

**ASSESSMENT OF MENTAL HEALTH STATUS FOR PEOPLE WITH
SPINAL CORD INJURY: A CENTRE BASED STUDY**

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

ASSESSMENT OF MENTAL HEALTH STATUS FOR PEOPLE WITH SPINAL CORD INJURY: A CENTRE BASED STUDY

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DECLARATION

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

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Acronyms

ADL :	Activity of Daily Living
BHPI :	Bangladesh Health Profession's Institute
BMRC :	Bangladesh Medical Research Council
CRP :	Centre for the Rehabilitation of the Paralysed
IRB :	Institutional Review Board
MDD :	Major Depressive Disorder
PHQ-9 :	Patient Health Questionnaire-9
SCI :	Spinal Cord Injury
USA :	United State of America
WHO :	World Health Organization

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Abstract

Purpose: To assess mental health of people with spinal cord injury (SCI) in rehabilitation stage attending at CRP. **Objective:** The objectives of this study were to evaluate the level of depression, to know about socio-demographic information of Spinal Cord injury patients. Objectives also were to know about any association in between mental health and socio-demographic information (Age, gender, types of injury, cause of injury, severity of injury, marital status). **Methodology:** The study design was cross-sectional. Total 105 samples were selected conveniently for this study from Centre for the rehabilitation of the paralyzed (CRP), Spinal cord injury unit, at Savar. Data was collected by using of questionnaire and mental health was assessed by Patient Health Questionnaire (PHQ-9). The study was conducted by using quantitative descriptive analysis through using SPSS software 25.0 version. **Results:** Among 105 respondents, 89.5% % were male, 10.5% were female, 45.7% were aged between 16–30 years and 40% were aged between 31-45 years, 66.7% were married & 33.3% unmarried, 15.2% were illiterate & 46.7% were SSC passed, 61.9% were paraplegic & 34.1% were tetraplegic, 77.1% had complete-A in American Spinal Injury Association scale, and 41.9% had SCI for Fall from height. Among the participants, 21% minimal depression, 34.3% mild depression, 38.1% moderate depression, 5.7% had moderately severe depression and 1% had severe depression. Statistically significant association was found in between mental health & some socio-demographic information such as Age, gender, types of injury, severity of injury, marital status. **Conclusions:** In Bangladesh, large numbers of patients are underdiagnosed & untreated. To our knowledge, there is only a small amount of research specifically addressing depression signs and factors that affect depression in persons with SCI over time. Health planners and social services, need a thorough understanding of the psychological issues that people with SCI face, as well as the differences that develop as a result of cultural, physical, and environmental conditions including the resources available in each community. To adequately visualize the burden, further large-scale research is needed.

Keywords: Patient Health Questionnaire 9(PHQ-9), SCI, Mental health

1.1 Background

Spinal cord injury (SCI) is a severe disabling condition that not only can cause damage or loss of sensation and motor function, but also may cause multiple organ dysfunction (Huang et al., 2020). Among all severe injuries, Spinal cord injury (SCI) is the most complicated injury where patients typically have irreversible and debilitating neurological impairment deficits and the injury has a negative impact on the functional, medical, psychological and economic well-being of the affected person (Geard et al., 2018).

Spinal cord injury is a devastating condition that can impair physical, psychological, and social functioning (Gurcay et al., 2010; New et al., 2013; Smith et al., 2013). All people can encounter spinal cord injury in their lives and spinal cord injured patients face many challenges to cope up with the process of injury and rehabilitation. Some patients recover partially through rehabilitation to participate daily living activities, many activities are permanently altered (Kumar & Gupta, 2016).

SCI is a rare disorder, with an estimated global prevalence of 23.0 cases per million. (Lee et al., 2014). According to Jazayeri et al. (2015) the incidence of traumatic SCI ranged from 3.6 per million in Canada to 195.4 per million in Ireland. In 2007 the incidence of TSCI in Australia has reduced from 20.7 in 1986 to 15.0 cases per million (Lee et al., 2014). In the US, the incidence of SCI is estimated to be 30.0–40.0 cases per million according to registries across the country. Nonetheless, this incidence number includes 8.5 % of cases with unknown origin, which might be due to non-traumatic etiologies such as tumours or infections (Munce et al., 2013; Pirouzmand, 2010; Couris et al., 2010). According to Lim et al. (2017), the United States has the greatest prevalence of SCI at 906 per million. In Brazil, the rate of SCI varies between 17.0 and 71.0 cases per million, with a mean of 17.3 cases per million between 1986 and 2007. Between 1988 and 1994, the incidence of 11.7 incidents per million was estimated by Zimbabwe's national rehabilitation center of trauma patients. The 48.5 instances of TSCIs estimated in South

Africa are based on a single center report of patients with traumatic spine injuries in Johannesburg between 1988 and 1992. (Jazayeri et al., 2015).

SCI incidence rates in Asia range from 12.06 to 61.6 per million, with an average age range of 26.8 to 56.6 years affected persons (Ning et al., 2012). In Pakistan the national assessment of medical records of patients with head and spine trauma hospitalized between 1995 and 1999 yielded a revealed of 5.1 per million (Kumar et al., 2018).

Compared to developed countries, the life expectancy of spinal cord injured persons is much lower in developing country like Bangladesh (Razzak et al., 2011). Throughout Asia as well as in Bangladesh SCI continues to be a major cause of disability (Islam et al., 2011). Overall, 56.4 percent of people admitted with SCI died within 5 years, whereas 43.6 percent lived for 5 years or more. According to a study conducted at CRP in Bangladesh, the most susceptible age groups were 20-40 years old, accounting for 55.6 percent of the population. The frequency of SCI was lower in those under the age of 20 and higher in those over the age of 50. In the 158 people, 86.1% had traumatic injuries and 13.9% had non-traumatic injuries, resulting in 79.75% having paraplegia and just 20.25% having tetraplegia (Razzak et al., 2011). Falling from a great height is the cause of 63 percent of SCI in Bangladesh (Hoque et al., 2012).

A spinal cord injury (SCI) is a serious and long-term disorder that frequently results in paralysis, a variety of secondary consequences, functional limitations, and chronic discomfort (Aaby et al., 2020). This type of damage has been described as one of the most severe injuries a person may suffer, causing deep and irreversible alterations in many parts of life (Phillips et al., 2016).

SCI patients experience decreased satisfaction of life (Post & Van Leeuwen, 2012), poor social participation (Craig et al., 2015), and up to 30% report clinical levels of depression and anxiety at some point following their injury (Guadagni et al., 2019). As a result, psychological discomfort is frequent in people with SCI, and it has been found to last for up to ten years or more after the injury (Fuseini et al., 2019).

Factors such as acceptance of the damage has impact on the presence and severity of negative psychological effects (Peter et al., 2014). More acceptance is linked to a higher

quality of life and lower levels of sadness, anxiety, and post-traumatic stress disorder (PTSD) in experimental investigations (Craig et al., 2017). Chronic fatigue, chronic pain, and mental health dysfunction such as depression are all prevalent secondary disorders that lead to a lower quality of life (De Almeida et al., 2013; Lim et al., 2017).

About 10% of the world's population is affected by mental health disorders and the prevalence is even higher in individuals with disabilities according to WHO (Teesson et al., 2011). SCI is a disorder that frequently results in significant physical disability because damage to the spinal cord causes entire or partial loss of sensation and movement below the lesion level (WHO, 2013). Individuals with SCI are also at a higher risk of developing mental health concerns (Williams & Murray, 2015). Depression and anxiety disorders are common among those who have had a spinal cord injury, with prevalence rates of roughly 22% and 27%. Given these findings, it's essential to promote better understanding of the factors that influence mental health in the SCI community so that appropriate interventions and health policies may be developed (Le & Dorstin, 2016).

Depression is one of the top ten global causes of disability because it limits physical, personal, and social activities. It can affect anyone, at any age, and it is also the most common psychological problem in spinal cord injury (SCI) patients, who experience depressed mood, loss of energy, concentration difficulties, and sleep or appetite disturbances (Arango-Lasprilla et al., 2011; Shin et al., 2012; De Almeida et al., 2013). It 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 experience that ranges from minor 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 used and the time period covered (Shin et al., 2012). Inpatients and community residents both have a high prevalence of probable depression following SCI, ranging from 9.8% to 63.9 percent (Khazaeipour et al., 2015). Up to 40% of adults with SCI living in the community are at risk; this high prevalence rate increase the importance of careful screening of SCI patients and roughly 25% to 30% of people with SCI living in the community experience serious depressive symptoms (Bombardier et al.,

2012). Patient Health Questionnaire-9 (PHQ-9) is reported as a diagnostic measure of depression. It contains good psychometric properties. So it can be considered as a good tool to measure depression following SCI (Arafat et al., 2018).

This study is conducted to assess the mental health status of Spinal cord injury patients attending at specialized rehabilitation centre (CRP).

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. Spinal cord injury is a deprived condition that can lead to physical, mental and social disabilities (Smith et al., 2013). Mental health refers to mood, emotion, discomfort and life satisfaction. People with SCI experience, on average, higher levels of distress and lower levels of life satisfaction compared with the general population.

The prevalence of major depression in studies using diagnostic interviews ranged from 9.8% to 37.5%.³ Similar prevalence rates emerged from depression screening studies of people with SCI rehabilitation (20%– 43%) and community-residing people (11%– 60%) (Craig et al., 2009). Depression is associated with longer rehabilitation lengths of stay and fewer functional improvements, less functional independence and mobility at discharge and poorer role functioning. As Bangladesh is a densely populated developing country of Southeast Asia, a large number of people are suffering from SCI. Depressive symptoms either major or minor is poorly addressed & untreated here. However understanding long term physical & psychological consequences of SCI is essential for better rehabilitation.

After this study physiotherapist will get an idea about the mental health of patient will have after SCI. In CRP a large number of people attend to get physiotherapy treatment due to spinal cord injury but the aim of the treatment does not succeed always due to patient's poor mental health. With this study patients will also be benefited by gaining knowledge about his/her condition and will gain some information about their mental health which is responsible for their quality of life. This study will be an attempt to find out the impact of spinal cord injury over mental health of patients at rehabilitation stage in Bangladeshi perspective.

This idea help to set up treatment plan according to patient needs. We can provide better treatment as well as essential advice to the patients. As a health professional, it will improve our knowledge.

1.3 Research Question

What is the mental health status of spinal cord injury patients in rehabilitation stage attending at CRP?

1.4 Study Objectives

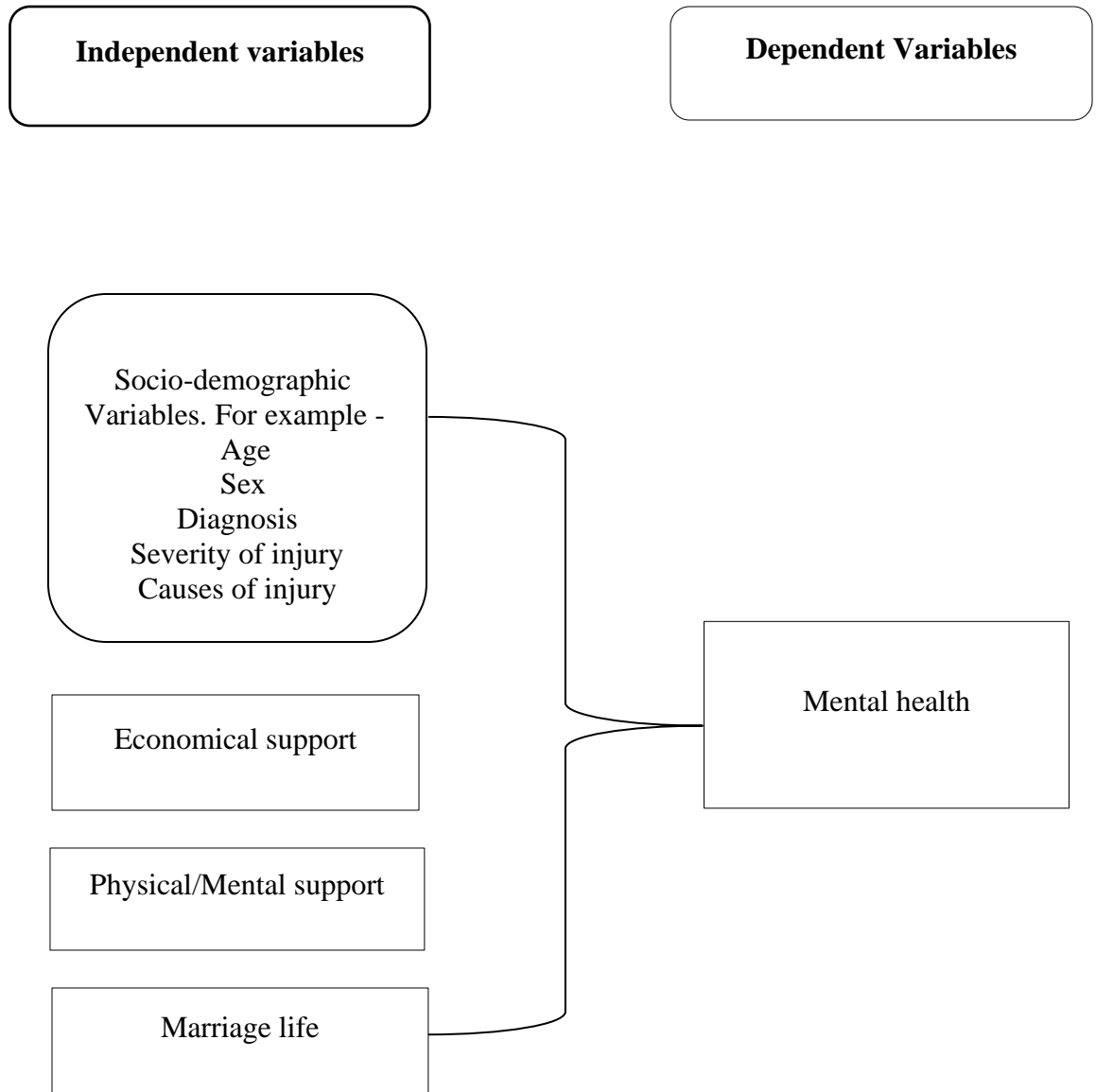
1.4.1 General Objective

To find out the mental health status of Spinal Cord Injury patients in rehabilitation stage attending at CRP.

