



Faculty of Medicine  
University of Dhaka

**COMPARISON OF FUNCTIONAL ABILITIES AND COMMUNITY  
INTEGRATION OF SPINAL CORD INJURY PATIENT'S  
IMMEDIATE DISCHARGE AND AFTER SIX MONTHS OF  
REHABILITATION**

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**COMPARISON OF FUNCTIONAL ABILITIES AND COMMUNITY INTEGRATION OF SPINAL CORD INJURY PATIENT'S IMMEDIATE DISCHARGE AND AFTER 6 MONTHS OF REHABILITATION.**

Submitted by **Proshoun Rakshit Himel**, for the partial fulfillment of the requirement for the degree of the Bachelor of Science in Physiotherapy (B.Sc. in PT)

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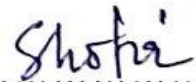
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# CONTENTS

	<b>Page No.</b>
Acknowledgement	i
List of Acronyms	ii
List of Figures	iii
List of Tables	iv
Abstract	v
<b>CHAPTER-I: INRODUCTION</b>	
1.1 Background	1 - 3
1.2 Rationale	4 - 5
1.3 Research Question	6
1.4 Objectives of the study	7
1.4.1 General objectives	7
1.4.2 Specific objectives	7
1.5 Operational definition	8 - 9
<b>CHAPTER-II: LITERATURE REVIEW</b>	10 - 15
<b>CHAPTER-III: METHODOLOGY</b>	
3.1 Study design	16
3.2 Study site	16
3.3 Data collection procedure	17
3.4 Study population and sampling technique	17
3.5 Sample size	17
3.6 Inclusion criteria	18

3.7 Exclusion criteria	18
3.8 Data collection tools	18 - 19
3.9 Data management and analysis	20
3.11 Ethical consideration	20
<b>CHAPTER- IV: RESULTS</b>	21 - 39
<b>CHAPTER- V: DISCUSSION</b>	40 - 41
5.1 Limitation	42
5.2 Recommendation	42 - 43
<b>CHAPTER- VI: CONCLUSION</b>	
6.1 Conclusion	44
<b>REFERENCES</b>	45 - 52
<b>APPENDIX</b>	53 - 76

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## List of Acronyms

<b>ASIA:</b>	American Spinal Injury Association
<b>BHPI:</b>	Bangladesh Health Professions Institute
<b>CRP:</b>	Centre for the Rehabilitation of the Paralyzed
<b>FIM:</b>	Functional Independence Measure
<b>SCIM:</b>	Spinal Cord Independence Measure
<b>SCI:</b>	Spinal Cord Injury
<b>SCL:</b>	Spinal Cord Lesion
<b>QOL:</b>	Quality of life
<b>SPSS:</b>	Statistical Package of Social Science
<b>US:</b>	United States
<b>WC:</b>	Wheelchair
<b>WHO:</b>	World Health Organization

## List of Figure

<b>Figure</b>		<b>Page no.</b>
<b>Figure-1:</b>	<b>Age of the participants</b>	<b>19</b>
<b>Figure-2:</b>	<b>Gender of the participants</b>	<b>20</b>
<b>Figure-3:</b>	<b>Marital status of the participants</b>	<b>21</b>
<b>Figure-4:</b>	<b>Educational level of the participants</b>	<b>25</b>
<b>Figure-5:</b>	<b>Occupational status</b>	<b>26</b>
<b>Figure-6:</b>	<b>Residential area</b>	<b>27</b>
<b>Figure-7:</b>	<b>Moithly family income</b>	<b>28</b>
<b>Figure-8:</b>	<b>Cause of injury</b>	<b>29</b>
<b>Figure-9:</b>	<b>Types of Paralysis</b>	<b>30</b>
<b>Figure-10:</b>	<b>Neurological level ASIA scale</b>	<b>31</b>

## List of Tables

<b>Table No.</b>	<b>Topic Name</b>	<b>Page No.</b>
<b>Table-1</b>	Socio-demographical characteristics of the participants	23 - 24
<b>Table-2</b>	Median and mean, P value of socio-demographic factors for each total score of SCIM III initially discharged and after 6 months (Man-Whitney U test or Kruskal-Walis test).	33 - 35
<b>Table-3</b>	Comparison between mean scores of self-care, respiratory and sphincter management, mobility subtotal and total score of SCIM III immediate discharge condition and after 6-month condition.	37



