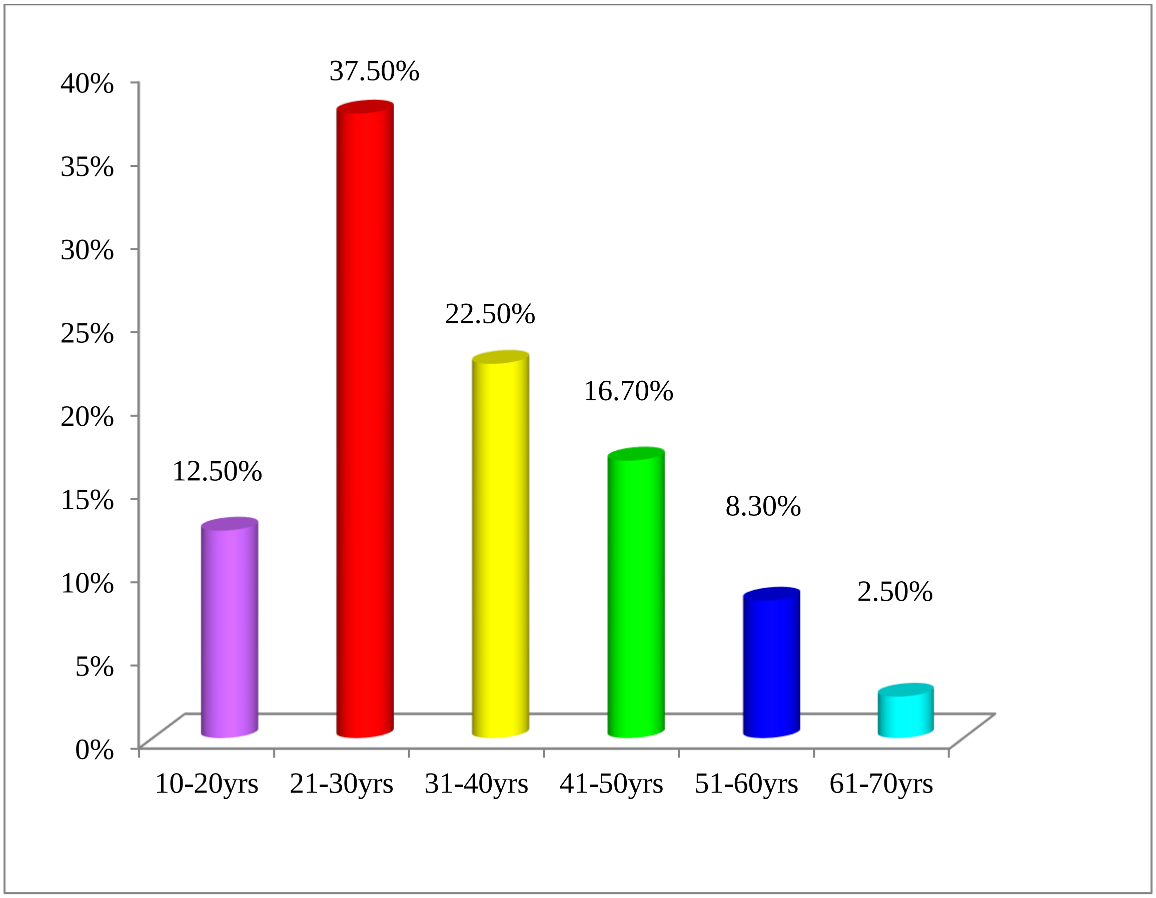


Figure-2 : Age group of the participants

4.3 Types of injury of the participants

Out of 120 participants, there were little difference between the number of paraplegia and tetraplegia ; paraplegia were 49.2% (n=59) and tetraplegia were 50.8% (n=61).

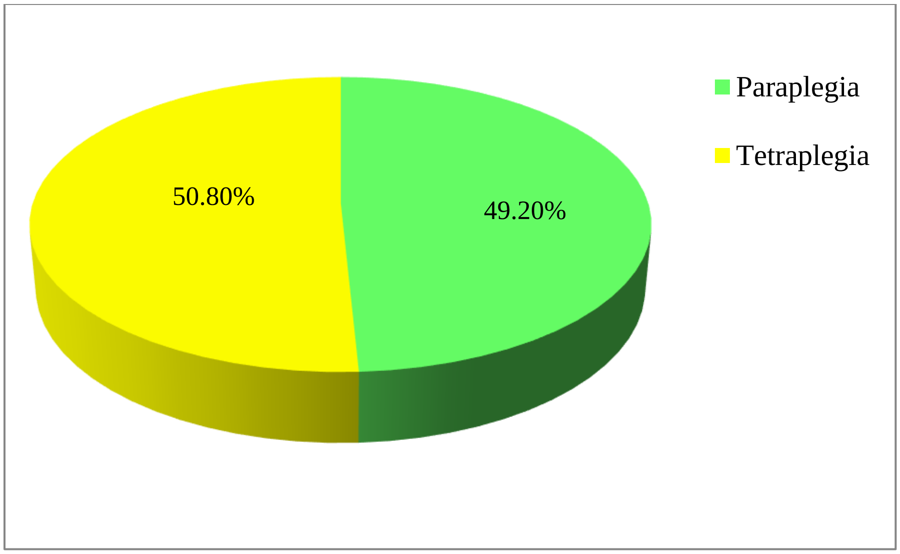


Figure-3 : Types of injury of the participants

4.4 Severity of injury of the participants

There were 120 patients who participate in this study. Most of them were complete A according to ASIA impairment scale. The percentage of complete A were 78.3% (n=94), incomplete B were 9.2%(n=11) , incomplete C were 10.8%(n=13) , incomplete D were 1.7% (n=2).

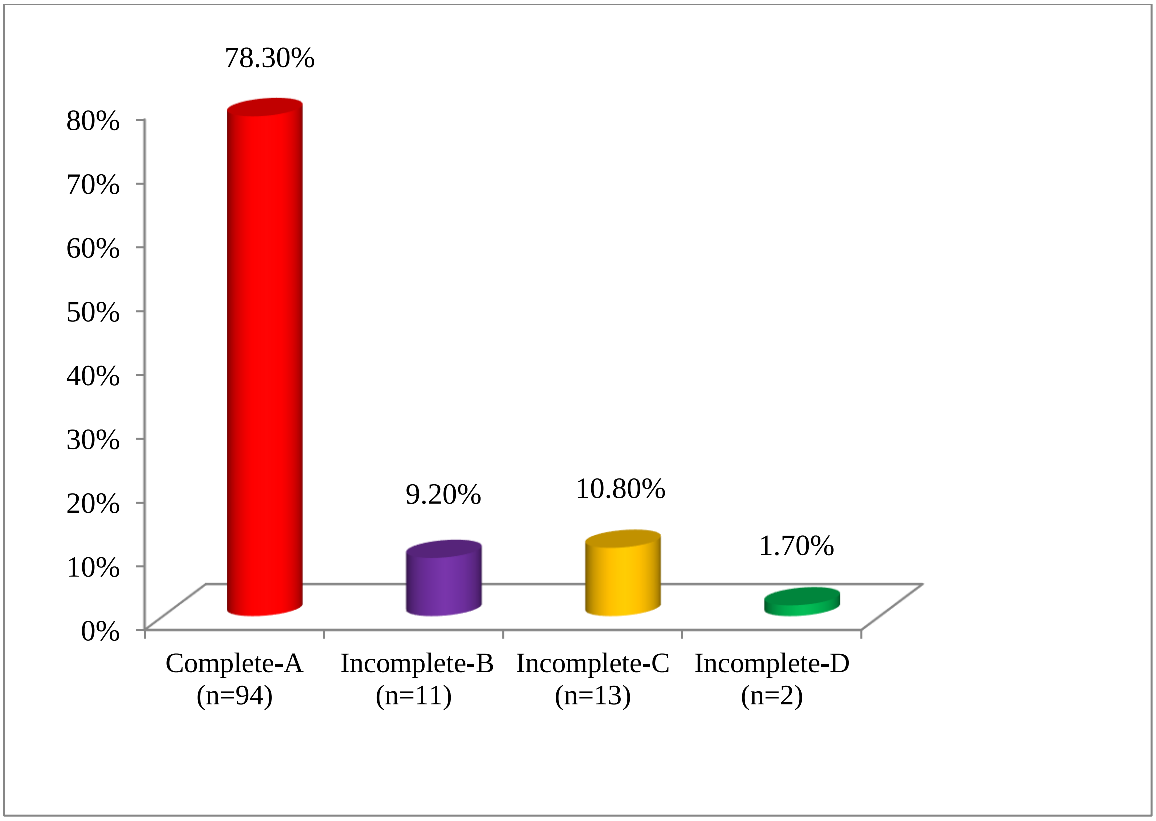


Figure-4 : Severity of injury of the participants

4.5 Causes of spinal cord injury

The causes of spinal cord injury can be traumatic or non-traumatic. Among 120 participants maximum participants had faced spinal cord injury due to traumatic cause. The percentage of spinal cord injury due to traumatic cause were 92.5% (n=111) and the percentage of spinal cord injury due to non-traumatic cause were 7.5% (n=9).