1.4.2 Specific Objectives

- To find out the socio-demographic characteristics of SCI patients.
- To assess the level of depression of patient with spinal cord injury.
- To know about any association in between mental health and socio-demographic information (age, gender, types of injury, cause of injury, severity of injury, marital status).

1.5 Conceptual Framework



1.6 Operational Definition

Spinal Cord Injury

Spinal cord injury is defined as the occurrence of an acute traumatic lesion of neural elements in the spinal canal resulting in temporary or permanent sensory and/or motor deficit.

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 lumbar 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.

Mental health

Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make healthy choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood.

Damage to the spinal cord that causes temporary or permanent alterations in function is known as a spinal cord injury (SCI). Traumatic and non-traumatic causes of SCI are distinguished (Noonan et al., 2013). A traumatic SCI occurs when the spinal cord is acutely damaged by an external physical impact (such as a car accident, fall, sports-related injury, or violence), whereas a non-traumatic SCI occurs when the primary injury is caused by an acute or chronic disease process (such as a tumor, infection, or degenerative disc disease). Damage to the spinal cord or the nerves at the end of the spinal canal is known as a spinal cord injury. This frequently leads to long-term strength changes.

The primary insult in traumatic SCI destroys cells and sets off a complicated secondary injury cascade that results in the death of neurons and glial cells, as well as ischemia and inflammation. Changes in the organization and structural architecture of the spinal cord, including the formation of a glial scar and cystic cavities, occur as a result of this cascade. Because of the glial scar and cystic cavities, as well as inadequate endogenous remyelination and axonal regrowth, the spinal cord has a low intrinsic recovery capacity, resulting in lifelong neurological impairments following SCI (Ahuja et al., 2017).

Non-traumatic SCI is more common in older age groups, and as life expectancy rises, the incidence of non-traumatic SCI will rise and eventually overtake that of traumatic SCI (New et al., 2013). The etiology of non-traumatic SCI varies by area. The majority of etiologies identified in temperate zones also occur in the tropics; however, infectious and nutritional illnesses are more common in tropical climates (Roman, 2014). HIV infection has been demonstrated to have an impact on the etiology of non-traumatic SCI, with a preference for infectious causes (Modi et al., 2011).

Annually, 40 to 80 new cases of spinal cord injury (SCI) are predicted to occur globally (New et al., 2014). SCI affects 15 to 40 people per million people over the world, with an annual incidence rate of 10.4 to 83 cases per million (Moghimian et al., 2015) According

to the National Spinal Cord Injury Association, up to 450,000 people in the United States are living with a spinal cord injury (SCI). Every year, an estimated 11,000 SCIs occur in the United States (American Association of Neurological Surgeons, 2017), and the incidence in Europe ranges from 10.4 per million per year to 29.7 per million per year (Moghimian et al., 2015). According to Lim et al. (2017), the highest prevalence of SCI is 906 per million in the United States; however, incidence rates of SCI in Asia range from 12.06 to 61.6 per million (Ning et al., 2012), but Moghimian et al. (2015) stated in his other literature that the incidence rate is 27.1 per million per year in Asia after 3 years. Accepting SCI in society can affect anyone, but males, particularly active younger men, are more likely to be victims (Craig, 2015). SCI is currently being prevent at the primary level all over the world. The International Spinal Cord Society (ISCoS) recently began a global mapping effort to create a structure for an ongoing data repository to inform stakeholders about prevention strategy development and coordination. The reported SCI incidence rate in the United States (39 per million) is comparable to that of Canada (35 per million), although it is significantly higher than that of Western Europe (16 per million) and Australia (14 per million) (15 per million). Aside from differences in methodology, population characteristics, and pre-hospital mortality rates, the increase in SCI incidence in North America appears to be connected with a greater percentage of violence-related SCIs (18%) compared to Western Europe (8%) and Australia (2%). SCI prevalence varies geographically within the United States (Cripps et al., 2011).

According to a study, the average life expectancy of patients with SCI in Bangladesh is 5.36 years. Overall, 56.4 percent of people admitted with SCI died within 5 years, whereas 43.6 percent lived for 5 years or more. According to a study conducted at CRP in Bangladesh, the most susceptible age groups were 20-40 years old, accounting for 55.6 percent of the population. The frequency of SCI was lower in those under the age of 20 and higher in those over the age of 50. In the 158 people, 86.1 percent had traumatic injuries and 13.9 percent had non-traumatic injuries, resulting in 79.75 percent having paraplegia and just 20.25 percent having tetraplegia (Razzak et al., 2011).

Although the ratio of SCI varies significantly between industrialized and developing countries, people with SCI are predominantly male. The male-female ratio in affluent countries ranges between 2.5:1-4.3:1, while in poor countries it ranges from 2.34:1-9:1. In India, the male-female ratio of SCI is 4.2:1 with a frequent age group of 20-49. Despite the fact that the gender distribution of the Bangladeshi population is nearly equal, the male-female ratio among people with SCI in Bangladesh is 4.5:1. According to many published papers in Bangladesh, the number of females with SCI is increasing in Bangladesh today (Razzak et al., 2017).

In Bangladesh, 60 percent of traumatic spinal cord injury lesions are paraplegics and 40 percent are tetraplegics, while 84 percent of non-traumatic spinal cord injury cases are paraplegics and 16 percent are tetraplegics. SCI have a variety of non-traumatic and traumatic etiologies, with differing degrees of brain damage as a result. Falling from a height, whether from trees, building sites, electric poles, or roofs, was found to be the most common cause (40.30 percent) while falling while carrying a large burden on the head was shown to be the second most common cause (40.30 percent) in a Bangladeshi study (16.0 percent). Spinal TB was shown to be the most common cause of non-traumatic SCI, accounting for 7.0 percent of patients. Road traffic accidents, falling objects on the back, Guillain-Barre Syndrome, and Transverse Myelitis were among the other reasons (Razzak et al., 2011).

Spinal cord injuries carry a substantial risk of morbidity and mortality. When compared to the general population, the risk of death is highest in the first year after an accident. People who have had a spinal cord injury are 2 to 5 times more likely to die young than those who have not suffered a spinal cord injury. Various epidemiological studies have been conducted in various parts of the world regarding this life-threatening illness. SCI occurs in 9.2 to 56.1 per million people over the world (Mathur et al., 2015). Males are more likely to suffer than females in spinal cord injury around the world, but children are also affected (Nas et al., 2015). Females, on the other hand, are most at risk during adolescence, between the ages of 15 and 19, and later in life, when they are over 60 years old. Male-to-female

ratios of at least 2:1, and occasionally much higher, have been reported in studies among adults (WHO, 2013).

People with SCI face a major health risk as a result of their lack of function and movement. Pressure ulcers, urinary tract infections, chronic pain, obesity, respiratory dysfunction, and cardiovascular diseases are examples of secondary health concerns linked to SCI. Furthermore, these secondary health issues can raise the likelihood of poor mental health, increased disability, and a shorter life expectancy (Williams et al., 2018). As a result, the abrupt and profound changes brought on by SCI pose considerable obstacles to an individual's well-being. The lack of function and movement that people with SCI experience puts their health at danger. Secondary health problems associated with SCI include pressure ulcers, urinary tract infections, chronic discomfort, obesity, respiratory dysfunction, and cardiovascular disease. Furthermore, these secondary health problems can increase the risk of poor mental health, increased disability, and a shorter lifespan (Williams et al., 2018). As a result, SCI's quick and substantial changes offer significant challenges to an individual's well-being. Damage to the spinal cord causes a total or partial loss of sensation and movement below the lesion level, making spinal cord injury (SCI) a common cause of serious physical impairment (WHO, 2013). Individuals with SCI have also been shown to have a higher risk of mental health concerns. Depression and anxiety disorders, in particular, are frequent after SCI, with prevalence rates of around 22% and 27%, respectively (Williams & Murray, 2015). Given these data, it's critical to gain a better understanding of the factors that influence mental health in the SCI community so that tailored interventions and health policies may be developed.

Depression has a variety of effects on people with SCI. It has an impact on one's attitude, ambition, outlook, problem-solving abilities, and energy levels. It is detrimental to one's well-being, health, and quality of life. Depressed people with SCI have a harder time looking after themselves and managing their medical conditions. They may have difficulties drinking enough water, caring for their skin, taking prescriptions, and eating appropriately, for example (Stanley, 2012).

Feeling sad, blue, unhappy, wretched, or down in the dumps is a common symptom of depression; most of us have experienced it at some point in our lives. True clinical depression is a mood illness characterized by feelings of sorrow, loss of interest, decreased energy, disturbed sleep, disturbed appetite, poor concentration, anger, or frustration that lasts for weeks or more (Sharma et al., 2012).

Depression has been classified as a mood state, a set of symptoms that usually occur together, and a recognized psychiatric disease in SCI research (Kalpakjian et al., 2009). Most of us have felt this way for brief periods of time at some point in our lives. True clinical depression is a mood illness characterized by feelings of sadness, loss, anger, or frustration that interfere with daily life for several weeks or more (Zieve & Merrill, 2011).

People who are physically ill should experience anxiety or depression as a result of their illness. These emotional responses are frequently fleeting. Some patients' emotional reactions are severe, and psychiatric diseases may appear to be triggered by physical illness. The most frequent psychiatric condition is major depression. Certain circumstances increase the likelihood of a significant psychological condition arising among the physically unwell. There are three types of psychological effects of physical sickness. First, physical disease or drugs used to treat it might cause psychological problems. Second, psychiatric diseases can develop as a psychological reaction to physical sickness or therapy. Third, physical disease may elicit psychological protection mechanisms and specific types of conduct. Patients who have a history of past psychological disorders, lifelong physical disabilities, or an inability to cope with hardship are especially vulnerable. If a physical sickness has a significant influence on a patient's life, it is more likely to have a psychological consequence. A patient's spinal cord injury, for example (Williams & Murry, 2015).

As potential predictors of mental health (Alegria et al., 2018), socioeconomic conditions and social ties have been identified. Individuals in low socioeconomic status have a higher risk of mental health issues than those in higher socioeconomic status, according to evidence from general population samples. In the SCI community, there are significant

socioeconomic disparities in mental health. Individuals with inadequate social interactions are more likely to develop mental health problems than those with good structural and functional social relationships, according to research from both general and SCI populations (Zürcher et al., 2019).

Spinal cord injuries (SCI) frequently have psychological implications, particularly anxiety and sadness, which can obstruct rehabilitation opportunities, as well as adjustment to their handicap and, as a result, the potential of returning to former social and work activities (Scivoletto et al., 1997). “Depression is a widespread mental condition marked by sorrow, loss of interest in activities, and diminished energy,” according to the World Health Organization. The severity of the disorder, the symptoms, and the length of the disorder distinguish depression from normal mood swings” (WHO, 2013). For a little period of time, most of us have felt this way. True clinical depression is a mood illness characterized by feelings of sadness, loss, anger, or frustration that last for weeks or longer (Khan et al., 2006). Depression has been described as "dwelling in a black hole" or having a sense of approaching doom by some people. Some depressed people, on the other hand, don't feel sad at all; instead, they feel lifeless, empty, and indifferent. Men, in particular, may feel angry, aggressive, and restless (Smith et al., 2013).

Although depression manifests itself differently in each individual, there are certain similar indications and symptoms. It's vital to remember that these symptoms are common throughout life's low points. The more symptoms it has, however, the stronger they are and the longer they have endured (Arango-Lasprilla et al., 2011). Loss of appetite, which is frequently associated with weight gain or loss, difficulty concentrating, and exhaustion Agitation, restlessness, and irritability are common symptoms of depression, as are dramatic changes in energy levels, feelings of hopelessness and helplessness, feelings of worthlessness, self-hate, and guilt, withdrawal or isolation, loss of interest or pleasure in previously enjoyed activities, thoughts of death or suicide, and difficulty sleeping or excessive sleeping (Anneken et al., 2010).

Factors, such as alcohol or drug abuse, certain medical conditions, such as underactive thyroid, cancer, or long-term pain, certain medications, such as steroids, sleeping problems, stressful life events, such as death or illness of a close relative, divorce, childhood abuse or neglect, job loss, and social isolation, may all play a role in depression (Zieve and Merrill, 2011). Anxiety and sadness can have a major impact on one's ability to operate. Severe depression episodes can lead to health issues such as weight loss, social issues such as job loss, and financial difficulties. For people who have lost function (such as SCI patients), depressive episodes might be considerably more harmful (Osterthun et al., 2014). SCI sufferers frequently display anxiety and depression, depending on the level of their loss. Depressive symptoms are more common in women with SCI (Kent and Dorstyn, 2014). Female patients were 3.8 times more likely than male patients to suffer from depression (Oh et al., 2006). There are three main groups of drugs used to treat depression such as tricyclic antidepressants, mono-amine-oxidase inhibitors and lithium salts and other treatments are group psychotherapy, relaxation therapy, behavior change, social skills training, occupational, art, music therapy, Psychodrama and training in sports or various leisure activities (Anadon et al., 2016).

Stanford et al. (2007) found that at least 1 in 5 participants had a high risk of acquiring a psychological illness, and more than 1 in 10 had a risk of developing co-occurring psychological disorders six months following discharge. Major depressive disorders and drug use disorders were the most prevalent psychological illnesses discovered. Given the high rates of suicide in this group, it was alarming that a substantial number of people with depression were also classified as being at risk of self-harm.

According to Fann et al. (2011), mild depression was shown to be prevalent in a varied sample of people with SCI. The rate of depression was comparable to earlier reports of probable major depression in non-selected community samples of people with SCI, and it was more than three times higher than the 1-year prevalence of MDD in the general population (6.7 %). Even among individuals who were not depressed at the time, 24% said they had been diagnosed with depression or had had therapy for it. Our finding that 15% of individuals indicated current suicidal thoughts, compared to just 9% of primary medical

care patients, is another evidence of the seriousness of depression in this cohort. In comparison to individuals who were not depressed, a higher percentage of depressive patients said they had a history of generalized anxiety disorder, panic disorder, or posttraumatic stress disorder. The presence of comorbid anxiety and sadness is predicted to be high.