## Abstract

**Introduction:** Spinal cord injury (SCI) is a traumatic or non-traumatic occurrence that results in disorders to usual sensory, motor, or autonomic function and ultimately influences a patient's physical, mental and social well-being. **Purpose of study:** It was aimed that comparison of functional abilities and community integration of spinal cord injury patient's immediate discharge and after 6 months of rehabilitation. **Methods:** This study was done by using quantitative method, which was a cross sectional study on the people with patients of SCI who admitted at CRP, Bangladesh. Retrospective data was suitable to compare functional outcome and social integration between immediate discharge time and 6 months after rehabilitation. This methodology was chosen to fulfill the aim of this research project. The study population or total 50 participants were attended willingly & conventionally for this study. Data was collected by SCIM III questionnaire. Researcher maintained all-ethical issues. Data were numerically captured in SPSS 25 version. Furthermore, Microsoft excel was used for the analysis of the data and for the presentation of the data as well. **Results:** 50 participants (43 men and 7 women) with SCI were recruited. Just prior to discharge from in-patient rehabilitation at CRP people with SCI, significant decrease perceived after 6 months in the SCIM III total scores of subjects (61.92 – 51.32 scores). Slight decrement also showed in self-care, respiratory and sphincter control & mobility after 6 months. There were some specific differences in total SCIM III scores discharge and after 6 months when comparing them with age, gender, type of paralysis, occupation, income, marital status. Statistical comparison between age factor and type of paralysis with total SCIM III scores (Discharge, after 6months) presented statistically significant ( $p < 0.005$ ). **Conclusion:** The functional ability and community integration of subjects with SCI significantly decreased after 6 months of community living. There was a significant decrement in functional abilities, ADL and community integration during immediate discharge condition and after 6 months of living in community without rehabilitation. This finding confirmed important roles of physiotherapy treatment and community rehabilitation after discharge. **Key words:** spinal cord injury (SCI); rehabilitation; functional ability; Spinal Cord Independent Measurement III (SCIM III).

## 1.1 Background

Spinal cord injury (SCI) is a traumatic or non-traumatic occurrence that results in disorders to usual sensory, motor, or autonomic function and ultimately influences a patient's physical, mental and social well-being (Haque et al., 2012). Each year, thousands of people are inflated by spinal cord injury (SCI), a distressing neurological disorder. Over the last few decades, mammoth progress has been made in our understanding of the molecular and cellular events caused by SCI, providing insights into critical mechanisms contribute to tissue damage and the failure of injured neurons to regenerate. SCI is currently treated with high-dose methylprednisolone, surgical interventions to stabilize and decompress the spinal cord and rehabilitative care (Sliva et al., 2014).

The usual life expectancy of people with spinal cord injury (SCI) has enlarged significantly in recent decades as medical care has improved (Post et al., 2012). According to Van den Berg et al. 2010, SCI is also considered by high injury, high cost and in young patients it frequently leads to severe enduring disability. SCI is a major cause of locomotor disabilities in both developing and developed countries, causing disruptions in daily activities (Tasiemski et al., 2011).

The reasons of SCI may fluctuate from person to person due to diverse age, sex, and race and sociocultural actions (Ning et al., 2016). The most frequent cause of traumatic SCI is motor vehicle accidents, followed by falls in America and Nigeria (Mothe A Tetor., 2013).

Bangladesh is a developing country with the world's highest population density. According to the Bangladesh Demographics Profile (2018), this small country is home to approximately 138 million people. It is regarded as one of the world's least developed countries in terms of average income, calorie consumption, infant mortality rate, and literacy rate. According to JICA (2017), approximately 15% of the global population is affected by various types of disabilities. And the majority of them live in developing

countries. It is estimated that nearly 10% of Bangladesh's total population is disabled, with 43 percent physically disabled (Haque, 2012).

Globally, the prevalence of SCI ranges between 15 and 40 people per million people, and the incidence rate ranges between 10.4 and 83 cases per million in one year. According to the National Spinal Cord Injury Association, as many as 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 (Moghimian et al., 2015).

It is critical to create dependable and sensitive measures for validating functional recovery. There is also a growing need for sensitive outcome measures, detect change over a shorter time period and across various care continuums as a result of decreasing lengths of from 115 days in rehabilitation in the United States 1974 to 2005: 36 days (Ackerman et al., 2010). Medical and rehabilitative interventions that are timely and appropriate are critical factors influencing functional recovery in traumatic SCI. Following acute care, patients should begin early post-acute rehabilitation as soon as possible. It aims to improve functional outcomes and tends to hasten and promote improvements in daily living activities. To achieve this goal, however, an in-depth understanding of the wide range and interaction of functional problems that people with SCI may encounter is required (Geyh et al., 2011).

Patients with spinal cord injury (SCI) have a wide range of medical, social, psychological, and economic issues, which is exacerbated by the fact that the damage frequently happens in young people. SCI causes voluntary muscular paralysis and lowers capacity to control motor functions, affecting occupational, avocational, and self-care tasks. Patients with subacute SCI can increase their functional abilities after participating in a rehabilitation program, according to evidence. However, due to contextual restrictions such as a lack of home adaption and assistance devices, this capacity did not persist after discharge. Reduced motor function while engaged in the same environmental settings may result in a sedentary lifestyle, increased risk of injury, and subsequent health concerns following discharge (Amatachaya et al., 2011).

The Spinal Cord Independence Measure (SCIM) was developed specifically for people with SCI to assess their ability to perform routine daily tasks. Since 1997, three versions of the SCIM have been created. The SCIM-III has been shown to be a valid, reliable,

and efficient measure for assessing functional status in people with SCI. The SCIM-III is divided into three subscales: self-care (scores ranging from 0 to 20), respiration and sphincter management (scores ranging from 0 to 40), and mobility (scores between 0 and 40). These subscales are further broken down into 19 tasks. Each task score is weighted based on its clinical relevance in relation to the overall activity of people with SCI. The SCIM-III has a maximum total score of 100 points, with higher scores indicating greater independence (Morrison et al., 2010).