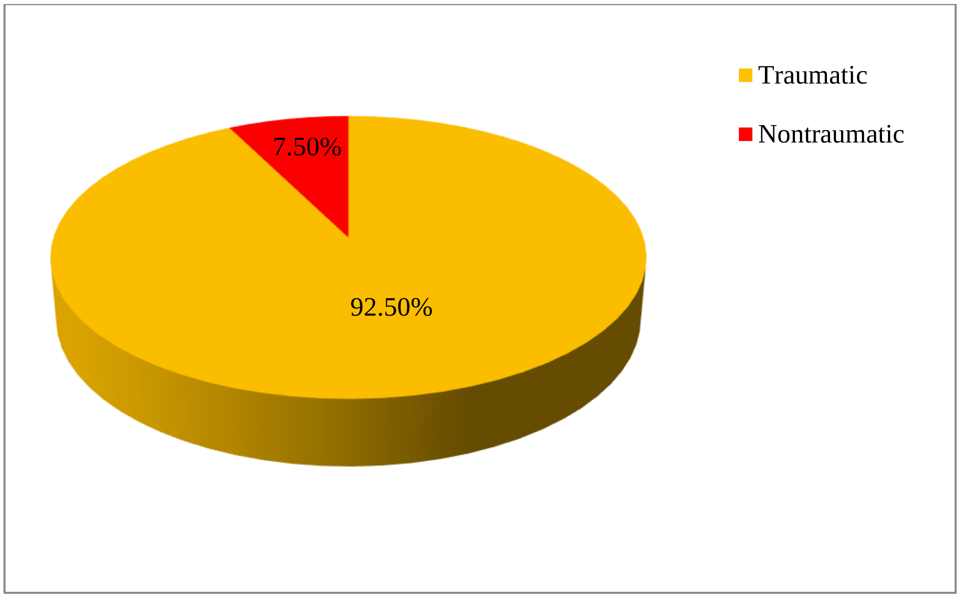


Figure-5 : Causes of spinal cord injury

4.6 Performance of the participants according to CES-D Scale :

Statements of CES-D Scale	%(n)			
	Rarely or none of the time	Some or a little of the time	Occasionally or a moderate amount of time	Most or all of the time
I was bothered by things that usually don't bother me.	5.0% (6)	5.0% (6)	36.7% (44)	53.3% (64)
I did not feel like eating; my appetite was poor.	8.3% (10)	13.3% (16)	18.3% (22)	60.0% (72)
I felt that I could not shake off the blues even with help from my family or friends.	3.3% (4)	10.8% (13)	50.8% (61)	35.0% (42)
I felt that I was just as good as other people.	75.0% (91)	15.0% (18)	9.2% (11)	0%
I had trouble keeping my mind on what I was doing.	8.3% (10)	16.7% (20)	35.8% (43)	39.2% (47)
I felt depressed.	4.2% (5)	5.0% (6)	22.5% (27)	68.3% (82)
I felt that everything I did was an effort.	5.8% (7)	6.7% (8)	45.8% (55)	41.7% (50)
I felt hopeful about the future.	46.7% (56)	30.0% (36)	13.3% (16)	10.0% (12)
I thought my life had been a failure.	2.5% (3)	7.5% (9)	47.5% (57)	42.5% (51)
I felt fearful.	0.8% (1)	9.2% (11)	60.8% (73)	29.2% (35)
My sleep was restless.	10.8% (13)	11.7% (14)	16.7% (20)	60.8% (73)
I was happy.	0%	7.5% (9)	0%	92.5% (111)
I talked less than usual.	14.2% (17)	5.8% (7)	17.5% (21)	62.5% (75)
I felt lonely.	3.3% (4)	7.5% (9)	65.0% (78)	24.2% (29)
People were unfriendly	95.8% (115)	3.3% (4)	0.8% (1)	0%
I enjoyed life.	90.0% (108)	8.3% (10)	1.7% (2)	0%
I had crying spells.	0.8% (1)	17.5% (21)	55.0% (66)	26.7% (32)
I felt sad.	0%	5.8% (7)	32.5% (39)	61.7% (74)
I felt that people disliked me.	96.7% (116)	2.5% (3)	0.8% (1)	0%
I could not get "going".	1.7% (2)	9.2% (11)	42.5% (51)	46.7% (56)

4.7 Level of depression

CES-D Scale has been used to find out the level of depression. The possible range of scores in CES-D scale is 0-60, with the higher scores indicating the presence of more symptomatology. In this study, the score 0-20 indicates Mild depression, the score 21-40 indicates Moderate depression & the score 41-60 indicates Severe depression. This study shows that among 120 participants, each participants had depression with different levels. Most of the participants had mild depression 60.8% (n=73) after spinal cord injury; Participants with moderate depression were 27.5% (n=33) and severe depression were 11.7% (n=14).

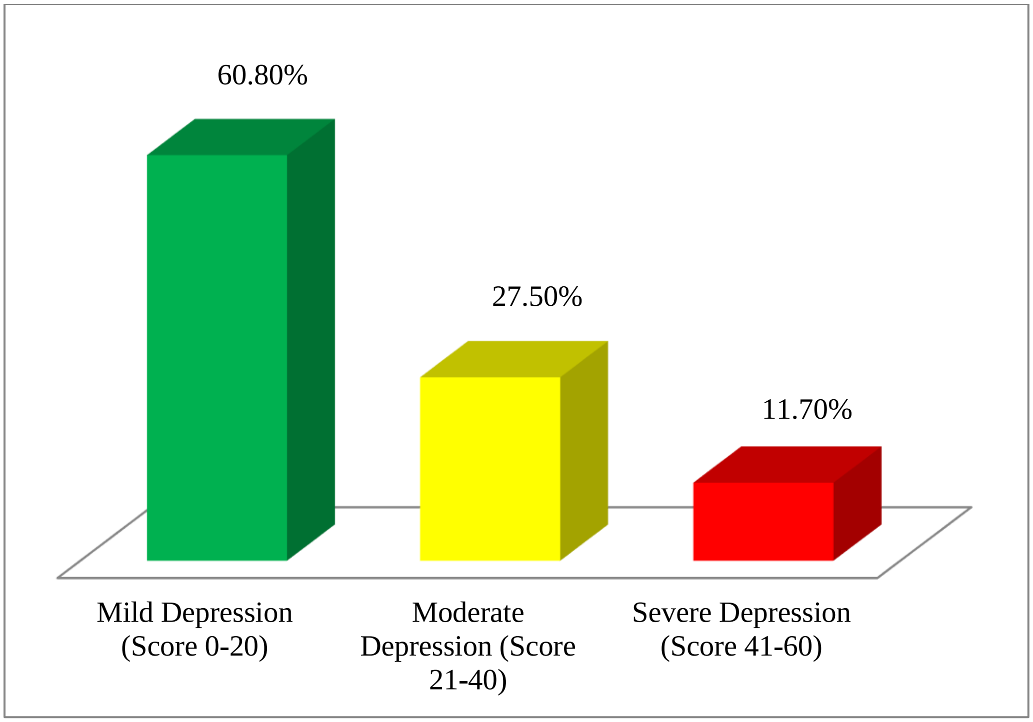


Figure-6 : Level of depression among the participants

4.8 Quality of life of the participants

Quality of life is an important issue after Spinal cord injury because that is the condition which can be limited a person's better quality of life. Among 120 participants, 26.7% (n=32) had very poor quality of life; 49.2% (n=59) had poor quality of life; 16.7% (n=20) had neither poor nor good quality of life and 7.5% (n=9) had good quality of life.

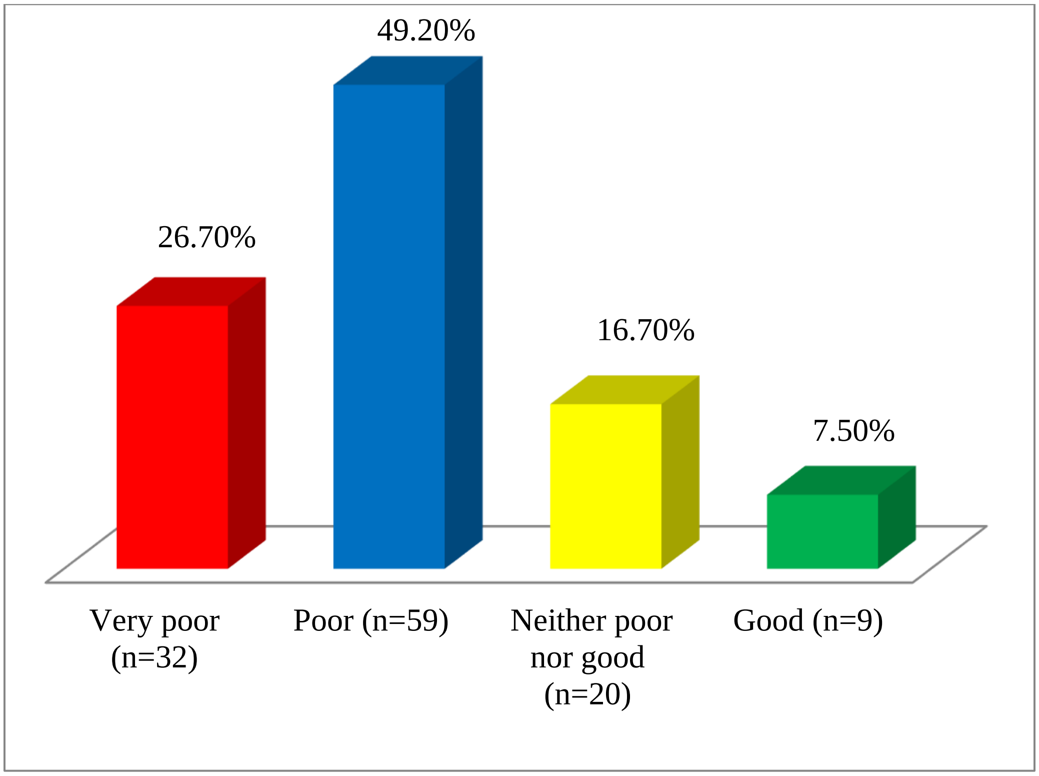


Figure-7 : Quality of life of the participants

4.9 Association in between Depression & Quality of Life of the participants :-

Table-1: Association in between Depression & Quality of Life of the participants

Quality of life	**Depression**			**Chi-square value** ($\chi2$)	**P-value**	**Significance**
	Mild	**Moderate**	**Severe**			
Very Poor	20% (n=24)	4.17% (n=5)	2.5% (n=3)	17.096	0.009	Significant
Poor	30% (n=36)	9.17% (n=11)	7.5% (n=9)			
Neither poor nor good	8.34% (n=10)	9.17% (n=11)	1.67% (n=2)			
Good	2.5% (n=3)	5.0% (n=6)	0.00% (n=0)			

The study found an association between depression and overall quality of life among 120 participants which was the 2nd objective of this study. The Chi-square value of this association was 17.096 & the association in between depression and quality of life was strongly significant ($p<0.009$). In this study, 20 (n=24) had mild depression (Score 0-20); 4.17% (n=5) had moderate amount of depression (Score 21-40) and 2.5% (n=3) had severe depression (Score 41-60) where all of them lead a very poor quality of life. On the other hand, 30% (n=36) had mild depression (Score 0-20); 9.17% (n=11) had moderate amount of depression (Score 21-40) and 7.5% (n=9) had severe depression (Score 41-60) where all of them lead a poor quality of life. Furthermore, 8.34% (n=10) had mild depression (Score 0-20); 9.17% (n=11) had moderate amount of depression (Score 21-40) and 1.67% (n=2) had severe depression (Score 41-60) where all of them lead neither poor nor good quality of life. Only 9 participants (n=9) had good quality of life where their depression level was, 2.5% (n=3) had mild depression, 5.0% (n=6) had moderate depression and 0.00% (n=0) had severe depression.