Depression is one of the most-well researched psychological issues linked to SCI. Despite this, we still have a lot to learn about SCI-related melancholy and how to deal with it. Major depression was found to be present in 9.8% to 37.5 percent of people in studies that used diagnostic interviews. Depression screening studies of persons undergoing SCI rehabilitation (20%–43%) and community-dwelling adults (11%)–60%) revealed similar prevalence rates. In the United States, MDD was found to be present in 6.7 percent of the population after one year (Mondin et al., 2013). Depression was linked to longer rehab stays, less functional gains, and worse functional independence and mobility upon release. Furthermore, depression was linked to a higher risk of pressure ulcers, a worse self-appraised health, more days in bed, more usage of professional personal care, and poorer role performance. After a spinal cord injury, the presence of probable severe depression predicted all-cause death (Hagen et al., 2012).

Arafat et al. (2018) informed in their study that 64% of the patients had moderate and above severity depression and patients of complete A was found to have more depression than other classes whereas Shin et al. (2012) found that depression was greater in Complete A and B were 8.02%. The study revealed severity of depression was found to be greater in tetraplegia than paraplegia as Khazaeipour et al. (2015) found that high prevalence of depression in patients with tetraplegia 62.2%. Among the respondents 30% had moderately severe depression, 28% had moderate depression, whereas Wiseman et al. (2015) found to have mild-moderate depression in 21%, severe-extremely severe depression 16%.

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 mental health status 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 Paralyzed (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 105 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:

$$\begin{aligned}n &= \frac{z^2 pq}{d^2} \\ &= \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} \\ &= 384\end{aligned}$$

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 105 sample were selected conveniently.

3.6 Data Collection Tool

“Patient Health Questionnaire (PHQ-9)” was selected to collect data. Mental health measurement tool is an established tool at SCI-related research; assessing mental health by using the PHQ-9, which consist of 10-items. The PHQ-9 questionnaire was developed in the context of overall level of depression and overall rate of mental health status. 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 collected data from the participants by following the instructions given on the "PHQ-9". This data collection tools were permitted from the authors to use this study. Participants who had the reading ability they administered 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 to find out mental health, the level of depression. The data was collected and analyzed by using statistical package for social sciences (SPSS) 25.0 version. Researcher analyzed the data by descriptive statistics using Frequency, Percentage (%), Pie diagram, Bar diagram, 95% CI test and IQR test was done and also shown the association by non-parametric test which was Chi-Square test.

95% Confidence Interval

A 95% confidence interval (CI) of the mean is a range with an upper and lower number calculated from sample. Because the true population mean is unknown, this range describes possible values that the mean could be. If multiple samples were drawn from the same population and a 95% CI calculated for each sample, we would expect the population mean to be found within 95% of these CIs. CIs are sensitive to variability in the population (spread of values) and sample size. When used to compare the means of two or more treatment groups, a CI shows the magnitude of a difference between groups. This is helpful in understanding both the statistical significance and the clinical significance of a treatment. In this article we describe the basic principles of CIs and their interpretation.

Interquartile range

The interquartile range is a measure of where the “middle fifty” is in a data set. Where a range is a measure of where the beginning and end are in a set, an interquartile range is a measure of where the bulk of the values lie.

The interquartile range formula is the first quartile subtracted from the third quartile:

$$\text{IQR} = Q3 - Q1$$

Chi square (χ^2) Test

Chi square (χ^2) Test is the most popular discrete data hypothesis testing method. It is a non-parametric test of statistical significance for bivariate tabular analysis with a contingency table. In this study Chi square (χ^2) 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-

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

Here,

χ^2 = Chi square value

Σ = 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 χ^2 is $p < 0.05$ conclude that there is significant association between the two variables.

3.9 Inclusion Criteria

- Patients who were in rehabilitation stage.
- Patients who were receiving treatment at CRP.
- Information was taken only form the clients.
- Both male and female patients with SCI.
- Patients 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, TM 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 the study. The proposal of the dissertation including methodology was presented to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) for oral presentation defense was done in front of the IRB. Then the necessary information was approved by Institutional Review Board and was permitted to do this research. After getting the permission of doing this study from the academic institute the researcher had been started to do it. The researcher had been taken permission for data collection from the 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 25 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

Informed consent relates to a state of affairs in which all potential participants receive and understand all the information they need to decide whether they want to participate. This includes information about the study's benefits, risks, funding, and institutional approval.

In this study a written consent was given to all participants before the completion of the questionnaire. The investigator explains to the participants about their role in this study. He also explained what type of questions they would be asked and also informed that they are free to ignore questions as their wish. He also assured that he didn't foresee any risks or discomfort from their participation.

Written consent (appendix) was given to all participants prior to completion of the questionnaire. The researcher explained to the participants about his or her role in this study and aim & objectives of this study. The researcher read the informed consent to the participants. Those who were literate was encouraged to sign the form. The researcher received a written consent from every participants including signature. Those who were illiterate, verbally consent was taken from them. Patients who were not that much cooperative, the career were explained the entire process. So that they can understand about the consent from and their participation was on voluntary basic. The aims and objectives of this study must be informed to the subjects verbally. So, gave the consent from to the subject and explained them.

The subjects had the rights to withdraw themselves from the research at any time. It supposed to assured the participants that their name or address would not be used. The information of the subjects might be published in any normal presentation or seminar or writing but they would not be identified. The participants informed by the researcher that the result would not be harmful for them. Ensuring the confidentiality of participant's information, no information has been shared without the research supervisor. At any time the researcher available to answer any additional questions in regard to the 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.

A Cross-sectional study was conducted to achieve the research objectives. About 105 samples were selected for this study. The main objective was to find out the assessment of mental health of people with SCI in rehabilitation stage attending at CRP.

4.1 Gender of the participants

Among 105 participants, most of them were male 89.5% (n=94) and Female were 10.5% (n=11)

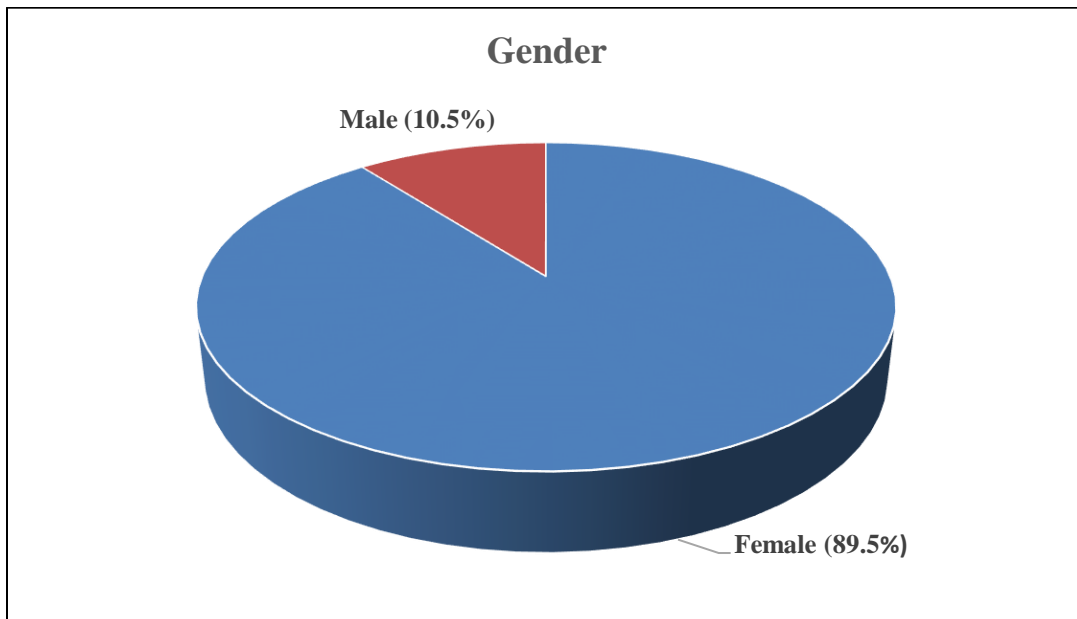


Figure 1: Gender of the participants

4.2 Age group of the participants

In this research, the mean of the age was 34, median was 32 and mode was 16. There were several age groups among 105 participants. The participants with 16-30 years were 45.7% (n=48), 31-45 years were 40% (n=42), 46-60 years were 10.5% (n=11), 61-75 years were 2.9% (n=3), 76+ years were 1.0% (n=1).

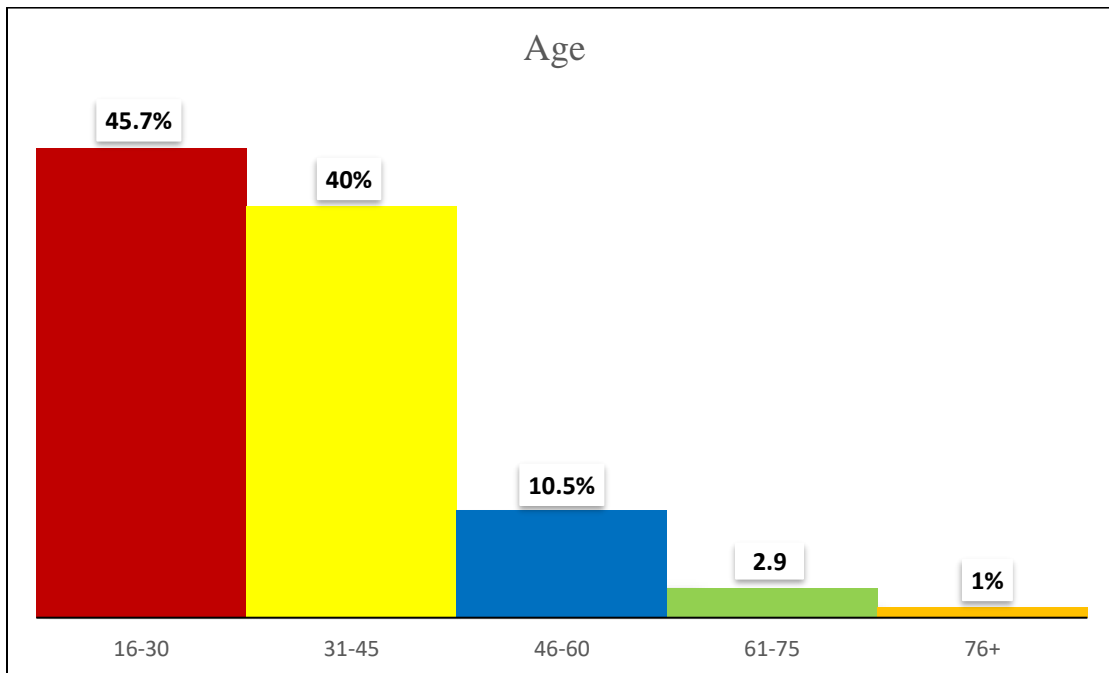


Figure 2: Age group of the participants

4.3 Types of injury of the participants

Out of 105 participants, there were little difference between the number of paraplegia and Tetraplegia; paraplegia were 61.9% (n=65) and tetraplegia were 38.1% (n=40).

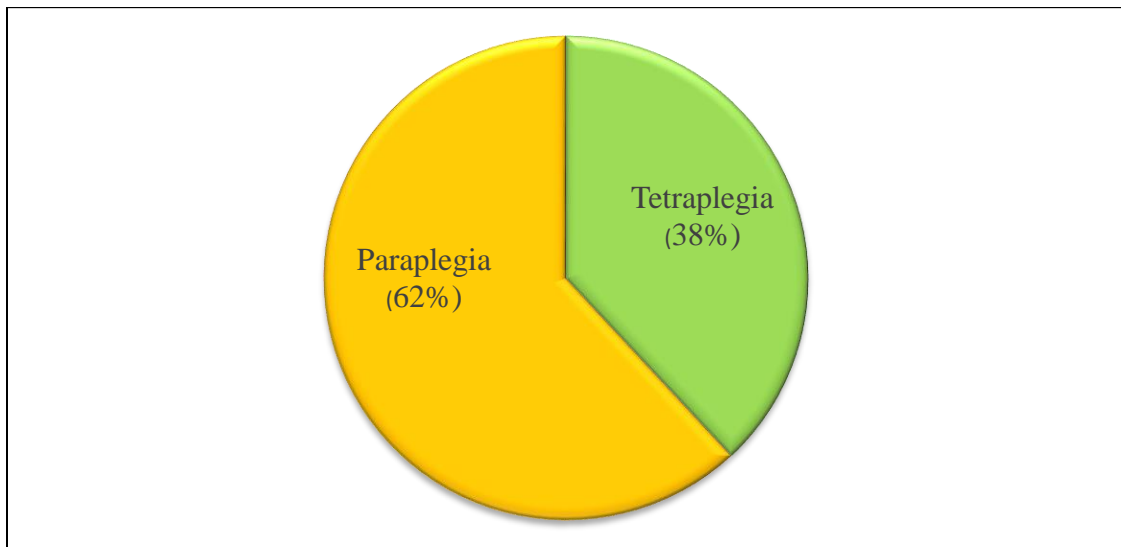


Figure 3: Types of injury of the participants

4.4 Marital status of the participants

Among 105 participants, most of them were married 66.7% (n=70) and unmarried were 33.3% (n=35).