Patients with spinal cord injury (SCI) have a wide range of medical, social, psychological, and economic issues, which is exacerbated by the fact that the damage frequently happens in young people. SCI causes voluntary muscular paralysis and lowers capacity to control motor functions, affecting occupational, avocational, and self-care tasks. Patients with subacute SCI can increase their functional abilities after participating in a rehabilitation program, according to evidence. However, due to contextual restrictions such as a lack of home adaption and assistance devices, this capacity did not persist after discharge. Reduced motor function while engaged in the same environmental settings may result in a sedentary lifestyle, increased risk of injury, and subsequent health concerns following discharge (Goulet et al., 2019).

## **1.2 Rationale of the study**

The aim of the study was to compare functional outcome and community integration of spinal cord injured patients immediate discharge and after 6 months of rehabilitation.

SCI is regarded as one of the most severe musculoskeletal conditions. It is estimated that 10-83 people per million suffer with SCI each year, but most nations reported an incidence of 15-30 people per million. One half of these injuries are caused by cervical spine injuries that result in tetraplegia, while the other half are caused by thoracic, lumbar, and sacral spine injuries that result in paraplegia. Exercise and physical activity have been demonstrated in studies to give health and wellness advantages for paraplegics and tetraplegics, including increased psychological functioning, physical activities, and avoidance of numerous secondary disorders. The importance of quality of life (QoL) for people with impairments has been acknowledged in the health care industry. As a result, enhancing QoL has become a primary priority. Functional abilities and community integration has been the major parts of SCI patients' life after traumatic events. It directly depends on life span and parts of daily life of SCI patients how will they survive and do their basic functional self-oriented works. Activity of daily living and coping with various environments relies on patients' functional ability, health condition, proper rehabilitation after spinal cord injury. During recent periods functional ability and life span of this vulnerable groups became concerning issue due to inadequate rehabilitation, community health care supports, regular follow up. Not maintaining proper guideline and home advice causing changes of quality of life and functional outcome after receiving proper rehabilitation. In Bangladesh there are two institutes, National Institute of Traumatology Orthopedic and Rehabilitation (NITOR) and Center for The Rehabilitation of The Paralyzed (CRP). Different exercise program, therapeutic intervention, sports activity, community participations, gait rehabilitation are the major part of SCI rehabilitation for long time management for functional improvement and preventing readmission, secondary complications. When a person suffers from SCI, it impacts every part of their life. SCI is a life-changing event for the sufferers. Patients require assistance with medication management, treatment, and medical crises, as well as monitoring, emotional support, personal care, mobility, and other essential daily life tasks. This study formulated to gain knowledge about necessity of physiotherapy community-based rehabilitation, follow up, telemedicine support to

maintain functional ability and managing secondary complication, ADL. In our country there is no such study about comparison of changes in functional ability and community integration of persons with SCI immediate discharge condition and after 6 months condition completing rehabilitation. In this study there will be an evaluation of changing conditions of functional ability and community participation of SCI patients immediate discharge completing full rehabilitation from CRP and after 6 months of rehabilitation.

### **1.3 Research question**

What are the comparative changes in functional abilities and community integrations of patients with spinal cord injury during immediate discharge and after 6 months of community living?

## **1.4 Objectives**

### **1.4.1 General objectives**

To evaluate comparison of functional abilities and community integration of spinal cord injury patients immediate discharge and 6 months after rehabilitation.

### **1.4.2 Specific objectives**

- i. To recognize the socio-demographic information of participants.
- ii. To find out functional independence in self-care.
- iii. To detect functional independence in sphincter control, transfer and locomotion.
- iv. To find out changes in functional abilities and ADL performance.
- v. To understand the changes in functional independence in self-care, respiratory and sphincter control, transfer and mobility through total score of SCIM III.
- vi. To discover changes in functional abilities and ADL performance by comparing total SCIM III score of initial discharge and after 6 months living in community.



## **1.5 Operational definition**

### **Spinal cord injury**

Spinal cord injury (SCI) is damage to the spinal cord that results in a loss of function such as mobility or feeling.

### **Evaluation**

The making of judgement about the amount, number or value of something, assessment.

### **Physical activity**

Physical activity refers to all movement including during leisure time, for transport to get to and from places, or as part of a person's work

### **SCIM III**

Spinal Cord Independent Measurement III is a measurement tool that helps to measure patients independency, functional ability, mobility and community joining ability.

### **Wheelchair**

A special chair used by people who cannot walk because of illness, an accident etc.

### **Paralysis**

Injury or disease to the nervous system can affect the ability to move a particular part of the body. This reduce motor ability is called paralysis.

### **Paraplegia**

Paraplegia is impairment in motor or sensory function of the lower extremities.

### **Tetraplegia**

Paralysis of both upper and lower limbs, it is also called quadriplegia.

### **Skeletal level**

The level at which the greatest vertebral damage is found after radiological examination.