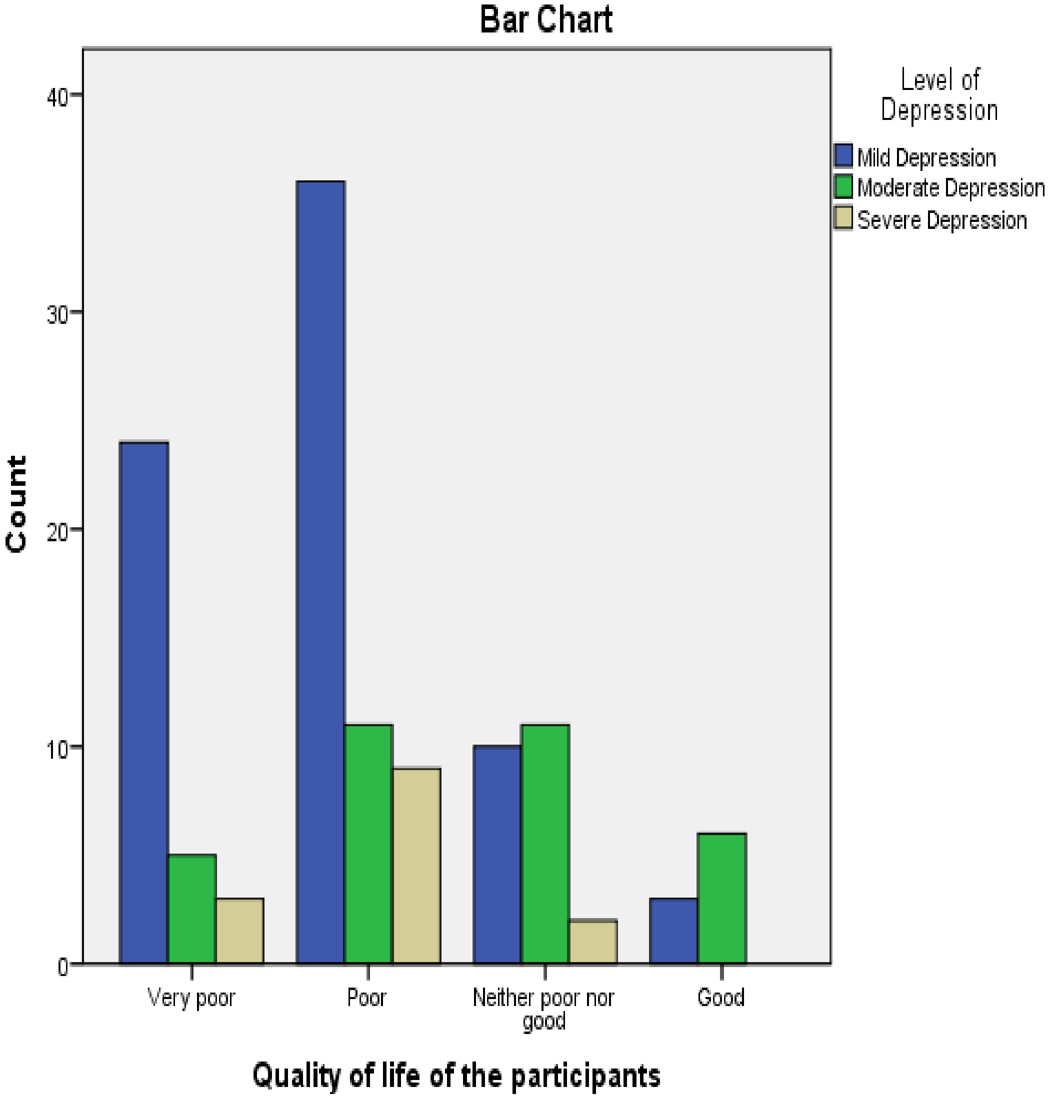


Figure-8 : Association in between Depression & Quality of Life of the participants

4.10 Association in between Depression & Socio-demographic information :-

Table-2: Association in between Depression & Age -

Socio-demographic variable	Depression	Chi-square value ($\chi2$)	p-Value	Significance
Age	"I felt hopeful about the future"	28.147	0.021	Significant

The study had another association occurred between socio-demographic profile and the depression which was mentioned in the 3rd objective of the study. In this study, CES-D scale was used by the author. CES-D scale had 20 statements; among these, author mentioned 10 statements which had association with socio-demographic characteristics and which were significant. ‘I felt hopeful about future’ in this statement chi-square ($\chi2$)value was 28.147 which was strongly significant ($p<0.021$) with Age.

Table-3: Association in between Depression & Gender -

Socio-demographic variable	**Depression**	**Chi-square value ($\chi2$)**	**p-Value**	**Significance**
Gender	"I had trouble in keeping mind on what I was doing"	9.217	0.027	Significant
	"I had crying spells"	10.939	0.012	Significant

In the study, there was a significant association in between depression and gender. ‘I had trouble in keeping mind on what I was doing’ in this statement chi-square ($\chi2$) value was 9.217 which was strongly significant ($p<0.027$) with gender. ‘I had crying spells’ in this statement chi-square ($\chi2$) value was 10.939 which was strongly significant ($p<0.012$) with gender.

Table-4: Association in between Depression & Types of injury -

Socio-demographic variable	Depression	Chi-square value (χ2)	p-Value	Significance
Types of injury	"I thought my life had been a failure"	8.352	0.039	Significant
	"I talked less than usual"	10.076	0.018	Significant
	"I felt lonely"	10.742	0.013	Significant

There was a significant association in between depression and type of injury in the study. 'I thought my life had been a failure' in this statement chi-square (χ2) value was 8.352 which was significant ($p<0.039$) with types of injury. 'I talked less than usual' in this statement chi-square (χ2) value was 10.076 which was significant ($p<0.018$) with types of injury. 'I felt lonely' in this statement chi-square (χ2) value was 10.742 which was significant ($p<0.013$) with types of injury.

Table-5: Association in between Depression & Severity of injury according to ASIA -

Socio-demographic variable	Depression	Chi-square value (χ2)	p-Value	Significance
Severity of injury according to ASIA	"I was bothered by things that usually don't bother me"	26.787	0.002	Significant
	"I felt depressed"	23.022	0.006	Significant
	"I felt lonely"	62.054	0.000	Significant

In the study, there was a significant association in between depression and severity of injury according to ASIA Scale. I was bothered by things that usually don't bother me' in this statement chi-square (χ2) value was 26.787 which was highly significant ($p<0.002$) with severity of injury according to ASIA Scale. 'I felt depressed' in this statement chi-square (χ2) value was 23.022 which was highly significant ($p<0.006$) with severity of injury according to ASIA Scale. 'I talked less than usual' in this statement chi-square (χ2) value was 16.456 which was significant ($p<0.058$) with severity of injury according to ASIA Scale. 'I felt lonely' in this statement chi-square (χ2) value was 62.054 which was highly significant ($p<0.000$) with severity of injury according to ASIA Scale.

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CHAPTER-V DISCUSSION

Depression is the most frequently studied psychosocial variable in SCI rehabilitation. Depression does not signal any adaptive process in adjustment; it is best construed as a secondary complication that severely limits mobility, erodes quality of life, and occurs at expense to the person, to the family, and to health care delivery systems (White et al.,2010). In this study, CES-D depression measurement scale and WHOQOL-BREF questionnaire were used to measure the level of depression and to create association between level of depression and quality of life. Socio-demographic characteristics played an important role in association with depression in this study. Wollaars et al. (2007) mentioned that there had an association between depression and quality of life and there had an another association between socio-demographic factors and depression. This study was found, male participants 85.0% (n=102) were higher than the female participants 15.0% (n=18). Most of the injured participants of this study were male following injury. According to Razzak, (2013) found that, among 56 participants 84% were male and 16.0% were female. Anderson et al. (2009) found that among 231 participants male were 63% and female were 37% following SCI. So, it seems that male participants are more permeable than female participants in spinal cord injury.

In this study most of the participants were from (21-30 years) age group which was 37.5% (n=45). Similarly Bombardier et al. (2008) in their study found 29.7% was from (25-35 years) age group. Both results claim that active younger (age around 20-40) are more vulnerable with the incidence of spinal cord injury.

There were total 120 participants in this study, among them Tetraplegia (involved four limbs) were 50.8% (n=61) and paraplegia (involved two limbs) were 49.2% (n=59). Hammond et al., (2014) noted the same type of result that in their study among 364 participants tetraplegia were 53.3% (n=194) and paraplegia were 46.7% (n=170). There is no any significant difference between the type of injury (paraplegia and tetraplegia), anyone with spinal cord injury would be paraplegia or tetraplegia.

Among 120 participants, most of them were complete A 78.3% (n=94) according to ASIA Scale; incomplete B were 9.2%(n=11), incomplete C were 10.8%(n=13) and incomplete D were 1.7% (n=2). Siddall et al., (2017) found the similar type of result in their study that 58.49% (n=31) participants had complete spinal cord injury and 41.50% (n=22) patients had incomplete spinal cord injury.

The study was carried out on 120 participants with Spinal Cord Injury. Among them, participants with traumatic cause (RTA, Fall from height, falling heavy object on head etc.) were 92.5% (n=111) and participants with non-traumatic cause (Tumour, TB spine, Transverse Myelitis, Multiple Sclerosis etc) were 7.5% (n=9). In North America, the main cause of Traumatic spinal cord injury was motor vehicle accidents rather than fall from height (Mothe & Tator, 2013).