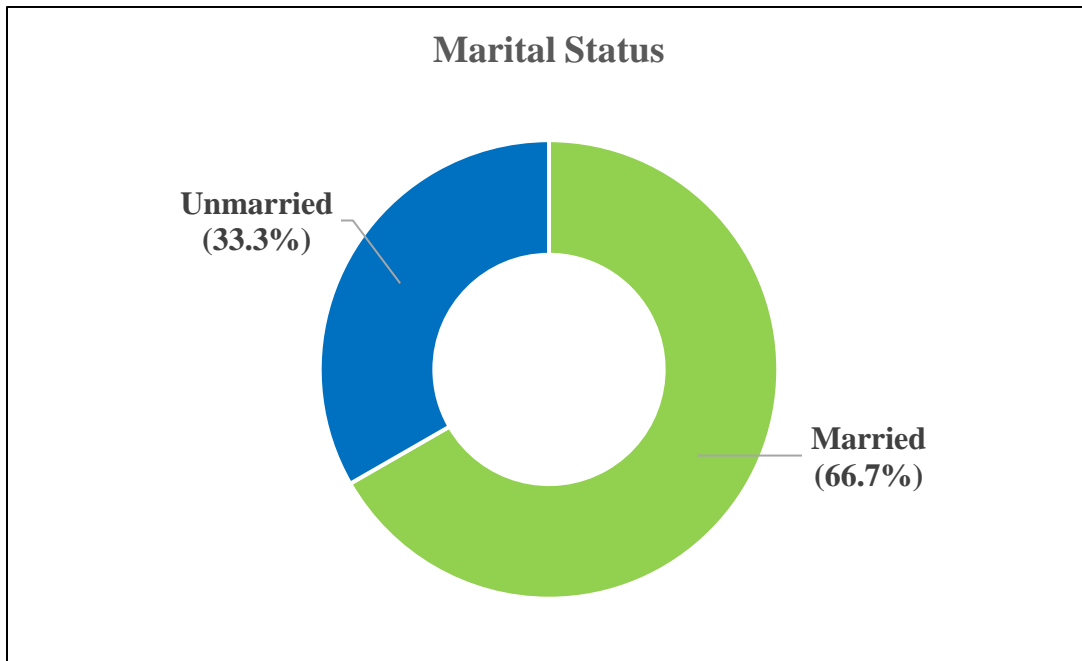


Figure 4: Marital status of participants

4. 5 Education level

Out of 105 participants, Illiterate were 15.2% (n=16), Class 1 to SSC were 46.7% (n=49), HSC were 20% (n=21), Graduate were 17.1% (n=18), Post graduate 1% (n=1).

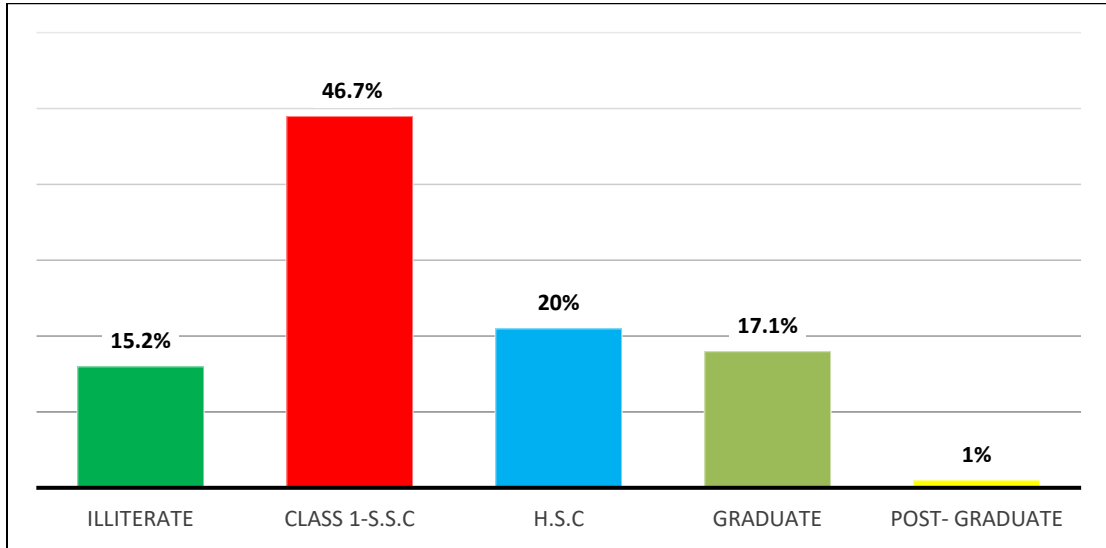


Figure 5: Education level of the participants

4.6 Occupation of the participants

There were participants of different occupation. Student were 18.1% (n=19), farmer were 17.1% (n=18), worker were 8.6% (n=9), driver were 9.5% (n=10), Businessman were 18.1% (n=19), day labourer were 6.7% (n=7), teacher were 7.6% (n=8), housewife were 7.6% (n=8), unemployed were 1.9% (n=2), others were 4.8% (n=5).

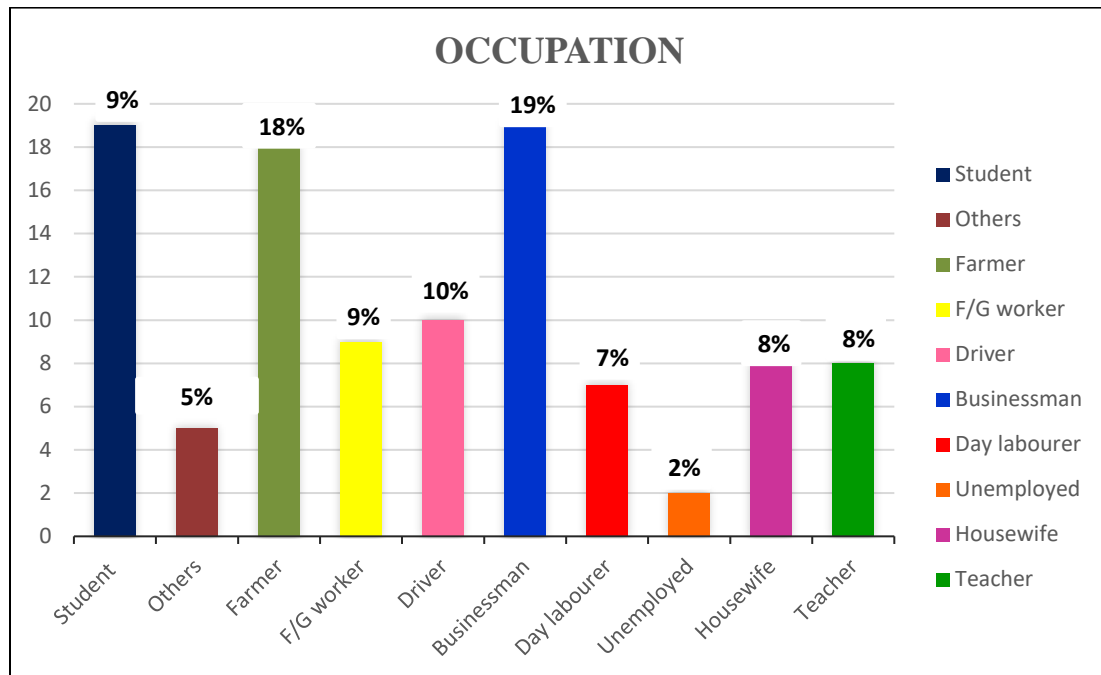


Figure 6: Occupation of the participants

4.7 Residential area of the participants

Among the 105 participants, participants live on rural area 25.7% (n=27), participants live on urban area 74.3% (n=78).

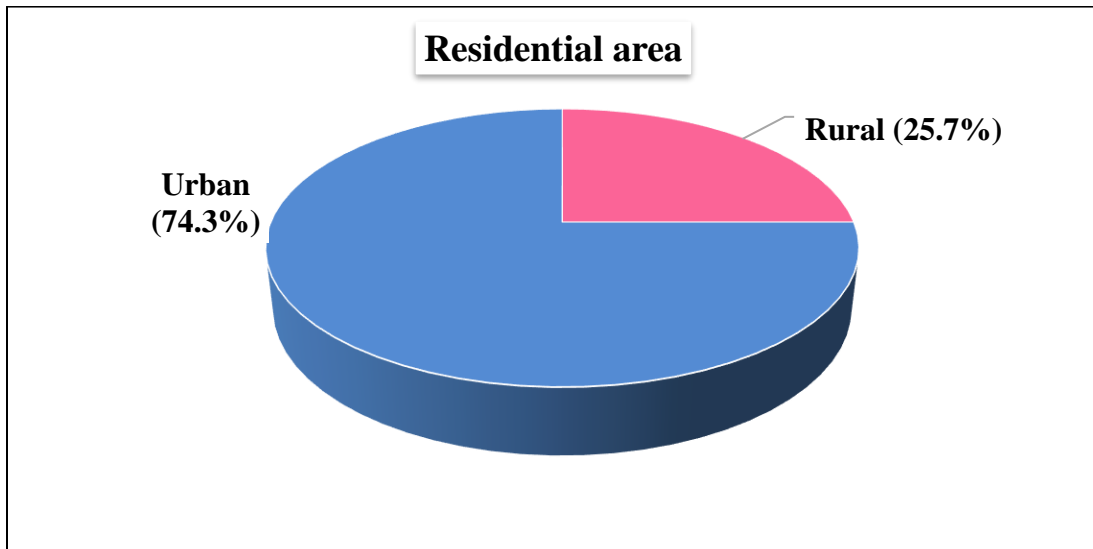


Figure 7: Residential area of the participants

4.8 Causes of injury

Among the 105 participants, maximum participants had faced spinal cord injury due to fall from height. The percentage of spinal cord injury due to fall from height were 41.9% (n=44), RTA were 38.1% (n=40), Fall during carrying heavy weight 7.6% (n=8), Heavy weight fall on back 1.9% (n=2), Sports injury were 1.9% (n=2), others were 6.7% (n=7).

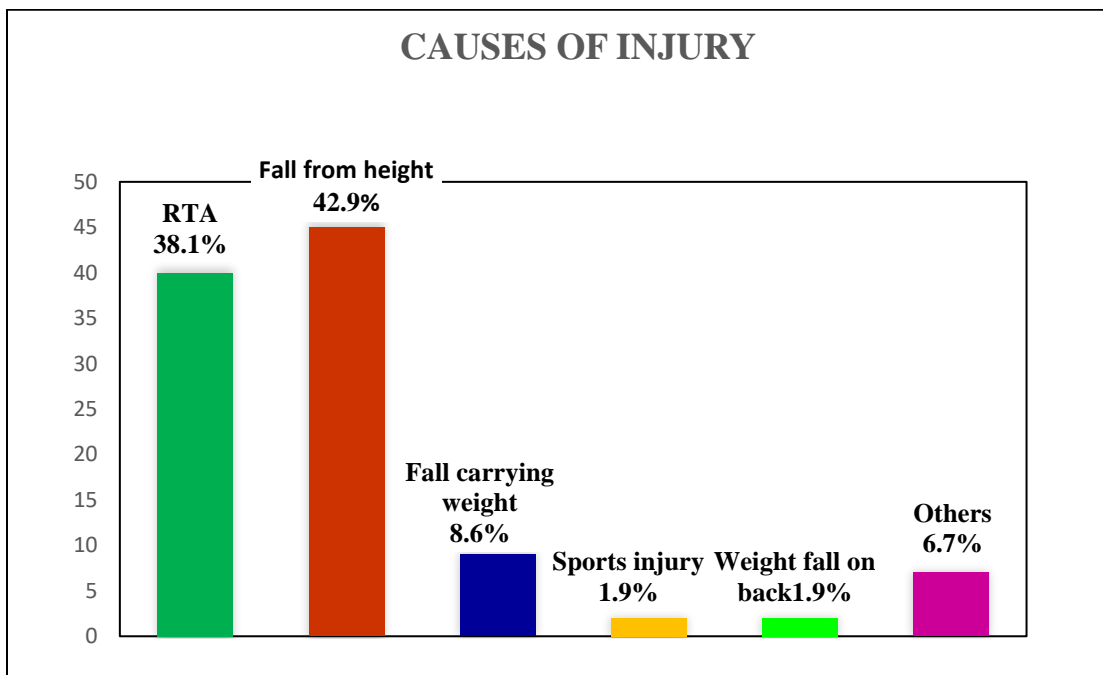


Figure 8: Causes of injury

4.9 Severity of injury of the participants

There were 105 patients who participate in this study. Most of them were complete A according to ASIA impairment scale. The percentage of complete A were 77.1% (n=81), incomplete B were 12.4% (n=13), incomplete C were 5.7% (n=6), incomplete D were 3.8% (n=4).

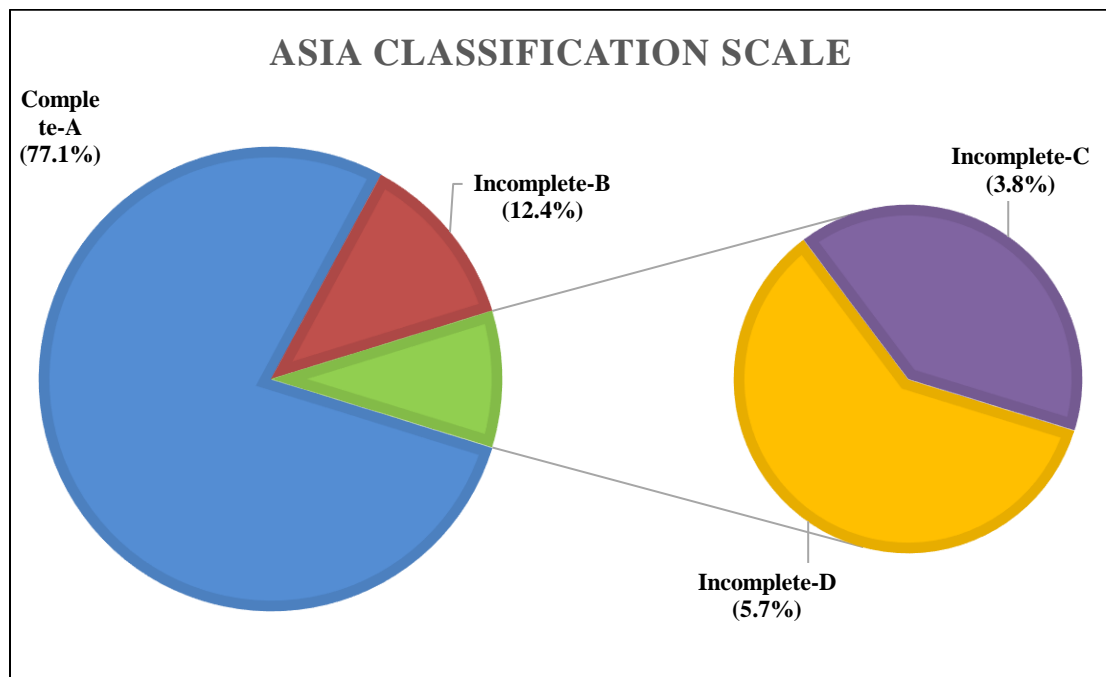


Figure 9: Severity of injury of the participants

4.10 Participants relation with their family members

The participants relation with their family were Good 81.9% (n=86), Average 13.3% (n=14), Poor 4.8% (n=5).