### **Neurological level**

The neurological level of injury is determined by identifying the most caudal segment of the cord with both intact sensation and normal antigravity muscle function strength.

### **Complete injury**

A complete injury means there is no function, no sensation and no voluntary movement below the level of the injury. Both sides of the body are equally affected.

### **Incomplete injury**

An incomplete injury means there is some function below the primary level of injury. A person with an incomplete injury may be able to move one limb more than another.

**ASIA:** American Spinal Injury Association.

**AIS:** Asia Impairment Scale.

**AIS A:** Complete. No sensory or motor function is preserved in sacral segments S4-S5.

**AIS B:** Incomplete. Sensory function below neurologic level and in S4-S5, no motor function below neurologic level.

**AIS C:** Incomplete. Motor function is preserved below neurologic level and more than half of the key muscle groups below neurologic level have a muscle grade less than 3.

**AIS D:** Incomplete. Motor function is preserved below neurologic level and at least half of the key muscle groups below neurologic level have a muscle grade 3.

**AIS E:** Normal. Sensory and motor function is normal.

Spinal cord injury is a serious and major event that strikes rudely and unexpectedly, interrupting personal and social life. Life-threatening moments arise as a result of these injuries (Islam et al., 2011). Damage to the spinal canal's neuronal components, such as the spinal cord and cauda equina, can cause temporary or chronic neurological disability (Bickenbach, J et al., 2013). The frequency rate of spinal cord injury ranges between 10.4 and 83 per million peoples (Kennedy et al., 2013). SCI is a life-changing event that affects not only those with SCI but also their spouses, parents, siblings, and children, as well as being a leading cause of death and morbidity. Individual impairment is prevalent following a spinal cord injury, which manifests itself in dramatic lifestyle changes (Kawanishi et al, 2013). SCI sufferers in developing nations like Bangladesh have a lower life expectancy than those in industrialized countries (Razzak et al., 2011).

SCI, which causes limb paralysis and damage like compression, contusion, or laceration, changes autonomic function at the site of injury or below, and can result in lifetime impairment like paralysis, loss of feeling, neuropathic pain, and so on, depending on the degree of the lesion (Mothe et al, 2013). Primary nerve injury is caused by an initial spinal cord injury that leads to further damage due to inflammation, ischemia, and toxicity, according to a recent study. Following a SCI, a loss of motor control develops, disrupting daily duties (Zhang et al., 2013). Spinal cord injury or damage can cause a wide range of disabilities, activity limitations, and participation restrictions, all of which have a detrimental impact on society (Bickenbach et al., 2013).

According to studies, Males are more impacted than females (4.3:1), with 53 percent of injuries happening in the cervical spine, 22 percent in the thoracic spine, and 25 percent in the lumbar spine, according to studies. In the United States, the annual incidence of traumatic SCI is 40 cases per million, or 1200 new cases each year (Rabadi et al., 2013). In non-traumatic SCI, males are more affected than females, with a ratio of 197:169, and paraplegia is more common than tetraplegia, with a prevalence of 269 per million in Australia (Bickenbach et al., 2013).

Spinal cord injury (SCI) is a severe disabling injury that can cause not just damage or loss of sensation and motor function, but also multiple organ malfunction. Although

some treatment options, such as cell therapy, have made a difference, there is no therapeutic treatment for SCI that has a beneficial clinical effect. It is costly. The expense of therapy, the length of recovery time, and the loss of labor force are always significant. influence on the person and family, as well as a significant weight on society. As a result, a coordinated multisystem strategy must be considered. treat the injuries as well as any issues that may arise (Kang et al., 2018)

All of these issues present significant hurdles in not just adapting to bodily features but also to living situations, relationships, and modifications (Pretz et al., 2014). As a result, in many cases, rehabilitation can encourage the full inclusion and engagement of people with impairments in the physical and psychosocial environments (Gonçalves et al. 2020).

Because of the high specific, bio-psychological impact and the high socio-economic repercussions, both short-term and long-term, knowledge of the incidence and prevalence of spinal cord injury (SCI) is vital. The extent of control of SCI and the potential need for greater prevention are reflected in the incidence rates. Prevalence rates, on the other hand, have an impact on health care as well as social and personal resources (Wyndaele et al., 2016). Traumatic spinal cord injury (TSCI) results alteration in sensory, motor and autonomic functions. The global incidence of TSCI is 13 to 53 cases per million, which is increasing globally (Adhikari et al., 2021)

Globally, the prevalence of SCI is between 15 and 40 people per million people, with an annual incidence rate ranging between 10.4 and 83 cases per million (Moghimian et al., 2015). United States have the annually statistics of traumatic SCI is 40 cases per million or 1200 new cases with SCI (Rabadi et al., 2013). 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); annually, an estimated 11,000 SCIs occur in the United States (American Association of Neurological Surgeons, 2017), and in Europe, the incidence ranges from 10.4 per million to 29.7 per million per year (Moghimian et al., 2015). According to Lim et al. (2017), the maximum incidence of SCI is 906 per million in the US (Furlan et al., 2013).