Spinal Cord Injury, which may occur suddenly but its effect can be devastating. Razzak (2013) stated that in the perspective of Bangladesh, people live their lives under conditions that make them vulnerable to SCI. SCI affect persons for long-term, as well as it also impact on persons regular QOL. Similarly, SCI has an impact on quality of life as it become to a high level of disability for long-term, morbidity and mortality (Razzak, 2011). Individuals with spinal cord injury will experience depression and depression is the most common form of psychological distress after spinal cord injury (Anderson et al., 2009). Arango-Lasprilla et al., (2013) found that depression is associated with diminished quality of life. This study found that there was an association in between depression and quality of life after SCI ($P<0.009$) which was strongly significant. Similarly, Shin et al.(2012) found in their study that the severity of depression and level of stress were higher, whereas QOL was lower after SCI ($p<0.05$). Craig et al., (2009) also found in their study that there is the relation between higher levels of hopelessness/ helplessness and developing depression, which may change over time since injury.

This study found an association in between age and depression ($P<0.021$) which was strongly significant. Similarly, Bombardier et al. (2008) study found that, a significant association with depression and age of SCI peoples. Shin et al. (2012) stated that the high levels of depression may reflect the adjustment process itself. High level of depression patients who lived the longest with SCI may be because of their aging as a secondary condition. Arango-Lasprilla et al. (2013) also found association between age and depression at their study.

In this study there was found a significant association in between gender & depression (p<0.012). Arango-Lasprilla et al. (2013) in their study provided an understanding relationship between sex and depression.

This study also found a significant association in between types of injury and depression (P<0.013). Saadat et al., (2010) found in their study that mildly depressed paraplegic & tetraplegic were less active than nondepressed paraplegic & tetraplegic. That means depression had relationship with type of injury.

There were also an association in between severity of injury and depression which was strongly significant (p<0.000). Shin et al. (2012) found that participants with complete SCI (n=18) were more depressed, had less life satisfaction and more stress levels than incomplete participants.

No statistical significance and association were found between levels of depression and cause of injury in this study. Similarly; Arango-Lasprilla et al. (2013) found at their study that there were no significant association between cause of injury and depression.

5.1 Limitations

There might be some limitations in every research. In this study small sample size may constitute a limitation. As the study was conducted at selected area of Center for the Rehabilitation of the Paralysed (CRP) in Spinal Cord Injury (SCI) unit which might not represent the whole population with SCI in the context of Bangladesh. Another major limitation was time and resource which have great impact on study and affect the result to generalize for wider population. As the study period was short so the adequate number of sample could not arrange for the study.

CHAPTER-VI CONCLUSION & RECOMMENDATION

6.1 Conclusion

A spinal cord injury (SCI) is a sudden, unexpected event which may occur acutely or chronically and has a long-term impact on physical functioning and psychological well-being. It is a major cause of disability in Asia as well as in Bangladesh. Every year many people affected by spinal cord injury with traumatic or non-traumatic cause. Spinal cord injury can affect any person, at any age, at any time but active younger males are more prompt to having spinal cord injury than female. Spinal cord injury negatively affect not only the patients physical condition but also all aspects of their lives more importantly their mental status and quality of life. After spinal cord injury depression become unavoidable event. It is a prominent psychiatric disorder among spinal cord injury patient and appear to be more common in disabled person than in nondisabled person. Depression levels may change over time since injury. Depression has a relationship with quality of life because the heightened stress levels in individuals with SCI further decrease their QOL. It have such a harmful effect on a spinal cord injury person's ability to function in day-to-day life. It can make pain worse, make sleep difficult, sap the energy, take away the enjoyment and make it difficult to take good care of health. In this study the level depression of spinal cord injury patients has been found. It has been seen in this research that there has association in between depression and overall QOL and that has been significant. It has been also significant that there has an association in between depression and socio-demographic information. So it is immensely essential to assess depression in patients having spinal cord injury and make proper treatment plan during rehabilitation period and always should be considered with priority.

6.2 Recommendation

Depression is an inevitable consequence after having spinal cord injury and has negative influence on quality of life of patients with spinal cord injury. So, the necessity is to give more attention to this psychological aspect which is linked to spinal cord injury (SCI).There are so many studies based on spinal cord injury but there are few amount of studies related to the concept of this patient's psychology such as depression. If other authors want to do further related study, they are recommended to do their study in whole country perspective with increased sample size.

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APPENDIX

Table: Association in between Age and Depression -

Socio-demographic variable	Depression	Chi-square value (χ2)	p-Value	Significance
Age	"I was bothered by things that usually don't bother me"	15.480	0.417	Not sig.
	"I didn't feel like eating; my appetite was poor"	10.789	0.767	Not sig.
	"I felt that I could not shake off the blues even with help from my family or friends"	10.417	0.793	Not sig.
	"I felt that I was just as good as other people"	14.829	0.138	Not sig.
	"I had trouble keeping my mind on what I was doing"	19.070	0.211	Not sig.
	"I felt depressed"	14.696	0.474	Not sig.
	"I felt that everything I did was an effort"	8.613	0.897	Not sig.
	"I thought my life had been a failure"	19.225	0.204	Not sig.
	"I felt fearful"	8.036	0.922	Not sig.
	"My sleep was restless"	16.658	0.340	Not sig.
	"I was happy"	6.180	0.289	Not sig.
	"I talked less than usual"	14.069	0.520	Not sig.
	"I felt lonely"	16.719	0.336	Not sig.
	"People were unfriendly"	4.970	0.893	Not sig.
	"I enjoyed life"	7.240	0.703	Not sig.
	"I had crying spells"	21.444	0.123	Not sig.
	"I felt sad"	10.847	0.370	Not sig.
	"I felt that people disliked me"	8.096	0.619	Not sig.
	"I could not get "going"	22.451	0.097	Not sig.

Table: Association in between Gender and Depression -

Socio-demographic variable	Depression	Chi-square value (χ2)	p-Value	Significance
Gender	"I was bothered by things that usually don't bother me"	3.189	0.363	Not sig.
	"I didn't feel like eating; my appetite was poor"	0.454	0.929	Not sig.
	"I felt that I could not shake off the blues even with help from my family or friends"	2.782	0.427	Not sig.
	"I felt that I was just as good as other people"	0.351	0.839	Not sig.
	"I felt depressed"	2.250	0.522	Not sig.
	"I felt that everything I did was an effort"	2.478	0.479	Not sig.
	"I felt hopeful about the future"	5.037	0.169	Not sig.
	"I thought my life had been a failure"	4.174	0.243	Not sig.
	"I felt fearful"	0.604	0.896	Not sig.
	"My sleep was restless"	4.014	0.260	Not sig.
	"I was happy"	0.115	0.734	Not sig.
	"I talked less than usual"	3.356	0.340	Not sig.
	"I felt lonely"	6.054	0.109	Not sig.
	"People were unfriendly"	4.126	0.127	Not sig.
	"I enjoyed life"	0.552	0.759	Not sig.
	"I felt sad"	1.502	0.472	Not sig.
	"I felt that people disliked me"	0.978	0.613	Not sig.
	"I could not get "going"	1.078	0.782	Not sig.

Table: Association in between Types of injury and Depression -

Socio-demographic variable	**Depression**	**Chi-square value ($\chi 2$)**	**p-Value**	**Significance**
Types of injury	"I was bothered by things that usually don't bother me"	5.970	0.113	Not sig.
	"I didn't feel like eating; my appetite was poor"	7.096	0.069	Not sig.
	"I felt that I could not shake off the blues even with help from my family or friends"	5.278	0.153	Not sig.
	"I felt that I was just as good as other people"	0.291	0.865	Not sig.
	"I had trouble keeping my mind on what I was doing"	6.827	0.078	Not sig.
	"I felt depressed"	5.054	0.168	Not sig.
	"I felt that everything I did was an effort"	3.946	0.267	Not sig.
	"I felt hopeful about the future"	1.046	0.788	Not sig.
	"I felt fearful"	5.679	0.128	Not sig.
	"My sleep was restless"	2.008	0.554	Not sig.
	"I was happy"	0.159	0.690	Not sig.
	"People were unfriendly"	1.045	0.593	Not sig.
	"I enjoyed life"	0.367	0.832	Not sig.
	"I had crying spells"	6.442	0.092	Not sig.
	"I felt sad"	1.278	0.528	Not sig.
	"I felt that people disliked me"	1.300	0.522	Not sig.
	"I could not get "going"	0.363	0.948	Not sig.

Table: Association in between Severity of injury according to ASIA and Depression -

Socio-demographic variable	Depression	Chi-square value (χ2)	p-Value	Significance
Severity of injury according to ASIA	"I didn't feel like eating; my appetite was poor"	14.645	0.101	Not sig.
	"I felt that I could not shake off the blues even with help from my family or friends"	8.557	0.479	Not sig.
	"I felt that I was just as good as other people"	7.975	0.240	Not sig.
	"I had trouble keeping my mind on what I was doing"	8.539	0.481	Not sig.
	"I felt that everything I did was an effort"	13.515	0.141	Not sig.
	"I felt hopeful about the future"	14.456	0.107	Not sig.
	"I thought my life had been a failure"	12.655	0.179	Not sig.
	"I felt fearful"	7.734	0.561	Not sig.
	"My sleep was restless"	15.827	0.071	Not sig.
	"I was happy"	1.395	0.707	Not sig.
	"I talked less than usual"	16.456	0.058	Not sig.
	"People were unfriendly"	1.497	0.960	Not sig.
	"I enjoyed life"	7.945	0.242	Not sig.
	"I had crying spells"	4.537	0.873	Not sig.
	"I felt sad"	11.926	0.064	Not sig.
	"I felt that people disliked me"	1.145	0.980	Not sig.
	"I could not get "going"	8.333	0.501	Not sig.

Table: Association in between Cause of injury and Depression -

Socio-demographic variable	Depression	Chi-square value ($\chi 2$)	p-Value	Significance
Cause of injury	"I was bothered by things that usually don't bother me"	5.367	0.147	Not sig.
	"I didn't feel like eating; my appetite was poor"	1.500	0.682	Not sig.
	"I felt that I could not shake off the blues even with help from my family or friends"	2.323	0.508	Not sig.
	"I felt that I was just as good as other people"	2.015	0.365	Not sig.
	"I had trouble keeping my mind on what I was doing"	1.077	0.783	Not sig.
	"I felt depressed"	3.207	0.361	Not sig.
	"I felt that everything I did was an effort"	3.499	0.321	Not sig.
	"I felt hopeful about the future"	4.341	0.227	Not sig.
	"I thought my life had been a failure"	0.738	0.864	Not sig.
	"I felt fearful"	1.085	0.781	Not sig.
	"My sleep was restless"	1.540	0.673	Not sig.
	"I was happy"	0.789	0.374	Not sig.
	"I talked less than usual"	5.176	0.159	Not sig.
	"I felt lonely"	1.397	0.706	Not sig.
	"People were unfriendly"	0.423	0.806	Not sig.
	"I enjoyed life"	0.254	0.881	Not sig.
	"I had crying spells"	0.471	0.925	Not sig.
	"I felt sad"	0.609	0.737	Not sig.
	"I felt that people disliked me"	0.336	0.846	Not sig.
	"I could not get "going"	1.227	0.746	Not sig.