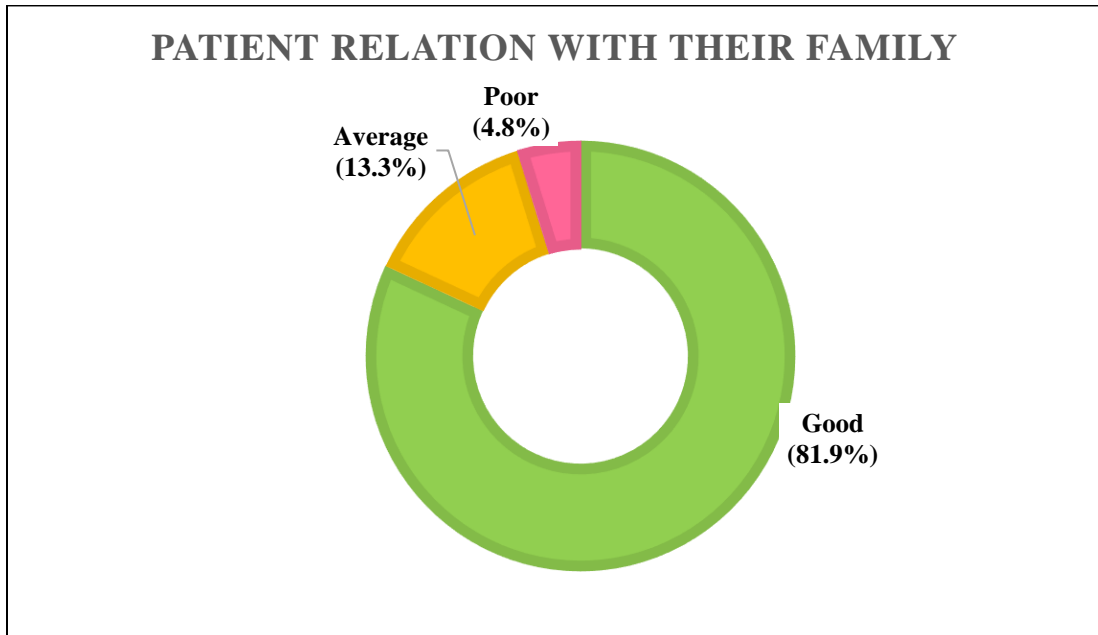


Figure 10: Participants relation with their family members

4.11 Marriage life of the participants

The marriage life of the participants were Good 26.7% (n=28), Average were 30.5% (n=32), Poor were 6.7% (n=7), Unmarried were 36.2% (n=38).

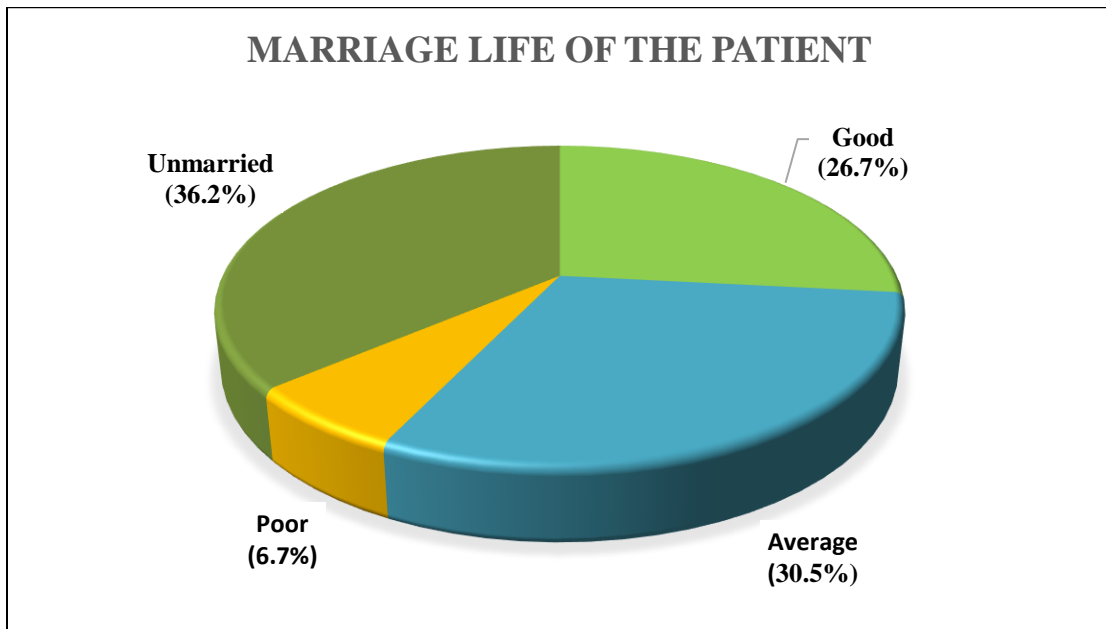


Figure 11: Marriage life of the participants

4.12 Physical support from family members

Total 105 participants, among them participants who got Good physical support from the family members were 54.3% (n=57), average were 41% (n=43), poor 4.8% (n=5).

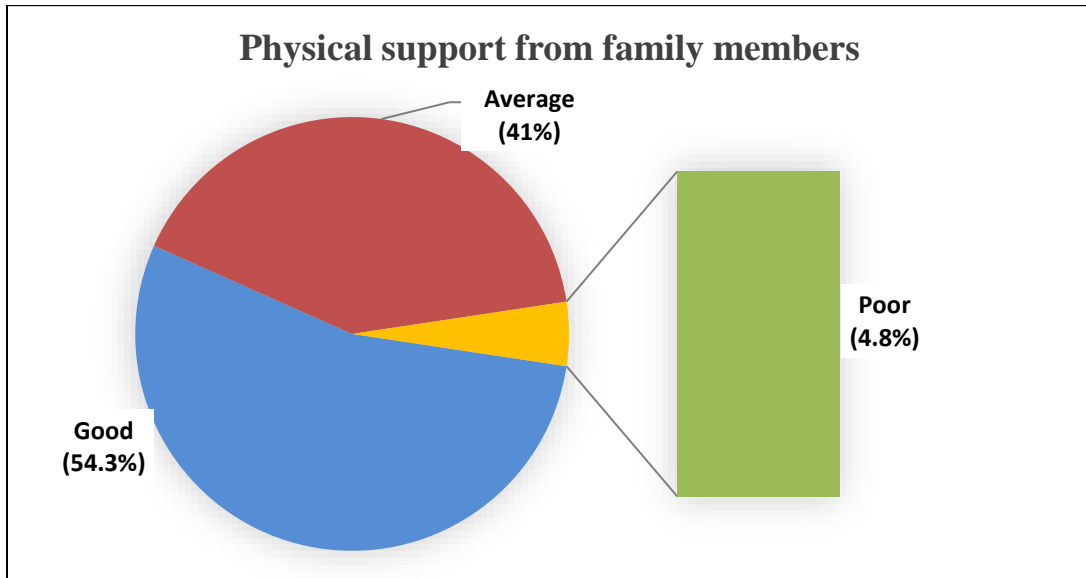


Figure 12: Physical support from the family members

4.13 Economical support from the family members

Out of 105 participants, participants who got economical support from the family members were 98.1% (n=103), participants who did not get economical support from the family members were 1.9% (n=2).

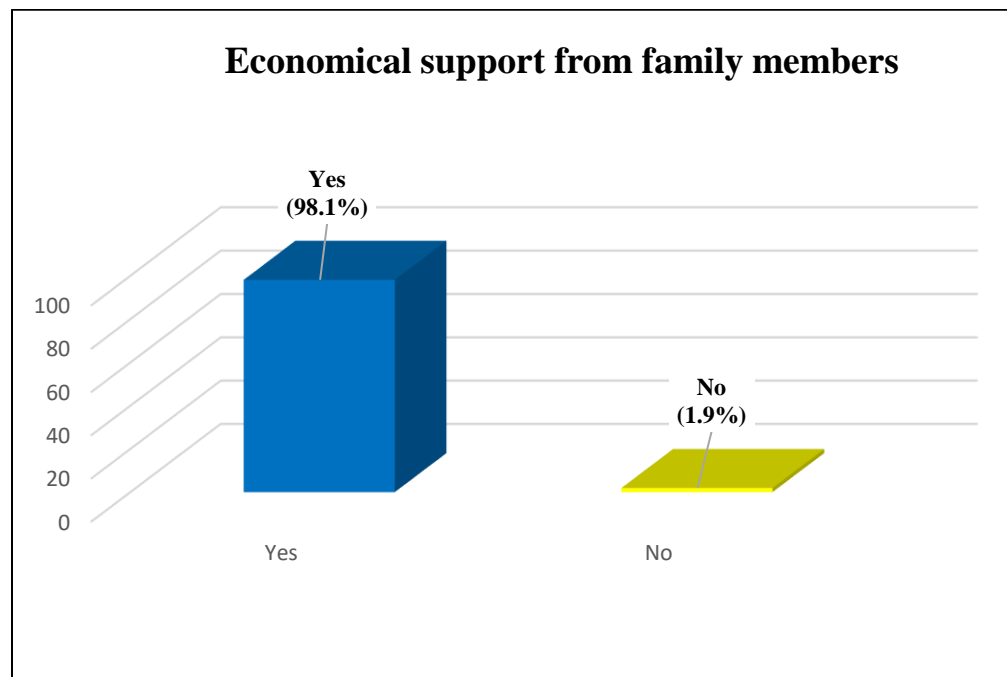


Figure 13: Economical support from the family members

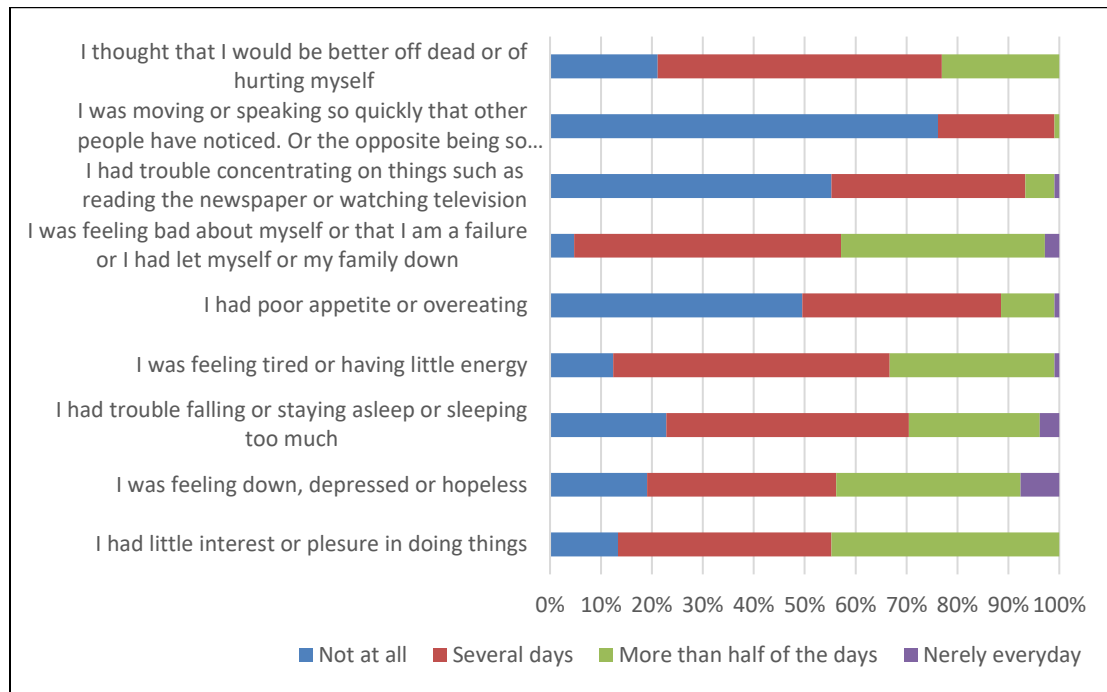
Table-1: Socio demographic information of all participants(n=105)

Variables	n (%)	Variables	n (%)
Age of participants		Cause of lesion	
Mean	34	RTA	40(38.1)
Median	32	Fall from height	44(41.9)
Mode	16	Fall carrying heavy weight	8(7.6)
16-30	48(45.7)	Sports injury	2(1.9)
31-45	42(40.0)	Heavy weight fall on back	2(1.9)
46-60	11(10.5)	Others	7(6.7)
Male	94(89.5)	Relation with family members	
Female	11(10.5)	Good	86(81.9)
Marital status of participants		Average	14(13.3)
Married	70(66.7)	Not so good	5(4.8)
Unmarried	35(33.3)	Married life	
Educational qualification		Good	28(26.7)
Illiterate	16(15.2)	Average	32(30.5)
Class1-SSC	49(46.7)	Poor	7(6.7)
HSC	21(20.0)	Relation with family members	
Graduate	18(17.1)	Good	86(81.9)
Post-graduate	1(1.0)	Average	14(13.3)
Living area		Poor	5(4.8)
Rural	27(25.8)	Support from family in daily activities	
Urban	78(74.3)	Good	57(54.3)
Occupation		Average	43(41.0)
Student	19(18.1)	Poor	5(4.8)
Farmer	18(17.1)	Economical support from family members	
Worker	9(8.6)	Yes	103(98.1)
Day laborer	7(6.7)	No	2(1.9)
Housewife	8(7.6)	Types of paralysis	
Teacher	8(7.6)	Tetraplegia	40(38.1)
Driver	10(9.5)	Paraplegia	65(61.9)
Businessman	19(18.1)		
Unemployed	2(1.9)		
Others	5(4.8)		
AIS classification			
Complete-A	81(77.1)		
Incomplete-B	13(12.4)		
Incomplete-C	6(5.7)		
Incomplete-D	4(3.8)		

Table -2: PHQ-9 1st part (N=105)

Variables	Not at all N (%)	Several days N (%)	More than half of the days N (%)	Nearly everyday N (%)
1. I had little interest or pleasure in doing things	14(13.3)	44(41.9)	47(44.8)	-
2. I was feeling down, depressed or hopeless	20(19.0)	39(37.1)	38(36.2)	08(7.6)
3. I had trouble falling or staying asleep or sleeping too much	24(22.9)	50(47.6)	27(25.7)	04(3.8)
4. I was feeling tired or having little energy	13(12.4)	57(54.3)	34(32.4)	01(1.0)
5. I had poor appetite or overeating	52(49.5)	41(39.0)	11(10.5)	1(1.0)
6. I was feeling bad about myself- or that I am a failure or I had let myself or my family down	5(04.8)	55(52.4)	42(40.0)	3(2.9)
7. I had trouble concentrating on things, such as reading the newspaper or watching television	58(55.2)	40(38.1)	06(05.7)	01(1.0)
8. I was moving or speaking so slowly that other people have noticed. Or the opposite –being so figety or restless that I have been moving around a lot more than usual	80(76.2)	24(22.9)	1(1.0)	-
9. I had thoughts that I would be better off dead, or of hurting myself	22(21.0)	58(55.2)	24(22.9)	1(1.0)

Figure 14 Result of PHQ-9 first part question of all participants (n=105). The x-axis shows the percentage of responses and the y axis shows each of the items on the first part of the Patient Health Questionnaire Scale.