In Asia, the incidence rate of SCI ranges from 12.06% to 61.6% per million people, with men being more vulnerable than women. The main causes of traumatic spinal cord injury are motor vehicle collisions (MVCs) and falls (Ning et al., 2012).

Global SCI incidence is estimated to be 40 to 80 new cases per million people per year. This means that between 250 000 and 500 000 persons suffer spinal cord injuries each year (International perspective on spinal cord injury; WHO, 2013). According to a study conducted in Bangladesh, 60 percent of traumatic spinal cord lesions patients were paraplegics, and 40 percent were tetraplegics; 84 percent of non-traumatic spinal cord lesions patients were paraplegics, and 16 percent were tetraplegics; and the male to female ratio was 7.5: 1.0 (Haque et al., 2012).

In CRP, Bangladesh, males are more commonly affected than females, and 92% of patients are from rural areas, while 8 % are from urban areas. The majority of patients have paraplegia (56%), cervical lesion (27%), thoracic lesion (27%), and lumber lesion (29 %) (Islam et al., 2011).

The spinal cord is a part of the spinal column. The spinal cord is 42-45 cm long and extends from the brain to the L1-L2 vertebral level, ending in the conus medullaris. The cauda equina (or "horse's tail") continues from the end of the spinal cord in the spinal canal. The nerve roots that exit the spinal column between each of the vertebrae correlate to neurological segmental levels in the spinal cord. There are 31 pairs of nerve roots in the spine. There are eight cervical, twelve thoracic, five lumbar, five sacral, and one coccygeal vertebra. The neurological levels do not always correlate to the vertebral segments due to the length discrepancy between the spinal column and the spinal cord (International perspective on spinal cord injury; WHO 2013).

Spinal cord is considerably flattened in anterior and posterior areas and is cylindrical in form. It begins in the foramen magnum of the cranium and extends to the medulla oblongata of the brain. It ends inferiorly at the level of the first lumbar vertebra's bottom border. The spinal cord is contained within the vertebral foramen, also known as the vertebral canal (Snell, 2010). The vertebral bodies cover the spinal cord anteriorly, whereas the vertebral arches shield it laterally and posteriorly. The spinal cord connects the spinal nerves and the brain. The spinal cord is the main conduit for movement and sensory information between the brain and the rest of the body (Kirshblum et al., 2011).

The body's receptors receive sensory stimuli from the environment. The sensory stimuli transfer information to the brain, which then sends the transmitted information to the spinal nerves via the spinal cord. This information is beneficial to body motions (Snell, 2010).

At all phases of the rehabilitation process, it is best to actively include well-integrated teams of specialists working in an interdisciplinary manner (Dean et al., 2012). Variable motor outcomes have been recorded when patients return to society following discharge, despite functional improvements in the rehabilitation setting. Higher functioning persons at discharge may experience a considerable loss in independent mobility, according to one-year outcome studies of people with SCI (Chen et al., 2013).

Perhouse et al. (2012), on the other hand, reported that functional gains after discharge were linked to injury healing, even one year later. When analyzing long-term outcomes, the authors stressed the necessity of not only addressing the effects of both inpatient and post-discharge therapies, but also finding other patient-specific characteristics that can impact functional mobility across the continuum of care.

Alamin et al. (2019), published a retrospective study in Bangladesh that revealed the differences between the initial type of ASIA and the type of ASIA upon discharge. 26 people were promoted from AIS A to B, 38 to C, and 28 to D out of 437 people. At the time of discharge, 338 people were wheelchair-bound and 49 were walking. It was discovered that community integration and life satisfaction had a substantial positive link. Both community integration and life satisfaction scores were found to be significantly influenced by the kind of injury, gender, and age. Higher education was linked to greater community integration and life happiness among Bangladesh's 150 SCI participants (Ahmed et al., 2018).

Spinal cord injury is a life-changing condition that is costly to treat and arises suddenly and unexpectedly in human and social life. Following this occurrence, some life-threatening consequences ensue (Islam et al., 2011). Neurological impairment from a spinal cord injury might be permanent or temporary in the neuronal components of the spinal canal (Bickenbach et al., 2013). The annual incidence of spinal cord injury ranges between 10.4 and 83 per million individuals (Kennedy & Chessell, 2013).

In Bangladesh, there is currently no suitable or exact number of people suffering from spinal cord injuries. As a result, determining or estimating the overall number of patients with Spinal Cord Injury in Bangladesh is difficult. In Bangladesh, the most prevalent age group for spinal cord injury is 25-29 years old, and 83 percent of those affected are men (Islam et al., 2011).

A spinal cord injury creates substantial disability by causing radical changes in lifestyle (Kawanishi & Greguol, 2013). Life expectancy of people with SCI has increased over the past 30 years, according to a national data base of 30,822 SCI people in the United States, with mortality rates dropping by almost 40% in the first two years after the injury (Saadat et al., 2010).