VERBAL CONSENT FORM (English)

(Please read out to the participants)

Assalamualaikum / Namasker,

My name is Joty Paul; I am conducting this study for a B.Sc. in Physiotherapy project study dissertation titled "**Effect of depression on quality of life of patients with spinal cord injury attending at CRP**" under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding depression and quality of life of SCI patient. You have to answer some questions which are mention in the attached form. This will take approximately 20-30 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related with this SCI area, so your participation in the research will have no impact on your present or future treatment in the SCI unit. 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 and also all information will be destroyed after completion of the study. 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, and/or Md. Shofiqul Islam, Assistant Professor, department of physiotherapy, BHPI, CRP, Savar, Dhaka.

Do you have any questions before I start?

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

Yes ☐ No ☐

Signature of the Participant/career with date ______________________________

Signature of the Interviewer with date _____________________________

সম্মতিপত্র বাংলা

আসসালামুয়ালাইকুম / নমস্কার,

আমি জ্যোতি পাল, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই) এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমি “মেরুরজ্জুতে আঘাতের পর দৈনন্দিন জীবনে বিষণ্ণতার প্রভাব” এর উপর গবেষণা করছি। এই গবেষণার উদ্দেশ্য হলো “মেরুরজ্জুতে আঘাতের পর দৈনন্দিন জীবনের সাথে বিষণ্ণতার প্রভাবের সম্পর্ক খুঁজে বের করা” আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তি গত, রোগের বৈশিষ্ঠ্য এবং সংশ্লীষ্ঠ নিয়ামকের উপর আ নুষাঙ্গীক কিছু প্রশ্ন করতে চাচ্ছি। এতে আনুমানিক ১০-১৫ মিনিট সময় লাগবে।আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্য কোন উদ্দেশ্যে ব্যবহৃত হবেনা। এই গবেষনায় আপনার অংশগ্রহণ বর্তমান ও ভবিষ্যৎ চিকিৎসায় কোন প্রকার প্রভাব ফেলবেনা। আপনি যেসব তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে।এই অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছা প্রণোদীত এবং আপনি যেকোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার ও আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং আমার সুপারভাইজার, মোঃ সফিকুল ইসলাম, সহকারী অধ্যাপক , ফিজিওথেরাপী বিভাগ, বিএইচপিআই, সিআরপি,সাভার, ঢাকা-তে যোগাযোগ করতে পারেন।

আমি কি আপনার অনুমতি নিয়ে সাক্ষাৎকার শুরু করতে পারি?

হ্যাঁ ☐ না ☐

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ.............................

উপাত্ত সংগ্রহকারীর স্বাক্ষর ও তারিখ...........

গবেষকের স্বাক্ষর ও তারিখ..........................

Questionnaire

(English)

Part-I : Socio-demographic Questionnaire

Patient's name :

Age:

Sex :

Diagnosis :

Type of injury : Paraplegia
Tetraplegia

Severity of injury : Complete A
Incomplete B
Incomplete C
Incomplete D

Cause of injury : Traumatic
Non-traumatic

Part-II : CES-D Scale

Center for Epidemiologic Studies Depression Scale (CES-D)

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way **during the past week.**

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I did not feel like eating; my appetite was poor.	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4. I felt that I was just as good as other people.	3	2	1	0
5. I had trouble keeping my mind on what I was doing.	0	1	2	3
6. I felt depressed.	0	1	2	3
7. I felt that everything I did was an effort.	0	1	2	3
8. I felt hopeful about the future.	3	2	1	0
9. I thought my life had been a failure.	0	1	2	3
10. I felt fearful.	0	1	2	3

11. My sleep was restless.	0	1	2	3
12. I was happy.	3	2	1	0
13. I talked less than usual.	0	1	2	3
14. I felt lonely.	0	1	2	3
15. People were unfriendly	0	1	2	3
16. I enjoyed life.	3	2	1	0
17. I had crying spells.	0	1	2	3
18. I felt sad.	0	1	2	3
19. I felt that people disliked me.	0	1	2	3
20. I could not get "going".	0	1	2	3

Possible range of scores is 0 to 60, with the higher scores indicating the presence of more symptomatology.

<u>PART-III</u> : WHOQOL-BREF QUESTIONNAIRE

The questionnaire asks how you feel about your quality of life, health and other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

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

Please read each question, assess your feelings and tick (√) the number.

		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 two 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 two 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

The following questions ask you to say **how good or satisfied** you have felt about various aspects of your life over the last two weeks.

		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 relationship?	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 questions refers to **how often** you have felt or experienced certain things in the last two 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

THANK YOU FOR YOUR HELP

Questionnaire

(বাংলা)

CES-D Scale

নিম্নলিখিত তালিকাটি আপনার আচরন এবং অনুভূতি সম্বন্ধনীয় । **বিগত সপ্তাহে** আপনি প্রায়শই কিরকম অনুভব করতেন অনুগ্রহপূর্বক তা আমাকে জানান ।

আমরা আপনাকে বিগত সপ্তাহের অনুভূতির কথা স্মরন করতে বলব । নিচের সবগুলো উক্তি পড়ে আপনার অনুভূতি যাচাই করুন এবং পাশের ছকে যে উত্তরটি সবচেয়ে সঠিক বলে মনে হবে সে নম্বরটিতে টিকচিহ্ন দিন ।

		কদাচিৎ অথবা কখনও না	কিছুসময় অথবা অল্পসময়	মাঝেমধ্যে অথবা অনেকটা সময়	বেশীরভাগ সময় অথবা সবসময়
১.	সচরাচর যেসব বিষয়গুলো আমাকে বিরক্ত করে না, আমি সেগুলোতে বিরক্ত হতাম ।	০	১	২	৩
২.	আমার খেতে ইচ্ছা করত না; আমার খাবারে অরুচি ছিল ।	০	১	২	৩
৩.	পরিবার আর বন্ধুদের সাহায্য সত্ত্বেও আমার বিষন্নতা যাচ্ছিল না ।	০	১	২	৩

৪.	আমি অন্যান্য মানুষের মতই সুস্থ অনুভব করতাম ।	৩	২	১	০
৫.	আমি যে কাজগুলো করতাম সেগুলোতে মনোযোগ ধরে রাখতে সমস্যা হত ।	০	১	২	৩
৬.	আমি হতাশা অনুভব করতাম।	০	১	২	৩
৭.	আমি যা কিছু করতাম সবকিছুই খাটুনি মনে হত।	০	১	২	৩
৮.	আমি ভবিষ্যত নিয়ে আশা অনুভব করতাম ।	৩	২	১	০
৯.	আমি ভেবেছিলাম আমার জীবনটা বিফলে যাচ্ছে ।	০	১	২	৩
১০.	আমি ভয় অনুভব করতাম ।	০	১	২	৩
১১.	আমার ঠিকমত ঘুম হত না ।	০	১	২	৩
১২.	আমি খুশি ছিলাম ।	৩	২	১	০
১৩.	আমি সচরাচর এর চেয়ে কম কথা বলতাম ।	০	১	২	৩

১৪.	আমি একাকীত্ব অনুভব করতাম ।	০	১	২	৩
১৫.	মানুষজন বন্ধুসুলভ ছিল না ।	০	১	২	৩
১৬.	আমি জীবন উপভোগ করতাম।	৩	২	১	০
১৭.	আমার বুক ফেটে কান্না আসত।	০	১	২	৩
১৮.	আমি দুঃখ অনুভব করতাম ।	০	১	২	৩
১৯.	আমি অনুভব করতাম মানুষজন আমাকে অপছন্দ করে ।	০	১	২	৩
২০.	আমার জীবন চলছিল না ।	০	১	২	৩

আপনাকে ধন্যবাদ!

Questionnaire

(বাংলা)

WHOQOL-BREF

এ অংশের মূল্যায়ন, আপনি আপনার জীবন, স্ব্যাস্থ্য 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। এটি প্রায়ই প্রথম উত্তর হতে পারে।

আপনার মান, আশা, আনন্দ ও বিবেচ্য সমূহ স্মরন রাখুন। আমরা আপনার জীবনের গত দুই সপ্তাহের কথা স্মরন করতে বলব।

সবগুলো প্রশ্ন পড়ুন, আপনার অনুভূতি যাচাই করুন এবং পাশের ছকে যে উত্তরটি সবচেয়ে সঠিক মনে হবে সে নম্বরটিতে টিকচিহ্ন দিন ।

		খুব খারাপ	খারাপ	ভালও নয় খারাপও নয়	ভাল	খুব ভাল
১.	আপনার জীবনযাত্রার মান কেমন?	১	২	৩	৪	৫

		খুব সন্তুষ্ট	অসন্তুষ্ট	সন্তুষ্ট নয় অসন্তুষ্ট নয়	সন্তুষ্ট	খুব সন্তুষ্ট
২.	আপনার স্বাস্থ্য নিয়ে কি আপনি সন্তুষ্ট?	১	২	৩	৪	৫

নিচের প্রশ্নগুলো গত দু'সপ্তাহে নিম্নবর্ণিত অভিজ্ঞতাগুলো কি পরিমানে হয়েছে সে সম্পর্কে ।

		একদম না	কম	মোটামুটি	বেশী	খুব বেশী
৩.	শারীরিক ব্যাথার কারনে আপনি কি পরিমান প্রয়োজনীয় কাজ থেকে বিরত ছিলেন?	৫	৪	৩	২	১
৪.	আপনার দৈনন্দিন কার্যক্রম ঠিক রাখতে চিকিৎসা কতটুকু প্রয়োজন?	৫	৪	৩	২	১
৫.	আপনি জীবনকে কতটুকু উপভোগ করেন?	১	২	৩	৪	৫
৬.	জীবনকে আপনার কতটুকু অর্থপূর্ণ মনে হয়?	১	২	৩	৪	৫