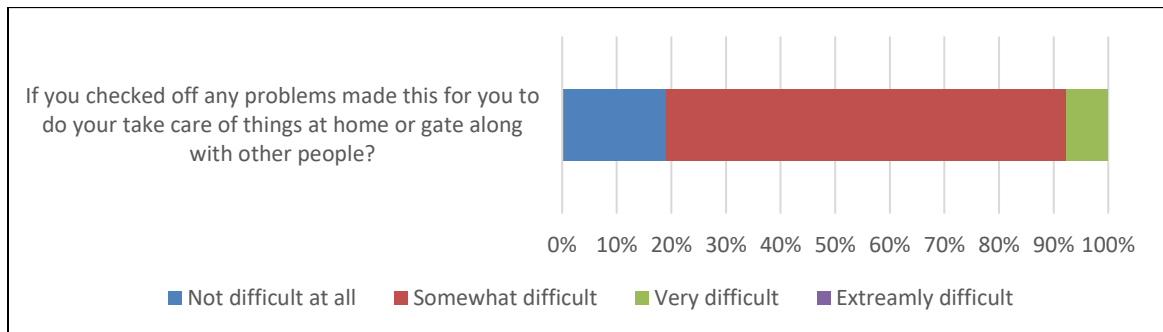
In this study among 105 participants, 44.8% (n=47) of participants felt little interest or pleasure in doing things more than half of the days, 41.9% (n=44) had little interest in work for several days & 13.3% (n=14) participants did not face such difficulties. 37.1% (n=39) of participants felt down or depressed almost several days, 36.2% (n=38) felt depressed more than half of the days, 7.6% were depressed nearly every-day and 19% (n=20) were not depressed. Among 105 participants, 47.6% (n=50) had trouble falling asleep or sleeping too much for several days, 25.7% (n=27) had sleeping problem for more than half of the days, 3.8% (n=4) had nearly every-day and 22.9% (n=24) had no such complains. 54.3% (n=57) was feeling tired or having little energy for several days, 32.4% (n=34) felt tired for more than half of the day, 1% (n=1) for almost every-day and 12.4% (n=13) had no complain of weakness. Poor appetite/overeating habit for several days had 39% (n=41) participants, more than half of the days had 10.5% (n=11) participants, nearly every-day had 1% (n=1) participant and 49.5% (n=52) had normal appetite. Among 105 participants,

52.4% (n=55) of participants felt bad for themselves or their family several days, 40% (n=42) for more than half of the days, 2.9% (n=3) for almost every-day and 4.8% (n=5) had no such thought. Among participants, 38.1% (n=40) had trouble concentrating for several days, 5.7% (n=6) for more than half of the days, 1% (n=1) for nearly every-day and 55.2% (n=58) had no problem in concentrating things. 22.9% (n=24) of participants used to move noticeable slowly several days and 1% (n=1) more than half of the days and 76.2% (n=80) had no such problems. Among them, 55.2% (n=58) had thought it would be better off dead/hurt themselves about several days, 22.9% (n=24) more than half of the days and 1% (n=1) nearly every-day and 21% (n=22) had no such thought.

Table-3: PHQ-9 2nd part.

Variable	Not difficult at all N (%)	Somewhat difficult N (%)	Very difficult N (%)	Extremely difficult N (%)
If you checked off any problems, how difficult have these problems made this for you to do your work, take care of things at home or get along with other people?	20 (19.0)	77 (73.3)	8 (7.6)	---

Figure 15 Result of PHQ-9 second part question of all participants (n=105). The x-axis shows the percentage of responses and the y axis shows the items on the second part of Patient Health Questionnaire Scale.

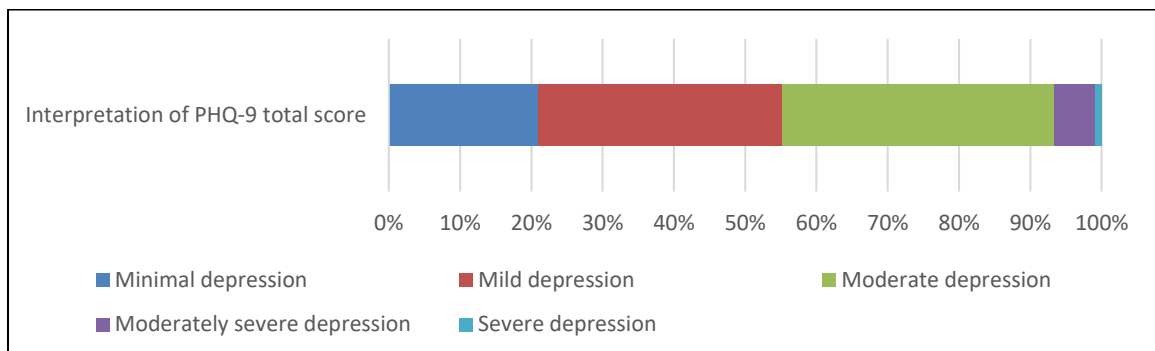


Out of 105 participants, 73.3% (n=77) of the participants faced difficulty at work, take care of family or get along with people for several days, 7.6% (n=8) had difficulty for more than half of the days and 19% (n=20) were free from these kind of problems & able to get along well & took care of their family.

Table-4: Interpretation of PHQ-9

Variable	Minimal Depression N (%)	Mild depression N (%)	Moderate depression N (%)	Moderately severe depression N (%)	Severe depression N (%)
Interpretation of PHQ -9 total score	22 (21.0)	36 (34.3)	40 (38.1)	06 (05.7)	01 (01.0)

Figure 16 Result of PHQ-9 total score interpretation of all participants (n=105). The x-axis shows the depression percentage of participants.



PHQ-9 Scale has been used to find out the level of depression. The possible range of scores in scale is 1-27, with the higher scores indicating the presence of major depressive disorder. In this study, the score 1-4 indicates Minimal depression, the score 5-9 indicates Mild depression, the score 10-14 indicates Moderate depression, the score 15-19 indicates Moderately severe depression and the score 20-27 indicates Severe depression. This study shows that among the 105 participants, most of the participants 21% (n=22) had Minimal depression, 34.3% (n=36) had Mild depression 38.1% (n=40) had Moderate depression, 5.7% (n=6) Moderately severe depression and 1% (n=1) had Severe depression.

Table- 5: Interpretation of 95% CI & IQR

Variables	95% CI		IQR
	Upper	Lower	
Age	36.59	31.41	16
Monthly income(BDT)	20397.51	15412.02	10000
Little interest or pleasure	1.45	1.18	
Feeling down/depressed	1.49	1.16	
Trouble sleeping	1.26	0.95	
Feeling tired	1.35	1.09	
Poor appetite/overeating	0.77	0.49	
Feeling bad about yourself	1.53	1.29	
Trouble concentrating	0.65	0.40	
Moving/speaking noticeable slow	0.34	0.16	
Thoughts of being dead/hurting yourself	1.17	0.90	
Difficulty to take care of things/get along with people	1.98	1.79	
PHQ-9 Interpretation	9.57	8.05	

The study shows in 95% CI test age has upper value 36.59, lower value 31.41 and IQR was 16. Monthly income's upper value was 20397.51, lower value was 15412.02 and IQR was 10000. PHQ-9 scale which has 10 items, Item 1-“Little interest or pleasure” has upper value was 1.45, lower value was 1.18. Item 2- “Feeling down/depressed” has upper value 1.49, lower value 1.16. Item 3- “Trouble sleeping” has upper value 1.26, lower value 0.95. Item 4- “Feeling tired” has upper value 1.35, lower value 1.09. Item 5- “Poor appetite/overeating” has upper value 0.77, lower value 0.49. Item 6- “Feeling bad about yourself” has upper value 1.53, lower value 1.29. Item 7- “Trouble concentrating” has

upper value 0.65, lower value 0.40. Item 8- “Moving/speaking noticeable slow” has 0.34, lower value 0.16. Item 9- “Thoughts of being dead/hurting yourself” has upper value 1.17, lower value 0.90. Item 10- “Difficulty to take care of things/get along with people” has upper value 1.98, lower value 1.79. Interpretation PHQ-9 has upper value 9.57, lower value 8.05.

Association in between PHQ-9 & Socio-demographic information

Table-6: Association in between PHQ-9 & Age

Socio-demographic variable	PHQ-9 Items	Chi-square value (χ^2)	P-Value
Age	“Little interest/pleasure in doing things”	16.144	0.040*
	“Feeling down, depressed, or hopeless”	14.557	0.265
	“Trouble falling or staying asleep or sleeping too much”	36.592	0.000*
	“Feeling tired or having little energy”	113.742	0.000*
	“Poor appetite or overeating”	116.942	0.000*
	“Feeling bad about yourself”	17.775	0.123
	“Trouble concentrating on things”	25.178	0.014*
	“Moving or speaking so slowly”	106.305	0.000*
	“Thoughts that you would be better off dead/ of hurting yourself”	127.028	0.000*
	“Difficulty to do your work, take care of things at home/get along with people”	10.792	0.214

*Significant (P< 0.05)

The study had association occurred between socio-demographic profile and PHQ-9 which was mentioned in the 3rd objective of the study. In this study, PHQ-9 scale was used by the author. PHQ-9 scale had 10 statements; among these, author mentioned 6 statements which had association with socio-demographic characteristics and which were significant. “Little interest/pleasure in doing things” in this statement chi-square (χ^2) value was 16.144 which was strongly significant (p<0.040) with Age. “Trouble falling or staying asleep, or sleeping too much” in this statement chi-square (χ^2) value was 36.592 which

was strongly significant ($p < 0.000$) with Age. “Feeling tired or having little energy” in this statement chi-square (χ^2) value was 113.742 which was strongly significant ($p < 0.000$) with Age. “Poor appetite or overeating” in this statement chi-square (χ^2) value was 116.942 which was strongly significant ($p < 0.000$) with Age. “Trouble concentrating on things” in this statement chi-square (χ^2) value was 25.178 which was strongly significant ($p < 0.014$) with Age. “Moving or speaking so slowly” in this statement chi-square (χ^2) value was 106.305 which was strongly significant ($p < 0.000$) with Age. No association was found between age and PHQ-9 items (“Feeling down, depressed, or hopeless”, “Feeling bad about yourself”, “Trouble concentrating on things” & “Difficulty to do your work, take care of things at home/get along with people”) that was not statistically significant.

Table-7: Association in between PHQ-9 & Gender

Socio-demographic variable	PHQ-9 Items	Chi-square value (χ^2)	P-Value
Gender	“Little interest/pleasure in doing things”	0.519	0.772
	“Feeling down, depressed, or hopeless”	5.606	0.132
	“Trouble falling or staying asleep or sleeping too much”	7.705	0.053
	“Feeling tired or having little energy”	10.028	0.018*
	“Poor appetite or overeating”	9.719	0.021*
	“Feeling bad about yourself”	11.378	0.010*
	“Trouble concentrating on things”	18.729	0.000*
	“Moving or speaking so slowly”	10.282	0.006*
	“Thoughts that you would be better off dead/ of hurting yourself”	9.476	0.024*
	“Difficulty to do your work, take care of things at home/get along with people”	4.260	0.119

*Significant (P< 0.05)

In the study, there was a significant association in between PHQ-9 items and gender. “Feeling tired or having little energy” in this statement chi-square (χ^2) value was 10.028 which was strongly significant (p<0.018) with gender. “Poor appetite or overeating” in this statement chi-square (χ^2) value was 9.719 which was strongly significant (p<0.021) with gender. “Feeling bad about yourself” in this statement chi-square (χ^2) value was 11.378 which was strongly significant (p<0.010) with gender. “Trouble concentrating on things” in this statement chi-square (χ^2) value was 18.729 which was strongly significant (p<0.000) with gender. “Moving or speaking so slowly” in this statement chi-square (χ^2)

value was 10.282 which was strongly significant ($p < 0.006$) with gender. “Thoughts that you would be better off dead/of hurting yourself” in this statement chi-square (χ^2) value was 9.476 which was strongly significant ($p < 0.024$) with gender. No association was found between gender and PHQ-9 items (“Little interest/pleasure in doing things”, “Feeling down, depressed, or hopeless”, “Trouble falling or staying asleep or sleeping too much” & “Difficulty to do your work, take care of things at home/get along with people”) that was not statistically significant.

Table-8: Association in between PHQ-9 & Types of injury

Socio-demographic variable	PHQ-9 Items	Chi-square value (χ^2)	P-Value
Types of injury	“Little interest/pleasure in doing things”	2.569	0.277
	“Feeling down, depressed, or hopeless”	0.730	0.866
	“Trouble falling or staying asleep or sleeping too much”	2.801	0.423
	“Feeling tired or having little energy”	1.413	0.702
	“Poor appetite or overeating”	15.237	0.002*
	“Feeling bad about yourself”	1.938	0.585
	“Trouble concentrating on things”	3.605	0.307
	“Moving or speaking so slowly”	0.757	0.685
	“Thoughts that you would be better off dead/ of hurting yourself”	4.544	0.208
“Difficulty to do your work, take care of things at home/get along with people”	2.351	0.309	

*Significant ($p < 0.05$)

There was a significant association in between PHQ-9 items and type of injury in the study. “Poor appetite or overeating” in this statement chi-square (χ^2) value was 15.237 which was strongly significant ($p < 0.002$) with types of injury. No association was found between type of injury and PHQ-9 items (“Little interest/pleasure in doing things”, “Feeling down, depressed, or hopeless”, “Trouble falling or staying asleep or sleeping too much”, “Feeling tired or having little energy”, “Feeling bad about yourself”, “Trouble concentrating on things”, “Moving or speaking so slowly”, “Thoughts that you would be better off dead/ of hurting yourself” & “Difficulty to do your work, take care of things at home/get along with people”) that was not statistically significant.