According to Nwankwo & Uche. (2013), the 31-45 years old age group is the most commonly impacted in SCI, and females are less affected than males (4.3:1), with 53 percent of injuries occurring in the cervical spine, 22 percent in the thoracic spine, and 25 percent in the lumbar spine. SCI has different incidence, prevalence, and causes in underdeveloped and industrialized countries. He claims that regional management and prevention techniques differ. The number of older individuals in Western countries is growing by the day, and SCI is becoming more common as a result of falls. This has turned into a public health issue (Singh et al., 2014).

The average life expectancy after a spinal cord injury in Bangladesh was 5.36 years. Within five years of being admitted to the hospital, 56.4 percent of patients with SCI died. 43.6 percent of those injured lived for five years or longer. According to a CRP study in Bangladesh, the most vulnerable age range was 20-40, which accounts for 55.6 percent of those with SCI. In this country, SCI is less common in people under the age of 20 and more common in people over the age of 50. Paraplegia accounted for 79.75 percent, whereas tetraplegia accounted for 20.25%. Traumatic (86.1%) and non-traumatic (13.9%) causes were identified. Among traumatic injuries, 18% are caused by falling while carrying a heavy burden on the head, which frequently results in tetraplegia (Razzak et al., 2011). According to another research conducted in Bangladesh, 63% of SCI is caused by height falling (Haque et al., 2012).

In Bangladesh, it is common to carry big loads on one's head. Falling while carrying a large burden on the head, road traffic accidents, falling from a height, falling of a heavy

object into the head or neck, bull attack, and plunging into shallow water are the most prevalent causes of spinal cord injury in Bangladesh (Haque et al., 2012).



This section delivered an impression of the methodological framework by emerging a research design, section of sample size and study area, the usage of data assembly technique in order to identify changes in functional abilities of person with SCI during initial discharge and after 6-month of rehabilitation living in the community.

### **3.1 Study Design**

Quantitative research design was used in the method of retrospective cohort type in this study. Retrospective cohort design is the most popular survey method to focus on the previous as well as current experience. A retrospective study design allows the investigator to formulate ideas about possible associations and investigate potential relationships (Anthonisen, 2009).

The aim of the study was to evaluate the changes in functional outcome and social integration immediate and 6 months after discharge from CRP SCI unite. Retrospective data were suitable to compare functional outcome and community integration between immediate discharge time and 6 months after in recent time. This methodology is chosen to fulfill the aim of this research project.

### **3.2 Study site**

Data were collected from CRP SCI registered unit in Bangladesh which is one of the largest SCI rehabilitation centers in South Asia for patient with SCI. Standard data questionnaires was established for data collection at first then collected from registered unit of SCI at CRP.

### **3.3 Data collection procedure**

1st time, 50 data were collected from discharged patient's documents of September & October, 2021. In the 2nd time, data were collected over phone interview from the same sample in April & May, 2022.

### 3.4 Study population and sampling technique

In this study, people with SCI and those who completed treatment and rehabilitation from CRP were chosen to participate. The target population of this study was 50. Convenience sampling technique was selected for accomplishment of this study.

### 3.5 Sample Size

When the sample frame is finite,

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

$$n = \frac{z^2 pq}{d^2}$$

When the sample frame is finite,

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

$$n = \frac{z^2 pq}{d^2}$$

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

$$= 384$$

Here,

Z (confidence interval) = 1.96

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

And,

q= (1-p)

$$= (1-0.5)$$

$$=0.5$$

The actual sample size was, n= 384.

As it is an academic thesis, self-funding and data was collected from a single specialized hospital by considering the feasibility and time limitation. 50 sample were selected conveniently.

### **3.6 Inclusion criteria**

- Members who had accomplished full rehabilitation from Center for the Rehabilitation of the Paralyzed (CRP), Savar, Dhaka, Bangladesh.
- Both male and female were included.
- Subject who was enthusiastic to join.
- Easy to interconnect with subject.
- All data were collected from CRP nursing station from last 6 months.
- 18 years or above (Farjzadeh et al., 2018).
- The patients who had shown willingness to participate were included (Trgovcevic et al., 2014).

### **3.7 Exclusion criteria**

- Subject who may not be enthusiastic to join.
- Subject who was psychologically unstable (Post & van Leeuwen, 2012).
- Subject who was less than 18 years of age.
- If subjects were not willing to participate in the trail (Melin et al., 2018).

### **3.8 Data collection tools**

Data was collected using SCIM-III scale, Papers, Pen, Pencil, Diary, Computer and pen drive, previous documents.

#### **Spinal Cord Independence Measure (SCIM)**

The SCIM developed exactly for person with SCI and measures the capability of accomplishment routine day to day responsibilities (Ackerman et al., 2009). The SCIM by administrated by physiotherapist, occupational therapist, and nursing staff on administration and discharge

### Sub-items and maximal scores of the SCIM

Area	Sub-item	Maximal score
Self-care	Feeding	3
	Bathing upper body	3
	Bathing lower body	3
	Dressing upper body	4
	Dressing lower body	4
	Grooming	3
Total score of area		20
Respiration and sphincter Management	Respiration	10
	Bladder management	15
	Bowel management	10
	Use of toilet	5
Total score of area		40
Mobility	Bed mobility	6
	Transfer bed–wheelchair	2
	Transfer wheelchair–toilet–tub	2
	Mobility indoors	8
	Mobility form moderate distances(10–100m)	8
	Mobility outdoors(4100m)	8
	Stair management	3
	Transfer wheelchair–car	2
	Transfer wheelchair–ground	1
	Total score of area	
Total score of SCIM		100

### **3.9 Data management and analysis**

The data was collected using SCIM Scale. The data that analyzed was descriptive data. The graph technique was used for analyzing data and calculated as percentages and presented this using bar and pie chart by SPSS (Statistical Package of Social Science) software version 25.0. SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type office and use them to tabulated reports, charts and plots and distribution and trends, descriptive statics and conduct complex statistical analysis.