		একদম না	কম	মোটামুটি	বেশী	খুব বেশী
৭.	আপনি কাজে কতটুকু মনোযোগ করতে পারেন?	১	২	৩	৪	৫
৮.	আপনি দৈনন্দিন জীবনে কতটুকু নিরাপত্তা অনুভব করেন?	১	২	৩	৪	৫
৯.	আপনার ভৌত পরিবেশ কতটুকু স্বাস্থ্যকর?	১	২	৩	৪	৫

নিচের প্রশ্নগুলোতে জানতে চাওয়া হয়েছে গত দু' সপ্তাহে আপনি কতটুকু সর্ম্পূণভাবে কোন কাজ করতে বা অভিজ্ঞতা লাভ করতে পেরেছেন।

		একদম না	কম	মোটামুটি	অধিকাংশ	পরিপূর্ণভাবে
১০.	আপনার কি প্রতিদিন কাজ করার মত শক্তি আছে?	১	২	৩	৪	৫

		একদম না	কম	মোটামুটি	অধিকাংশ	পরিপূর্ণভাবে
১১.	আপনি কি আপনার শরীরের গড়ন নিয়ে সন্তুষ্ট?	১	২	৩	৪	৫
১২.	আপনার কি প্রয়োজন মেটাতে যথেষ্ট টাকা আছে?	১	২	৩	৪	৫
১৩.	আপনি কি দৈনন্দিন জীবন-যাপনের জন্য প্রয়োজনীয় তথ্য পান?	১	২	৩	৪	৫
১৪.	অবসর কাটানোর/বিনোদোনের সুযোগ আপনার কতটুকু আছে?	১	২	৩	৪	৫

		খুব খারাপ	খারাপ	ভালও না মন্দও না	ভাল	খুব ভাল
১৫.	আপনি কতটা ভালভাবে চলাফেরা করতে পারেন?	১	২	৩	৪	৫

নিচের প্রশ্নতে জানতে চাওয়া হয়েছে- গত দু'সপ্তাহে আপনার জীবনের বিভিন্ন দিক নিয়ে আপনি কতটুকু সন্তুষ্ট।

		খুব অসন্তুষ্ট	অসন্তুষ্ট	সন্তুষ্ট নয় অসন্তুষ্ট নয়	সন্তুষ্ট	খুব সন্তুষ্ট
১৬.	আপনার ঘুম নিয়ে আপনি কতখানি সন্তুষ্ট?	১	২	৩	৪	৫
১৭.	দৈনন্দিন কাজ করার ক্ষমতা নিয়ে আপনি কতটুকু সন্তুষ্ট ?	১	২	৩	৪	৫
১৮.	আপনার কাজ করার ক্ষমতা/দক্ষতা নিয়ে আপনি কতটুকু সন্তুষ্ট ?	১	২	৩	৪	৫

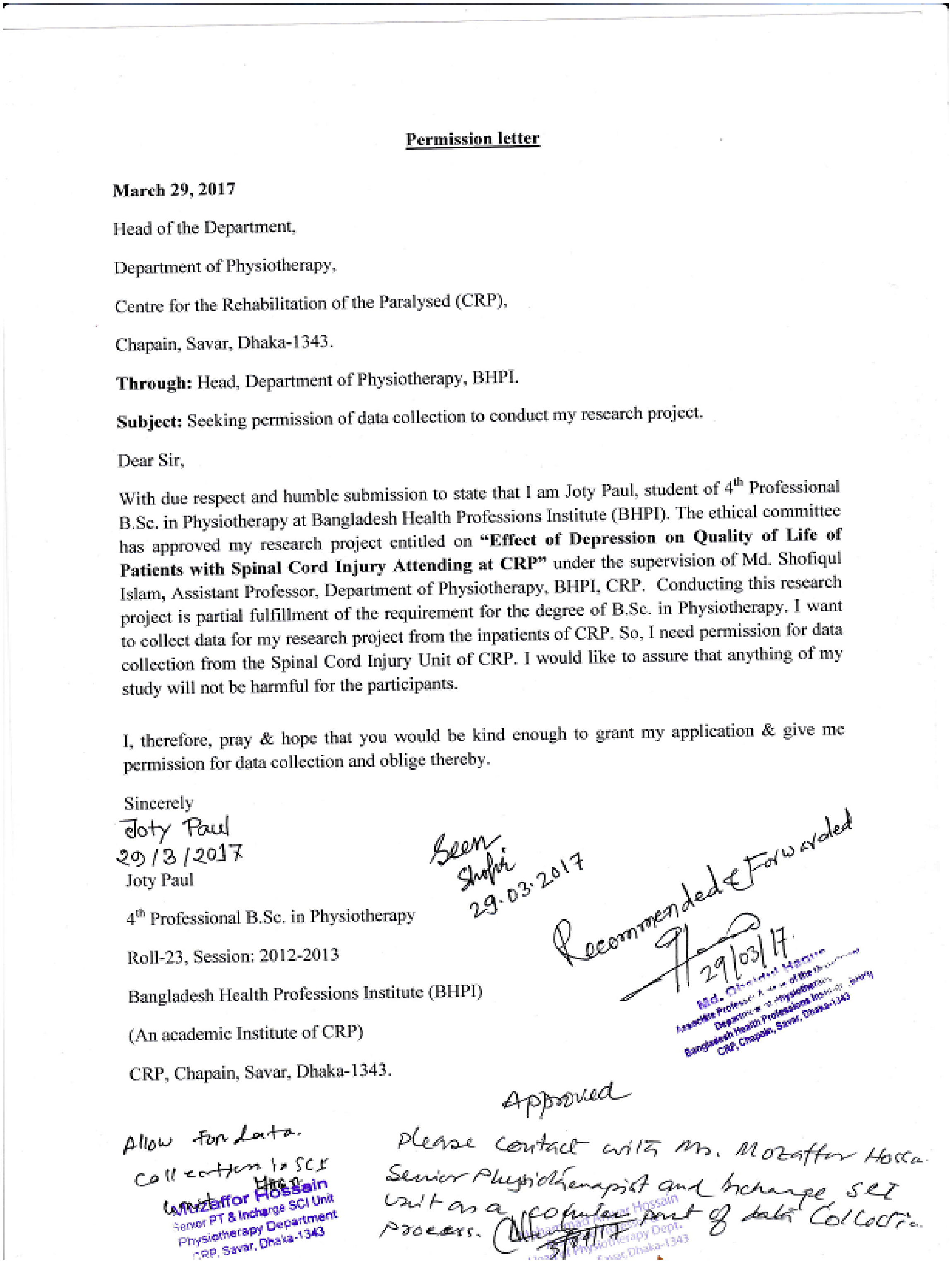
১৯.	নিজেকে নিয়ে আপনি কতটুকু সন্তুষ্ট ?	১	২	৩	৪	৫
২০.	অন্যদের সাথে আপনার ব্যক্তিগত সম্পর্কসমূহ নিয়ে আপনি কতটুকু সন্তুষ্ট ?	১	২	৩	৪	৫
২১.	আপনার যৌন জীবন নিয়ে আপনি কতটুকু সন্তুষ্ট ?	১	২	৩	৪	৫
২২.	বন্ধুদের হতে পাওয়া সাহায্যে আপনি কতটুকু সন্তুষ্ট ?	১	২	৩	৪	৫
২৩.	আপনি আপনার বাসস্থানের অবস্থা নিয়ে কতটুকু সন্তুষ্ট?	১	২	৩	৪	৫
২৪.	আপনি যে স্বাস্থ্যসেবা পান, তাতে কি সন্তুষ্ট?	১	২	৩	৪	৫
২৫.	আপনি যাতায়াত ব্যবস্থা নিয়ে কতটুকু সন্তুষ্ট?	১	২	৩	৪	৫

নিচের প্রশ্নগুলোতে জানতে চাওয়া হয়েছে গত দু' সপ্তাহে ঐ নির্দিষ্ট বিষয়সমূহ কতবেশী/ঘনঘন অনুভব করেছেন।

		কখনো না	কখনো কখনো	মাঝে মাঝে	প্রায়শই	সব সময়
২৬.	আপনার হতাশা, উদ্বেগ, অবসন্নতা এই সব নেতিবাচক অনুভূতি কত ঘন ঘন হয়?	৫	৪	৩	২	১

এই প্রশ্নগুলির উত্তর সম্পূর্ন করার জন্য আপনাকে ধন্যবাদ

Permission Letter



Permission letter

March 29, 2017

Head of the Department,

Department of Physiotherapy,

Centre for the Rehabilitation of the Paralysed (CRP),

Chapain, Savar, Dhaka-1343.

Through: Head, Department of Physiotherapy, BHPI.

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

Dear Sir,

With due respect and humble submission to state that I am Joty Paul, student of 4th Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The ethical committee has approved my research project entitled on **"Effect of Depression on Quality of Life of Patients with Spinal Cord Injury Attending at CRP"** under the supervision of Md. Shofiqul Islam, Assistant Professor, Department of Physiotherapy, BHPI, CRP. Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect data for my research project from the inpatients of CRP. So, I need permission for data collection from the Spinal Cord Injury Unit of CRP. I would like to assure that anything of my study will not be harmful for the participants.

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

Sincerely

Joty Paul
29/3/2017
Joty Paul

4th Professional B.Sc. in Physiotherapy

Roll-23, Session: 2012-2013

Bangladesh Health Professions Institute (BHPI)

(An academic Institute of CRP)

CRP, Chapain, Savar, Dhaka-1343.