Table-9: Association in between PHQ-9 & Severity of injury according to ASIA

Socio-demographic variable	PHQ-9 Items	Chi-square value (χ^2)	P-Value
Severity of injury	“Little interest/pleasure in doing things”	7.974	0.436
	“Feeling down, depressed, or hopeless”	12.011	0.445
	“Trouble falling or staying asleep or sleeping too much”	11.431	0.492
	“Feeling tired or having little energy”	39.334	0.000*
	“Poor appetite or overeating”	35.602	0.000*
	“Feeling bad about yourself”	5.279	0.948
	“Trouble concentrating on things”	7.867	0.795
	“Moving or speaking so slowly”	29.167	0.000*
	“Thoughts that you would be better off dead/ of hurting yourself”	35.089	0.000*
	“Difficulty to do your work, take care of things at home/get along with people”	9.658	0.290

*Significant ($p < 0.05$)

In the study, there was a significant association in between depression and severity of injury according to ASIA Scale. “Feeling tired or having little energy” in this statement chi-square (χ^2) value was 39.334 which was highly significant ($p < 0.000$) with severity of injury according to ASIA Scale. “Poor appetite or overeating” in this statement chi square (χ^2) value was 35.602 which was highly significant ($p < 0.000$) with severity of according to ASIA Scale. “Moving or speaking so slowly” in this statement chi-square (χ^2) value was 29.167 which was significant ($p < 0.000$) with severity of injury according to ASIA Scale. “Thoughts that you would be better off dead” in this statement chi-square (χ^2)

value was 35.089 which was highly significant ($p < 0.000$) with severity of injury according to ASIA Scale. No association was found between type of injury and PHQ-9 items (“Little interest/pleasure in doing things”, “Feeling down, depressed, or hopeless”, “Trouble falling or staying asleep or sleeping too much”, “Feeling bad about yourself”, “Trouble concentrating on things” & “Difficulty to do your work, take care of things at home/get along with people”) that was not statistically significant.

Table-10: Association between PHQ-9 and Marital status

Socio-demographic variable	PHQ-9 Items	Chi-square value (χ^2)	P-Value
Marital status	“Little interest/pleasure in doing things”	16.621	0.000*
	“Feeling down, depressed, or hopeless”	7.495	0.058
	“Trouble falling or staying asleep or sleeping too much”	11.457	0.009*
	“Feeling tired or having little energy”	7.145	0.067
	“Poor appetite or overeating”	12.083	0.007*
	“Feeling bad about yourself”	8.057	0.045*
	“Trouble concentrating on things”	6.890	0.075
	“Moving or speaking so slowly”	0.788	0.675
	“Thoughts that you would be better off dead/ of hurting yourself”	14.694	0.002*
“Difficulty to do your work, take care of things at home/get along with people”	6.203	0.045*	

*Significant (p< 0.05)

In the study, there was a significant association in between PHQ-9 items and marital status. “Little interest or pleasure in doing things” in this statement chi-square (χ^2) value was 16.621 which was highly significant (p<0.00) with marital status. “Poor appetite or overeating” in this statement chi square (χ^2) value was 12.083 which was highly significant (p<0.007) with marital status. “Feeling bad about yourself” in this statement chi-square (χ^2) value was 8.057 which was significant (p<0.045) with marital status. “Thoughts that you would be better off dead” in this statement chi-square (χ^2) value was 14.694 which was highly significant (p<0.002) with marital status. “Difficulty to work,

take care of things at home, or get along with people” in this statement chi-square (χ^2) value was 6.203 which was highly significant ($p < 0.045$) with marital status. “Trouble falling or staying asleep, or sleeping too much” in this statement chi-square (χ^2) value was 11.457 which was highly significant ($p < 0.009$) with marital status. . No association was found between type of injury and PHQ-9 items (“Feeling down, depressed, or hopeless”, “Feeling tired or having little energy”, “Trouble concentrating on things” & “Moving or speaking so slowly”) that was not statistically significant.

Spinal cord injury (SCI) alters one's life dramatically. SCI is related with greater mental health difficulties, which predict inferior outcomes such as increased pain, medical complications, and drug dependence (Migliorini et al., 2008). Depression is one of the most well-known mental disorders associated with SCI. Depression is believed to be a complication of SCI that hampers physical rehabilitation and accelerates health related problems (Williams & Murray, 2015). In this study, PHQ-9 scale were used to measure the mental health.

A cross sectional study was used to assess the mental health of individuals with spinal cord injury in rehabilitation stage. As this was a cross-sectional study, we consider this research as a preliminary study that can yield valuable information that may clarify many important questions related to spinal cord injury and their mental health. Among the 105 participants, male participants 89.5% (n=94) were higher than the female participants 10.5% (n=11). 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. Arafat et al. (2018) found that among 150 participants 90% were male and 10% were female following SCI. So, it seems that male participants are more permeable than female participants in spinal cord injury.

In this study majority of the participants were from (16-30 years) age group which was 45.7% (n=48) and 40% (n=42) were aged from 31-45 years. 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 105 participants in this study, among them Tetraplegia were 61.9% (n=65) and paraplegia were 38.1% (n=40). 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 little difference between the type of injury (paraplegia and tetraplegia), but anyone with spinal cord injury would be paraplegia or tetraplegia. Arafat et al. (2018) revealed in their study that severity of depression was found to be greater in tetraplegia than paraplegia as Khazaeipour et al. (2015) found that high prevalence of depression in patients with tetraplegia 62.2%.

Among 105 participants, most of them were complete-A 77.1% (n=81) according to ASIA Scale; incomplete-B were 12.4% (n=13), incomplete-C were 5.7% (n=6) and incomplete-D were 3.4% (n=4). Siddall et al. (2017) mentioned 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 105 participants with Spinal Cord Injury. Among them, participants with RTA were 38.1% (n=40), Fall during carrying heavy weight were 7.6% (n=8), Heavy weight fall on back were 1.9% (n=2), Sports injury were 1.9% (n=2), others were 6.7% (n=7) and In North America, the main cause of Traumatic spinal cord injury was motor vehicle accidents rather than fall from height (Mothe & Tator, 2013). But in the current study, the most common cause of injury was fall from height followed by road traffic accidents. This could be due to the fact that a greater percentage of people live in the villages in Bangladesh, similar to neighboring countries like India (Singh et al., 2003).

Among 105 participants, most of them were married 66.7% (n=70) and unmarried were 33.3% (n=35). Arafat et al. (2018) informed in his study that 64% were married and 32.67% were unmarried. In this study, participants live on rural area were 25.7% and participants live on urban area 74.3%.

In this study, among the participants illiterate were 15.2% (n=16), participants from class 1 to SSC were 46.7% (n=49), participants from HSC were 20% (n=21), participants who graduate were 17.1% (n=18) & Post graduate were 1% (n=1). In another study, illiterate were 19.4%, primary were 32.3%, SSC were 25.8% and HSC were 22.6% (Imran et al., 2018).

Among the 105 participants, most of the participants (38.1%) had moderate depression, 34.3% had mild depression, 21% had minimal depression, 5.7% moderately severe depression and 1% had severe depression in rehabilitation stage. Arafat et al. (2018) informed their study that among 150 participants, 30% had moderately severe depression, 28% had moderate depression, 25.33% had mild depression, 10.66% had minimal depression, and 6% had severe depression. In Australia, nearly half of the population with spinal cord injury suffered from mental health problems of depression around 37% according to Fann et al., (2011). Another study noted that the prevalence of probable minimal depression was 50%, mild depression was 27%, moderate depression was 14%, moderately severe was 6% and severe depression was 3% (Migliorini et al., 2008). Wiseman et al. (2015) found to have mild-moderate depression in 21%, severe-extremely severe depression 16% among spinal cord injured patients.

Spinal cord injury (SCI) is a long-term disabling and catastrophic disorder. Depression is the most prevalent comorbidity among the many psychiatric issues connected with SCI. Bangladesh is a highly populated developing nation with a high prevalence of SCI. Previous research has shown, depression symptoms whether minor or severe, are badly addressed and neglected. However, understanding the long-term physical and psychological effects of SCI is essential for a successful recovery.

This study found an association in between age and depression ($P < 0.000$) which was strongly significant. Arango-Lasprilla et al. (2013) found association between age and depression at their study. Shin et al. (2012) stated that high levels of depression might be a result of the adjustment process. Patients with SCI who survived the longest had a higher rate of depression, which might be due to aging as a secondary disease. Likewise, Bombardier et al. (2008) study found that, a significant association with depression and age of SCI peoples.

In this study there was found a significant association in between gender & depression ($p < 0.000$). Arango-Lasprilla et al. (2013) in their study provided an understanding relationship between gender and depression. There were also an association in between severity of injury and depression which was strongly significant ($p < 0.02$). Shin et al. (2012) found that participants with complete SCI were more depressed, had less life

satisfaction and more stress levels than incomplete participants. Kochhar et al. (2007) informed that the severity of injury was found to be aligned with many other studies.

This study also found a significant association in between types of injury and depression ($P < 0.02$). According to Saadat et al. (2010), mildly depressed paraplegics and tetraplegics were less active than non-depressed paraplegics and tetraplegics that suggests there was a link between sadness and the type of damage. Arafat et al. (2018) stated that among participants, 77 were paraplegic and among them most of the participants had mild depression ($n=30$) and among 73 tetraplegics, ($n=30$) patients had moderately severe depression. Severity of depression was related with the severity of injury.

This study also found a significant association in between marital status and depression ($P < 0.00$). 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

This research project has several limitations and barriers that had an impact on the study's accuracy, including the following:

The samples were only taken from the CRP in Savar and the sample size was tiny, so the study's findings could not be applied to the whole population of Bangladeshi people, suffering from spinal cord injuries. In the context of Bangladesh, there was little evidence to back up the project's outcome. The study employed a convenience sample that did not represent the whole population. An undergraduate student completed the research assignment, which was her first. As a result, in terms of the practical components of research, the researcher had little experience with procedures and tactics. Because this was the researcher's first survey, it might be possible that the supervisor and respectable teachers overlooked a few mistakes.

6.1 Conclusion

A spinal cord injury (SCI) is a rapid, unpredictable occurrence that can occur acutely or persistently and has a long-term impact on physical function and mental health. In Asia, as well as Bangladesh, it is a leading cause of disability. Every year, thousands of people are impacted by traumatic or non-traumatic spinal cord injuries. Spinal cord injury can strike anybody, at any age, at any time, although energetic young guys are more likely than females to suffer from the condition.

Patients with spinal cord injuries are confronted with the reality of impairment. They suffer from anxiety and sadness, and therefore a loss of confidence, affecting their quality of life. Anxiety and depression are two of the most common fatal mental disorders, hence they should be given higher importance. Though paraplegic and incomplete spinal cord damage patients improved the most, improvements were seen in individuals of all levels of impairment. The importance of early discovery and careful management of this illness cannot be overestimated.

According to the study a significant portion of SCI patients were found to be depressed. Surprisingly, in a nation like Bangladesh, large numbers of patients are underdiagnosed, undertreated, and even untreated. To our knowledge, there is only a small amount of research specifically addressing depression signs and factors that affect depression in persons with SCI over time. Health planners and social services, need a thorough understanding of the psychological issues that people with SCI face, as well as the differences that develop as a result of cultural, physical, and environmental conditions including the resources available in each community. To adequately visualize the burden, further large-scale research is needed.

More research is needed to determine what challenges may be contributing to the low rates of depression treatment among SCI patients. Evidence from various medical contexts

reveals that professional education and feedback are insufficient to vastly improve depression care, with programs that include complete patient education, active follow-up, and increased access to evidence-based therapies reaping the most results. To enhance depression care for people with SCI, it is necessary to design and assess comparable strategies.

6.2 Recommendation

The aim of the study was to assess mental health of people with spinal cord injury. Though the study had some limitations but investigator identified some further step that might be taken for the better accomplishment of further research.

The random sampling technique rather than the convenience sampling technique would be chosen in further in order to enabling the power of generalization the results.

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 mental health such as depression.

The investigation was conducted for relatively short period of time; thus, in the future, more time should be allocated to the study. The sample size for this study was 105 people, however the sample size will be increased in the future.

In this study, the investigator took the participants only from the one selected hospital of Savar as a sample for the study. So for further study investigator strongly recommended to include the SCI patients from all over the Bangladesh to ensure the generalize ability of this study.

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Appendix

VERBAL CONSENT STATEMENT

(Please read out to the participants)

Assalamualaikum/Namasker, My name is Fabiha Jannat Bushra, I am conducting this study for a B.Sc in Physiotherapy project study dissertation titled “**Assessment of mental health status for people with spinal cord injury: A centre based study**” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding Spinal Cord Injury (SCI). You will perform some tasks which are mention in this 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 area (spinal cord injury), so your participation in the research will have no impact on your present or future treatment in this area (spinal cord injury 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, researcher and/or my supervisor **Md. Shofiqul Islam**, Associate Professor& Head, dept. 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 _____

Signature of the Interviewer _____

মৌখিক অনুমতি / সম্মতি প্রত্র

(অংশগ্রহণকারীকে পড়ে শোনাতে হবে)

আসসালামুআলাইকুম / নমস্কার,

আমি ফাবিহা জান্নাত বৃশরা , আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশন্স ইন্সটিউট (বি,এইচ,পি, আই) এ পরিচালনা করছি যা আমার ৪র্থ বর্ষের বি, এস, সি ইন ফিজিওথেরাপি কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হলো “**মেরুরজ্জুতে আঘাত প্রাপ্ত রোগীদের মানসিক অবস্থার মূল্যায়ন। একটি প্রতিষ্ঠান কেন্দ্রিক গবেষণা**” । আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তিগত ও আনুষঙ্গিক প্রশ্ন করতে চাচ্ছি । এতে আনুমানিক ২০-৩০ মিনিট সময় লাগবে।

আমি আপনাকে অনুগত করছি যে এটা আমার অধ্যয়নের অংশ যা অন্য কোন উদ্দেশ্যে ব্যবহৃত হবে না। গবেষক সরাসরি এই স্নায়ুজ্ঞান অধ্যয়নের সাথে অন্তর্ভুক্ত নয় । তাই এই গবেষণায় অংশগ্রহন আপনার বর্তমান ও ভবিষ্যতের চিকিৎসায় কোন প্রভাব ফেলবে না। আপনি যে তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে। এই গবেষণায় আপনার অংশগ্রহন স্বেচ্ছায় এবং কোন নেতিভাচক প্রভাব ছাড়াই আপনি নিজেই যে কোন সময় এই অধ্যয়ন থেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন প্রশ্ন আপনার পছন্দ না হলে উত্তর না দেয়ার বা স্বাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার আপনার আছে। এই অধ্যয়নে অংশগ্রহনকারী হিসেবে আপনার কোন প্রশ্ন থাকলে আপনি আমাকে অথবা/এবং আমার সুপারভাইজার মোঃ সফিকুল ইসলাম, সহযোগী অধ্যাপক, বিভাগীয় প্রধান, ফিজিওথেরাপি বিভাগ, বি এইচ পি আই, সি আর পি , সাভার, ঢাকা তে যোগাযোগ করতে পারেন।

স্বাক্ষাৎকার শুরু করার আগে আপনার কি কোন প্রশ্ন আছে?