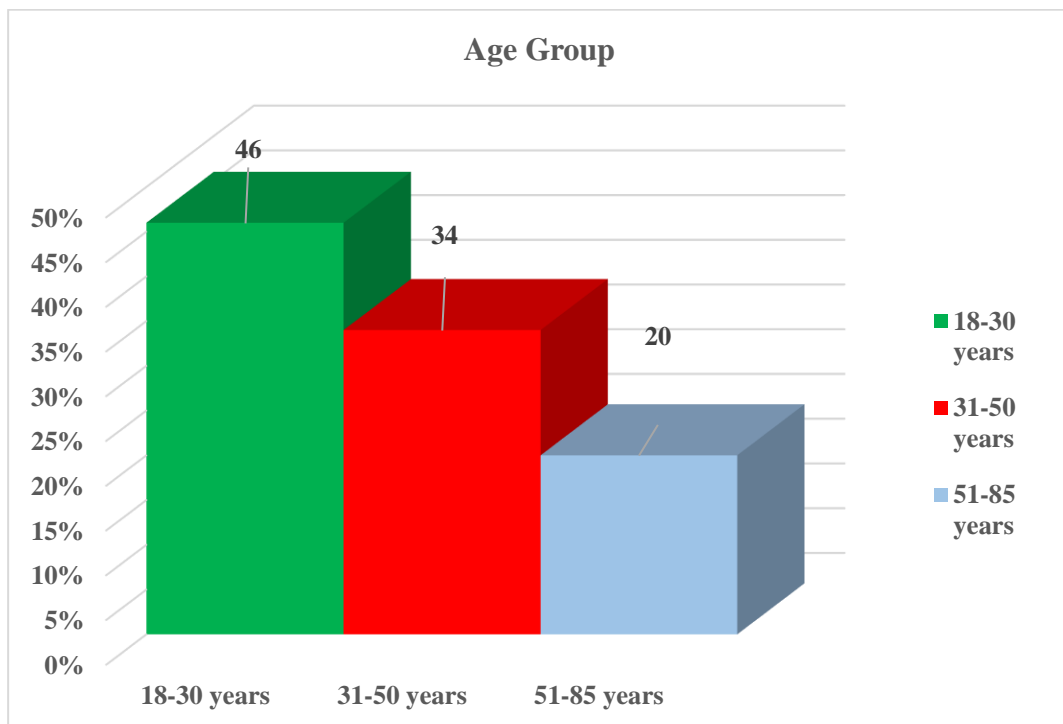
### **3.10 Ethical considerations**

Ethical considerations were implemented to avoid ethical problem. This thesis proposal is approved by IRB of BHPI. The researcher has been taken permission from ethical committee from conducting study and for data collection from SCI units of Savar, CRP and the Head of the Department of Physiotherapy. The researcher is committed not to share the information given with other except there research supervisor. This material will be disposed of after completion of the research project. Collected data will be destroyed after six months following the study.

A total 50 subjects were studied in this study. Necessary information was collected from the respondents and after analysis data was presented as tables and graphical form below.