Seen
Shofi
29.03.2017

Recommended & Forwarded
29/03/17

Md. O[illegible]
Associate Professor [illegible]
Department of Physiotherapy
Bangladesh Health Professions Institute [illegible]
CRP, Chapain, Savar, Dhaka-1343

Allow for data collection in SCI Unit

Mozaffor Hossain
Senior PT & Incharge SCI Unit
Physiotherapy Department
CRP, Savar, Dhaka-1343

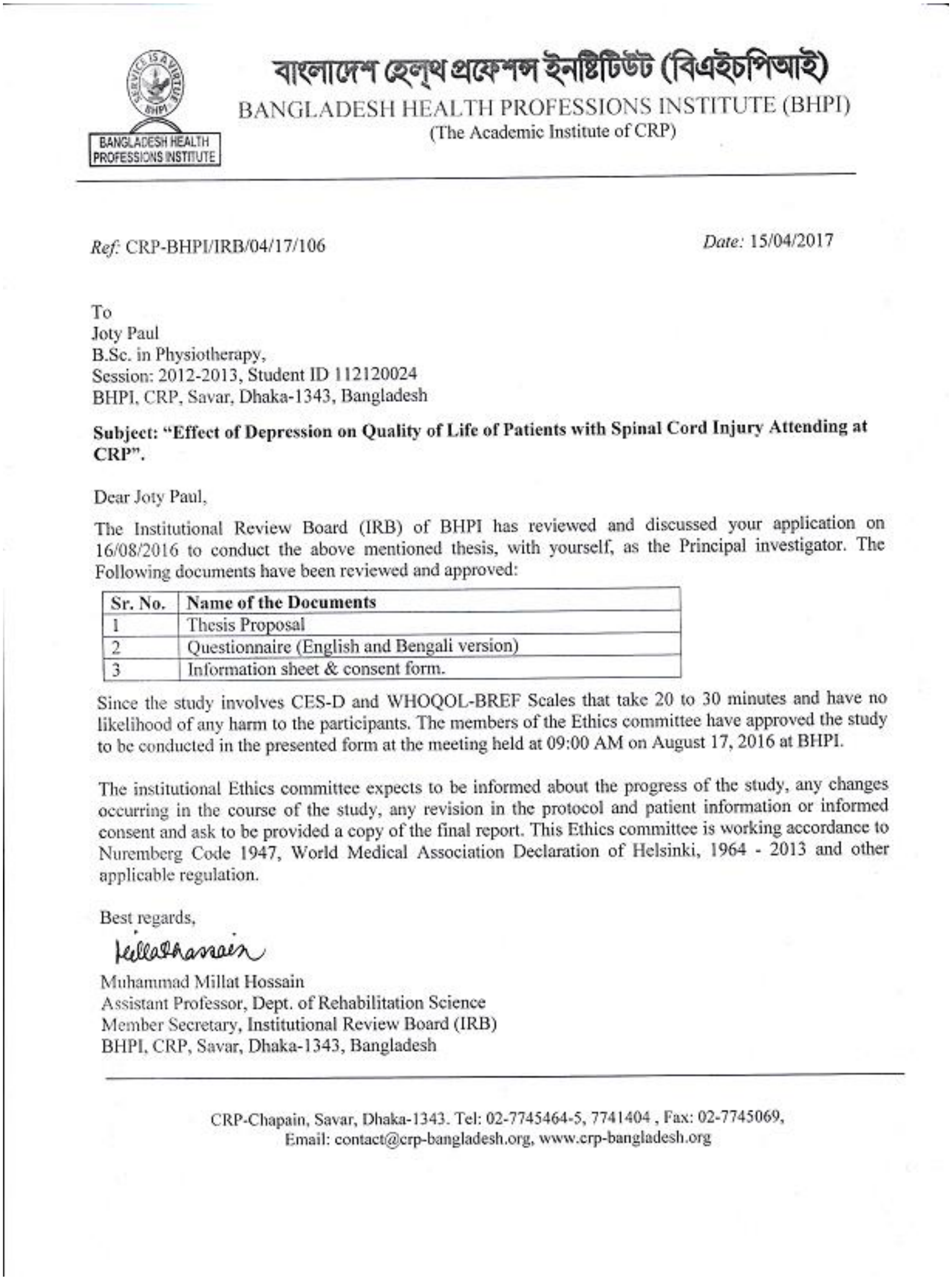
Approved

Please contact with Mr. Mozaffor Hossain Senior Physiotherapist and Incharge SCI Unit as a regular part of data collection process.

[illegible]

Muhammad [illegible] Hossain
Head of Physiotherapy Dept.
[illegible] Savar, Dhaka-1343

IRB Permission Letter



BANGLADESH HEALTH PROFESSIONS INSTITUTE

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)

BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)

(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/04/17/106 *Date:* 15/04/2017

To
Joty Paul
B.Sc. in Physiotherapy,
Session: 2012-2013, Student ID 112120024
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: "Effect of Depression on Quality of Life of Patients with Spinal Cord Injury Attending at CRP".

Dear Joty Paul,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on 16/08/2016 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 CES-D and WHOQOL-BREF Scales that take 20 to 30 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09:00 AM on August 17, 2016 at BHPI.

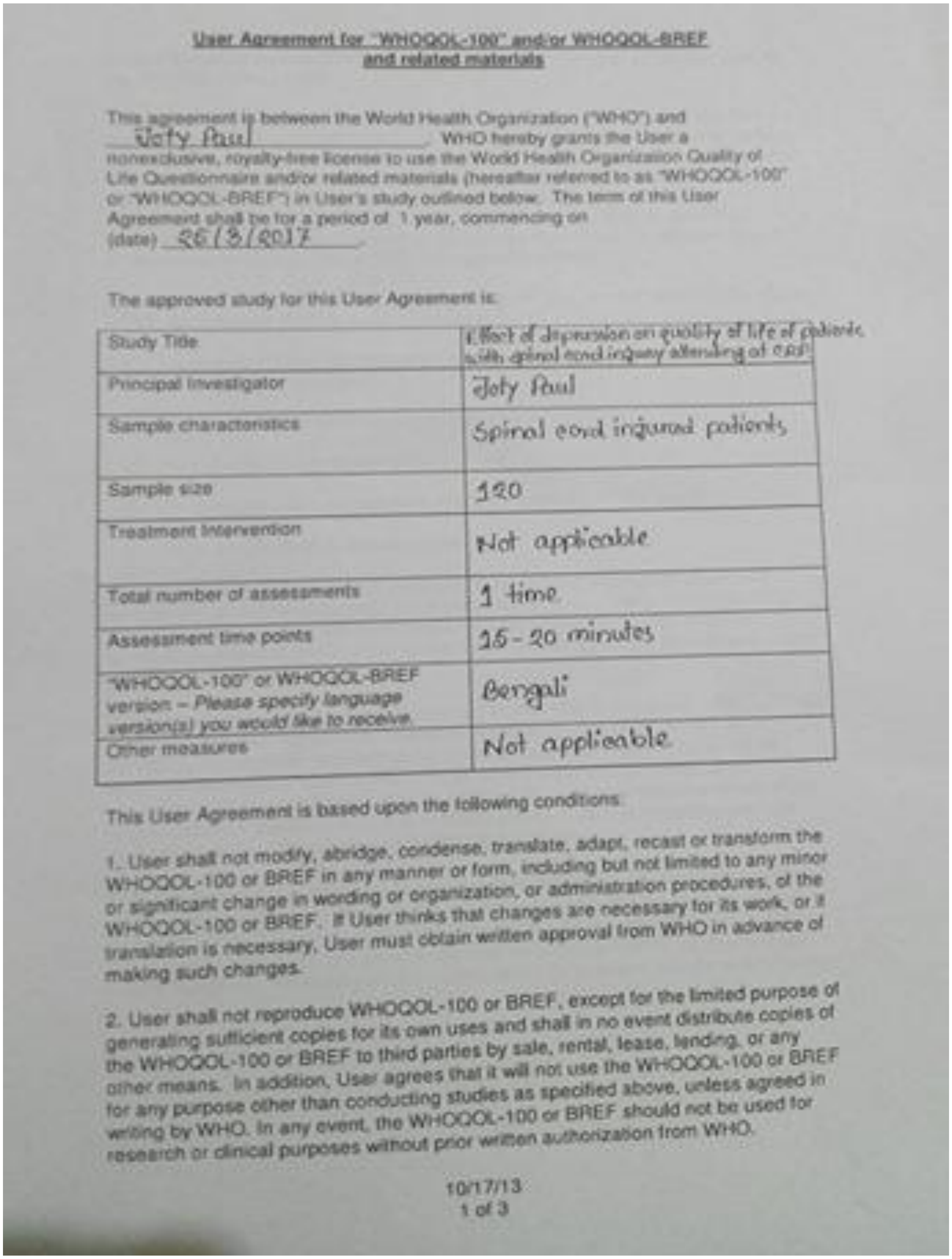
The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance 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

Permission Letter of WHOQOL-BREF Questionnaire



User Agreement for "WHOQOL-100" and/or WHOQOL-BREF and related materials

This agreement is between the World Health Organization ("WHO") and Joty Paul. WHO hereby grants the User a nonexclusive, royalty-free license to use the World Health Organization Quality of Life Questionnaire and/or related materials (hereafter referred to as "WHOQOL-100" or "WHOQOL-BREF") in User's study outlined below. The term of this User Agreement shall be for a period of 1 year, commencing on (date) 26/3/2017.