আমি আপনার অনুমতি নিয়ে এই স্বাক্ষাৎকার শুরু করতে যাচ্ছি।

হ্যা
না

অংশগ্রহনকারীর স্বাক্ষর.....

স্বাক্ষাৎগ্রহনকারী স্বাক্ষর.....

English questionnaire

	Interview Schedule Part- I: Patient's Identification (to be provided by patient or attendant)	
1.1	Identification number: (PDMS)	Date of Interview:
1.2	Address:	Contact no:

	Part- II: Patient's Socio-demographic Information (To be collected from Record/Patient/Care giver)	
2.1	Age (In year): Yrs	
2.2	Sex	1. Female 2. Male
2.3	Marital status:	1. Married 2. Unmarried
2.4	Educational level?	
2.5	Occupation?	
2.6	What is the average monthly income of your household?	_____ (Taka)
2.7	Residential Area	1. Rural 2. Urban
2.8	How your marriage life going on?	
2.9	How is your relation with your family members now?	

2.10	For doing daily activity how much you get support (Physical or mental) from your spouse/ family members?	
2.11	Do you get any economical support from your family members?	

	Part-III: Physiotherapy related Information (To be collected from Record/ Care provider/Clinical examination)	
3.1	Date of injury:	
3.2	Causes of injury:	
3.3	Skeletal level :	
3.4	Neurological level :	
3.5	ASIA classification scale :	<ol style="list-style-type: none"> 1. Complete A 2. Incomplete B 3. Incomplete C 4. Incomplete D 5. Normal E
3.6	Types of paralysis:	<ol style="list-style-type: none"> 1. Tetraplegic 2. Paraplegic

Part- IV: PHQ-9 Scale
Public Health Questionnaire (PHQ-9)

ID:.....

Date:.....

Over the last 2 weeks, how often have you been bothered by any of the following problems? (Use “ ✓ “ to indicate your answer).

	Not at all	Several days	More than half the days	Nearly everyday
1. I had little interest or pleasure in doing things	0	1	2	3
2. I was feeling down, depressed or hopeless	0	1	2	3
3. I had trouble falling or staying asleep or sleeping too much	0	1	2	3
4. I was feeling tired or having little energy	0	1	2	3
5. I had poor appetite or overeating	0	1	2	3
6. I was feeling bad about myself- or that I am a failure or I had let myself or my family down	0	1	2	3

7. I had trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. I was moving or speaking so slowly that other people have noticed. Or the opposite – being so figety or restless that I have been moving around a lot more than usual	0	1	2	3
9. I had thoughts that I would be better off dead, or of hurting myself	0	1	2	3

+ +

Total=

10. If you checked off any problems, how difficult have these problems made this for you to do your work, take care of things at home or gate along with other people?	Not difficult at all
	Somewhat difficult
	Very difficult
	Extremly difficult

Interpretation of total score:

Total Score	Depression Severity
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

Bangla questionnaire

	স্বাক্ষাৎকারের সময়সূচী পর্ব-১ঃ রোগীর সনাক্তকরণ/পরিচয় (রোগী অথবা রোগীর সহকারী তথ্য প্রদান করবেন)	
১.১	সনাক্তকরণ নাম্বার:	স্বাক্ষাতের তারিখ:
১.২	ঠিকানা:	যোগাযোগ নম্বর:
১.৩	অনুমতি নেয়া হয়েছে:	হ্যাঁ না

	পর্ব ২ঃ রোগীর আর্থসামাজিক তথ্যাবলি (রোগী অথবা রোগীর সহকারী তথ্য প্রদান করবেন)	
২.১	আপনার বয়স.....বছর।	
২.২	লিঙ্গ	১.মহিলা ২. পুরুষ
২.৩	বৈবাহিক অবস্থা	১.বিবাহিত ২.অবিবাহিত
২.৪	শিক্ষ্যাগত যোগ্যতা	১.নিরক্ষর / মূর্খ ২.অক্ষরজ্ঞান সম্পন্ন ৩.সুশিক্ষিত
২.৫	পেশা	১. রিক্সাচালক ২. কৃষিকাজ ৩. ফ্যাক্টরি / পোশাক শ্রমিক ৪. গাড়ী চালক ৫. ব্যবসায়ী ৬. দিন মজুর

		৭. বেকার ৮. গৃহিনী ৯. শিক্ষক ১০. ছাত্র/ ছাত্রী ১১. অন্যান্য
২.৬	পারিবারিক মাসিক আয়টাকা।
২.৭	আবাসিক এলাকা	১. গ্রাম ২. শহর
২.৮	আপনার বিবাহিত জীবন কেমন যাচ্ছে?	
২.৯	পরিবারের সদস্যদের সাথে আপনার এখন সম্পর্ক কেমন?	
২.১০	দৈনন্দিন কাজ করার জন্য আপনি আপনার সঙ্গি/ পরিবার থেকে কতটুকু (শারিরিক অথবা মানসিক) সহযোগিতা পান?	
২.১১	আপনি কি আপনার পরিবারের সদস্যদের থেকে কোন ধরনের আর্থিক সহযোগিতা পান?	

<p style="text-align: center;">পর্ব -৩ঃ ফিজিওথেরাপি সম্পর্কিত তথ্যাবলি (রোগীর দলিল/ রোগীর সহকারী/পরিষ্কার মাধ্যমে নিতে হবে)</p>		
৩.১	আঘাতের তারিখ:	
৩.২	আঘাতের কারণ:	১। মোটর যানের আঘাতে ২. উপর থেকে পড়ে ৩. ভারী কিছু বহন করার সময় পড়ে গিয়ে ৪. খেলাধুলার কারণে ৫. পিঠে ভারী কিছু পড়ে ৬. অন্য কারণে
৩.৩	স্কেলেটাল লেভেল :	
৩.৪	নিউরোলজিকাল লেভেল :	
৩.৫	এশিয়া স্কেল অনুযায়ী :	১. কমপ্লিট এ ২. ইনকমপ্লিট বি ৩. ইনকমপ্লিট সি ৪. ইনকমপ্লিট ডি ৫. নরমাল ই
৩.৬	শারিরিক অসারতার ধরণ:	১. টেট্রাপ্লেজিক ২. পেরাপ্লেজিক

পর্ব -৪ঃ পি এইচ কিউ ৯ স্কেল
রোগির স্বাস্থ্য সম্পর্কিত প্রশ্নাবলি (PHQ-9)

রোগির আইডিঃ

তারিখঃ

গত দুই সপ্তাহের মধ্যে নিচের উল্লিখিত সমস্যার জন্য আপনি কতবার বিরক্ত হয়েছেন?

(✓ চিহ্ন ব্যবহার করে আপনার উত্তর দিন)

	একবারে ই না	কিছু দিন	অর্ধেকের বেশি দিন	প্রায় প্রতিদিন
১। আমি কাজ করতে খুব কমই আগ্রহ বা আনন্দ পেয়েছি।	০	১	২	৩
২। আমি ভেঙে পড়েছি, বিষাদগ্রস্ত এবং আশাহত হয়েছি।	০	১	২	৩
৩। আমার ঘুমাতে সমস্যা হয়েছে অথবা অনেক বেশি ঘুম হয়েছে।	০	১	২	৩
৪। আমি ক্লান্ত বোধ করেছি অথবা একদম শক্তি পাইনি।	০	১	২	৩
৫। আমার কম ক্ষুদ্রা লেগেছে অথবা অনেক বেশি খেয়েছি।	০	১	২	৩
৬। আমি নিজেকে নিয়ে দুঃচিন্তায় আছি, অথবা আমি ব্যর্থ অথবা আমি নিজেকে না হয় আমার পরিবারকে নিচু করে ফেলেছি।	০	১	২	৩

৭। কোন কিছুতে মনোযোগ ধরে রাখতে সমস্যা হয় যেমন খবরের কাগজ পড়তে অথবা টেলিভিশন দেখতে।	০	১	২	৩
৮। আমি এত আশ্বে চলাচল করি অথবা কথা বলি যে অন্যরা খেয়াল ই করে না। অথবা এর উল্টোটা- স্বাভাবিকের চেয়ে বিরামহীন ভাবে অনেক বেশি নড়াচড়া করি।	০	১	২	৩
৯। আমার মনে হয় মরে গেলেই ভালো হয় অথবা নিজেই নিজেকে আঘাত করি।	০	১	২	৩

সর্বমোট=

১০। যদি আমার কোন ধরনের সমস্যা মনে হয় তাহলে এগুলো আমার প্রতিদিনের কাজ, বাড়িতে নিজের যত্ন নেয়া এবং মানুষের সাথে মেশার ক্ষেত্রে কতটা কঠিন করে তুলে?	একদম কঠিন না কিছুটা কঠিন অনেক কঠিন খুব বেশি কঠিন
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সর্বমোট নাম্বারের ব্যাখ্যা:

সর্বমোট নাম্বারের	হতাশার পরিমাণ
১-৪	খুবই অল্প হতাশা
৫-৯	অল্প হতাশা
১০-১৪	মাঝারি হতাশা
১৫-১৯	মাঝারির চেয়ে বেশি হতাশা
২০-২৭	খুব বেশি হতাশা

Permission letter

Permission Letter

Date: 16 June, 2021

The Head of Department

Department of physiotherapy

Bangladesh Health Professions Institute (BHPI)

Chapain, Savar, Dhaka-1343.

Subject: An application for seeking permission for data collection of 4th year physiotherapy research project.

Sir,

With due respect and humble submission to state that I am Jannatul Ferdus, a student of 4th year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The Ethical committee has approved my research project entitled: **"ASSESSMENT OF MENTAL HEALTH STATUS OF SPINAL CORD INJURY PATIENTS: A CENTER BASED STUDY"** under the supervision of Md. Shofiqul Islam, Associate Professor & Head, Department of Physiotherapy, BHPI, CRP, SAVAR, Dhaka. Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect data for SCI patients at physiotherapy Department. So, I need your kind permission for data collection at SCI Unit of CRP in Savar, Dhaka. I would like to assure that nothing of the study would be harmful for the participants.

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

Yours faithfully,

FABIHA JANNAT BUSHRA

Fabiha Jannat Bushra

4th Year

B.Sc. in Physiotherapy

Class Roll: 43; Session: 2015-16

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

CRP-Chapain, Savar, Dhaka-1343.

Recommended

Shofiq

16.06.21

Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Approved

Mohammad Anwar Hossain

16/06/20
MOHAMMAD ANWAR HOSSAIN
Senior Consultant &
Head of Physiotherapy Dept
Associate Professor, BHPI
CRP, Savar, Dhaka-1343

IRB Permission Letter



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref:

Date:

CRP/BHPI/IRB/06/2021/478

17/06/2021

To,
Fabiha Jannat Bushra
4th year B.Sc. in Physiotherapy
Session: 2015-2016, Student ID: 112150314
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "Assessment of Mental Health Status of Spinal Cord Injury Patients: A Center Based Study" by ethics committee.

Dear Fabiha Jannat Bushra,
Congratulations.

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the principal investigator. The following documents have been reviewed and approved

Sr. No. Name of the Documents

1. Dissertation proposal
2. Questionnaire (Bengali & English version)
3. Information sheet and consent form

The purpose of the study is to find out the mental health status of spinal cord injury patients. The study involves use of a questionnaire to explore that may take 15 minutes to answer the questionnaire and there is 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 8.30AM on 1st March, 2020 at BHPI (23rd IRB Meeting).

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

Best regards

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

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd, www.crp-bangladesh.org

Date: 16 June, 2021.

The Chairman

Institution Review Board (IRB)

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka-1343, Bangladesh.

Subject: Application for review and ethical approval.

Dear Sir,

With due respect, I am Fabiha Jannat Bushra, student of 4th professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI), academic institute of Centre for the Rehabilitation of the Paralyzed (CRP) under the faculty of medicine of University of Dhaka. This is a four-year full-time course. Conducting thesis project is partial fulfilment of the requirement for the degree of B.Sc. in Physiotherapy. I have to conduct a thesis entitled, **"ASSESSMENT OF MENTAL HEALTH STATUS OF SPINAL CORD INJURY PATIENTS; A CENTRE BASED STUDY"** under the supervision of MD. SHOFIQU L ISLAM, Associate professor & Head, department of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343. The purpose of this study is to assess the mental health of SCI patients. I would like to assure that anything of my study will not be harmful for the participants. Informed consent will be received from all participants, data will be kept confidential.

I, therefore pray and hope that your honor would be kind enough to approve my thesis proposal and give me permission to start data collection and oblige thereby.

Sincerely,

FABIHA JANNAAT BUSHRA

Fabiha Jannat Bushra

4th professional B.Sc. in Physiotherapy

Roll No.: 43

Session: 2015-16, ID: 112150314

BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Recommendation from the thesis supervisor:

Shofiq 16.06.21

Md. Shofiqul Islam

Associate professor & Head, Department of Physiotherapy, BHPI

CRP, Savar, Dhaka-1343, Bangladesh.