The approved study for this User Agreement is:

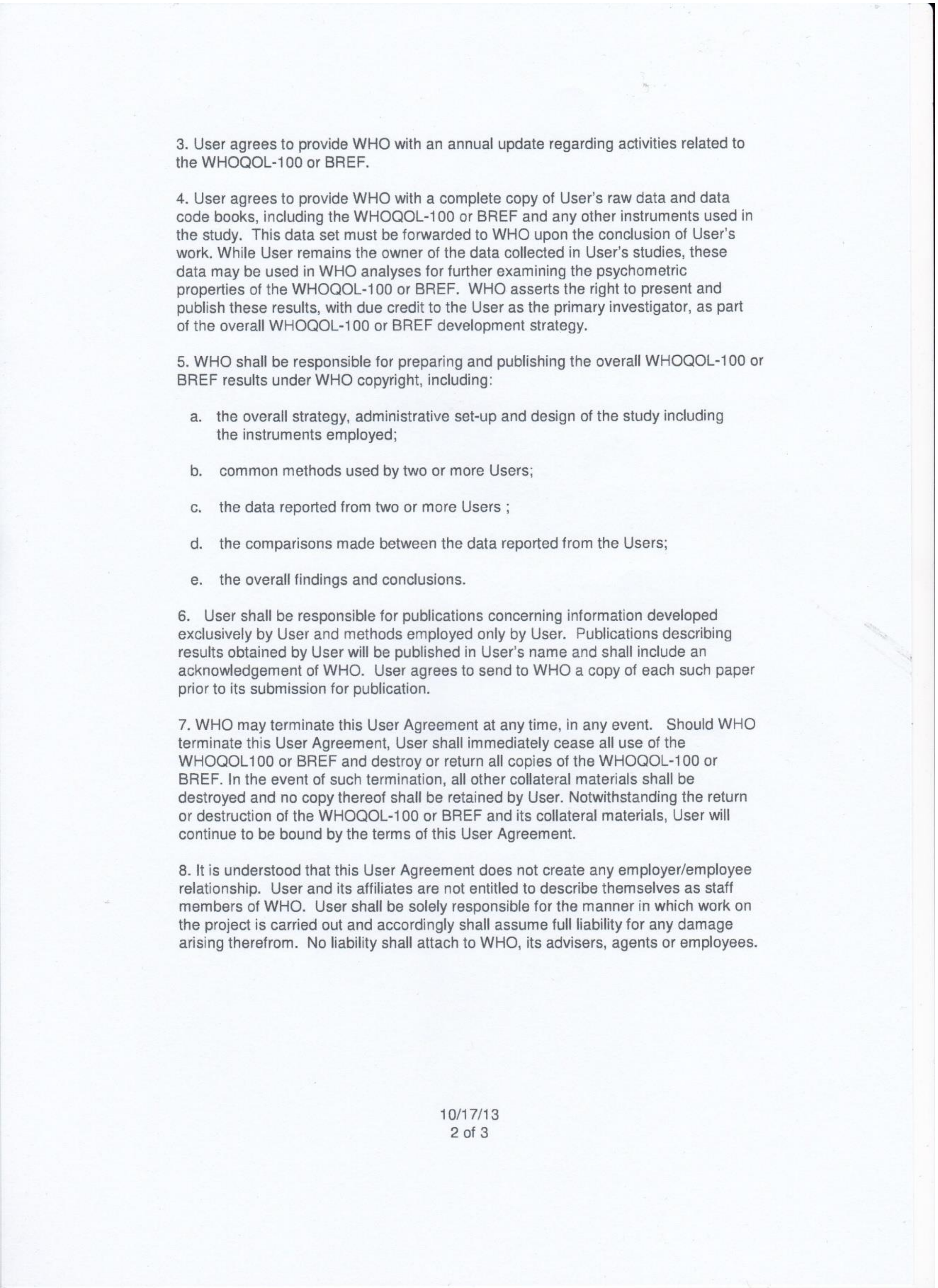
Study Title	Effect of depression on quality of life of patients with spinal cord injury attending at CRP
Principal Investigator	Joty Paul
Sample characteristics	Spinal cord injured patients
Sample size	120
Treatment Intervention	Not applicable
Total number of assessments	1 time
Assessment time points	15 - 20 minutes
"WHOQOL-100" or WHOQOL-BREF version – *Please specify language version(s) you would like to receive.*	Bengali
Other measures	Not applicable

This User Agreement is based upon the following conditions:

1. User shall not modify, abridge, condense, translate, adapt, recast or transform the WHOQOL-100 or BREF in any manner or form, including but not limited to any minor or significant change in wording or organization, or administration procedures, of the WHOQOL-100 or BREF. If User thinks that changes are necessary for its work, or if translation is necessary, User must obtain written approval from WHO in advance of making such changes.

2. User shall not reproduce WHOQOL-100 or BREF, except for the limited purpose of generating sufficient copies for its own uses and shall in no event distribute copies of the WHOQOL-100 or BREF to third parties by sale, rental, lease, lending, or any other means. In addition, User agrees that it will not use the WHOQOL-100 or BREF for any purpose other than conducting studies as specified above, unless agreed in writing by WHO. In any event, the WHOQOL-100 or BREF should not be used for research or clinical purposes without prior written authorization from WHO.

10/17/13
1 of 3



3. User agrees to provide WHO with an annual update regarding activities related to the WHOQOL-100 or BREF.

4. User agrees to provide WHO with a complete copy of User's raw data and data code books, including the WHOQOL-100 or BREF and any other instruments used in the study. This data set must be forwarded to WHO upon the conclusion of User's work. While User remains the owner of the data collected in User's studies, these data may be used in WHO analyses for further examining the psychometric properties of the WHOQOL-100 or BREF. WHO asserts the right to present and publish these results, with due credit to the User as the primary investigator, as part of the overall WHOQOL-100 or BREF development strategy.

5. WHO shall be responsible for preparing and publishing the overall WHOQOL-100 or BREF results under WHO copyright, including:

a. the overall strategy, administrative set-up and design of the study including the instruments employed;

b. common methods used by two or more Users;

c. the data reported from two or more Users ;

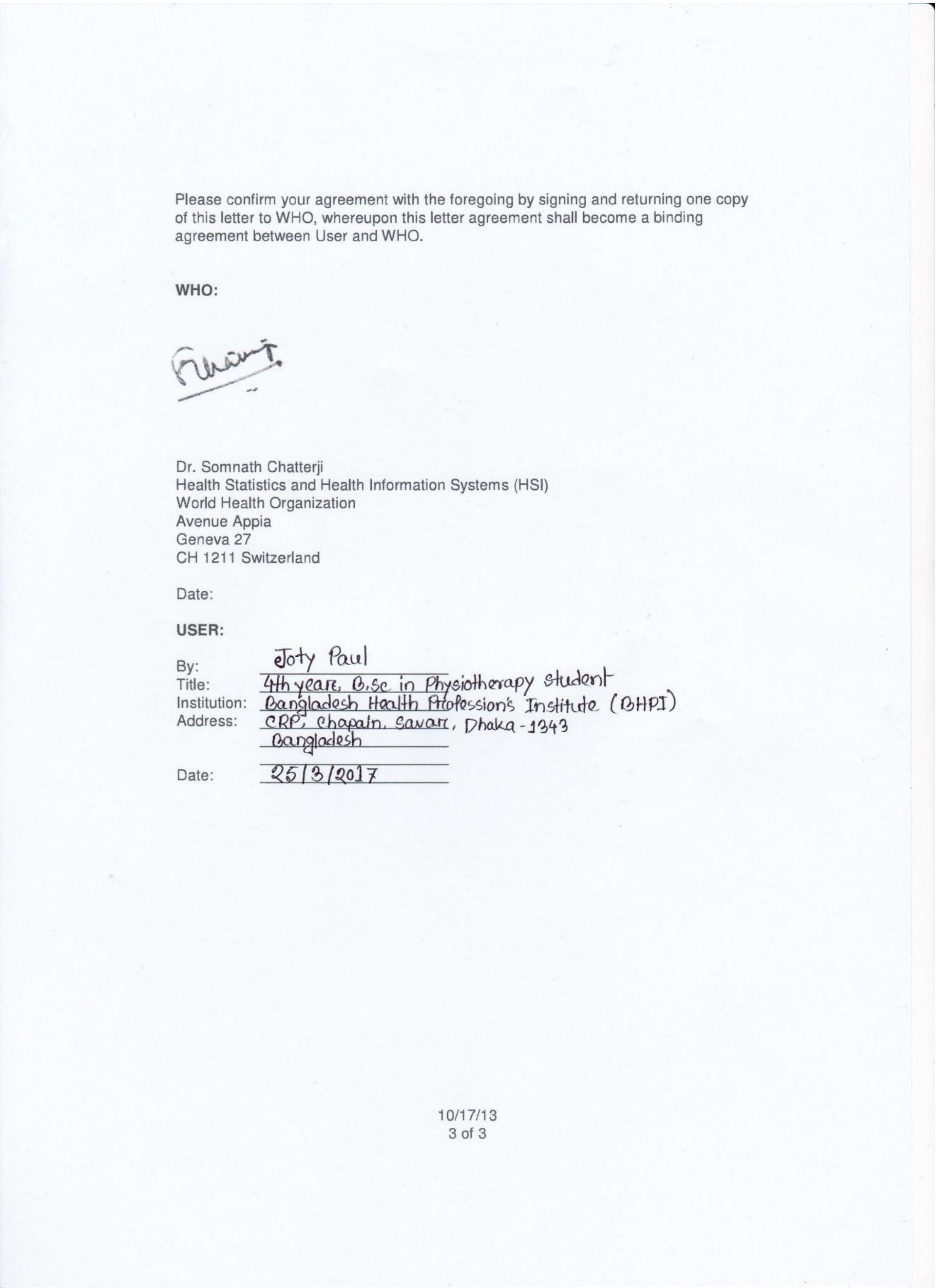
d. the comparisons made between the data reported from the Users;

e. the overall findings and conclusions.

6. User shall be responsible for publications concerning information developed exclusively by User and methods employed only by User. Publications describing results obtained by User will be published in User's name and shall include an acknowledgement of WHO. User agrees to send to WHO a copy of each such paper prior to its submission for publication.

7. WHO may terminate this User Agreement at any time, in any event. Should WHO terminate this User Agreement, User shall immediately cease all use of the WHOQOL100 or BREF and destroy or return all copies of the WHOQOL-100 or BREF. In the event of such termination, all other collateral materials shall be destroyed and no copy thereof shall be retained by User. Notwithstanding the return or destruction of the WHOQOL-100 or BREF and its collateral materials, User will continue to be bound by the terms of this User Agreement.

8. It is understood that this User Agreement does not create any employer/employee relationship. User and its affiliates are not entitled to describe themselves as staff members of WHO. User shall be solely responsible for the manner in which work on the project is carried out and accordingly shall assume full liability for any damage arising therefrom. No liability shall attach to WHO, its advisers, agents or employees.



Please confirm your agreement with the foregoing by signing and returning one copy of this letter to WHO, whereupon this letter agreement shall become a binding agreement between User and WHO.

WHO:

Dr. Somnath Chatterji
Health Statistics and Health Information Systems (HSI)
World Health Organization
Avenue Appia
Geneva 27
CH 1211 Switzerland

Date:

USER:

By: Joty Paul
Title: 4th yeare, B.sc in Physiotherapy student
Institution: Bangladesh Health Profession's Institute (BHPI)
Address: CRP, Chapain, Savar, Dhaka-1343
Bangladesh

Date: 25/3/2017