#### 4.1 Socio-demographic findings of this study

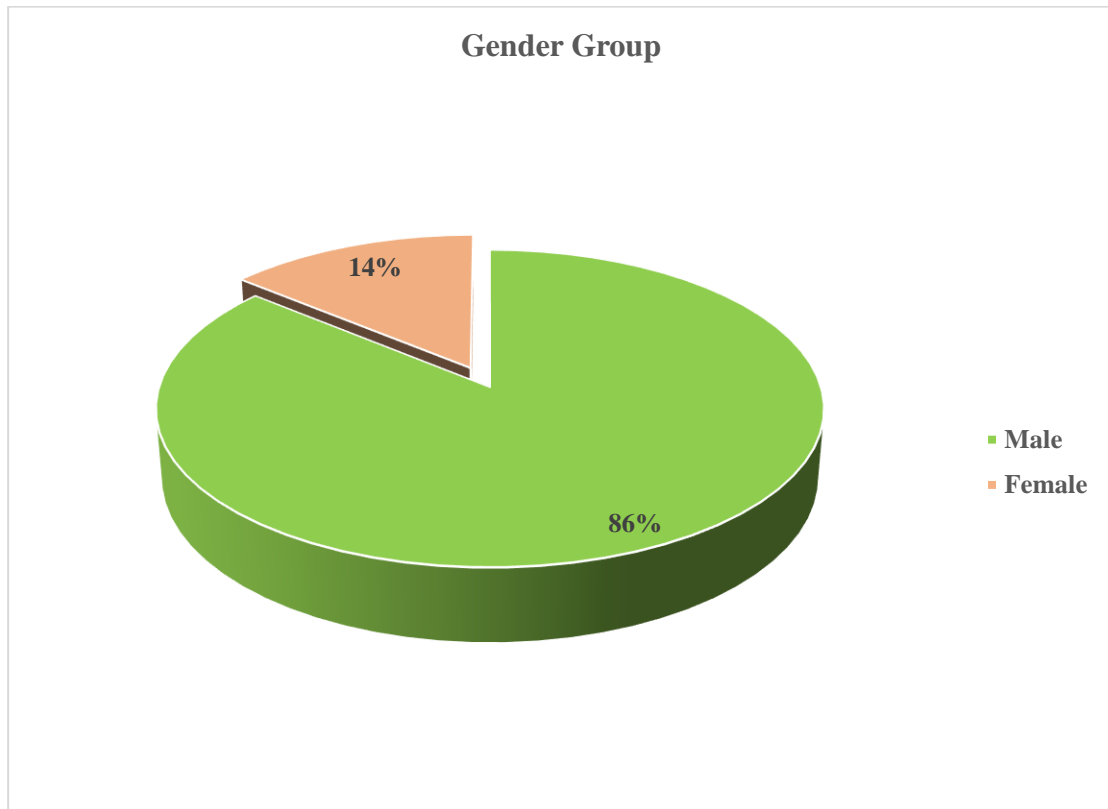
##### 4.1.1 Age



**Figure no: 1 - Age of the participants**

Among 50 patients an age group above 18 years respondents were taken as participants in this study. Among 50 participants most of them attended from 18-30 age group 46% (n=23). Rest of the other participants, 34% (n=17) participants were in 31-50 age group, 20% (n=10) participants were in 51-85 age of group.

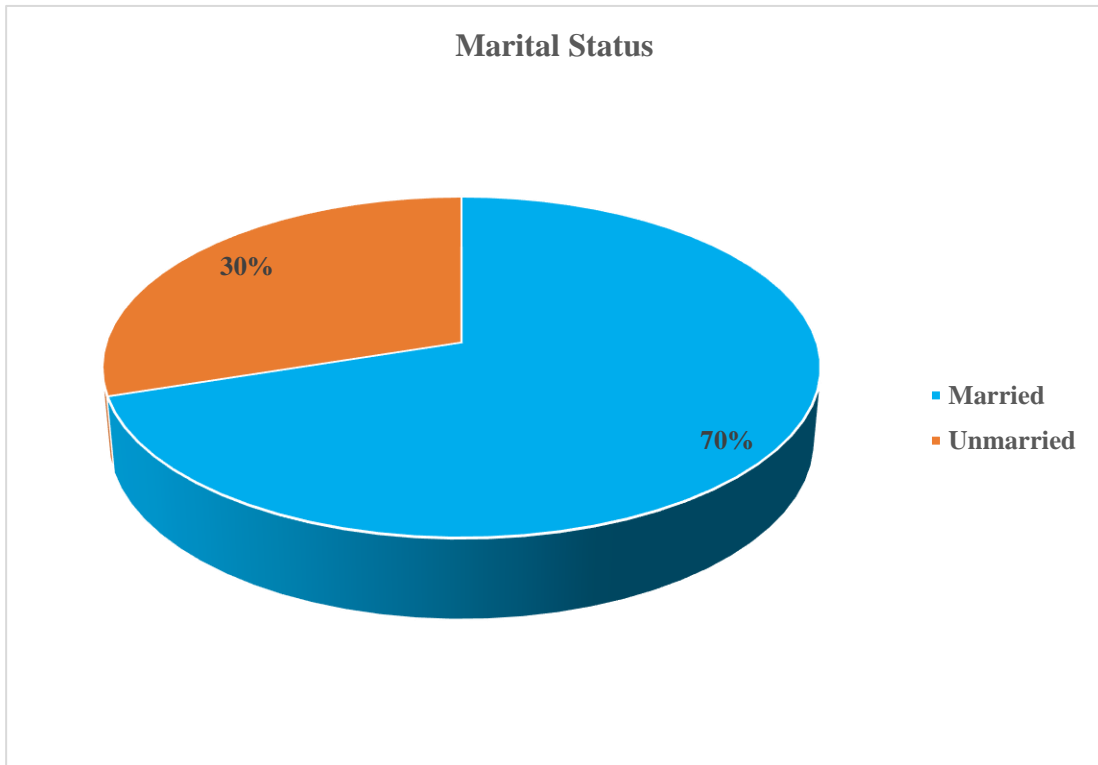
#### 4.1.2 Gender



**Figure no: 2- Gender of the participants**

Among 50 participants, most of the participants attended in this study were male. Data showed that 86% (n=43) were male and 14% (n=7) were female.

### 4.1.3 Marital status



**Figure no: 3- Marital status of the participants**

Among 50 participants, most participants were married. Data showed that 70% (n=35) participants were married and 30% (n=15) participants were unmarried.



#### **4.1.4 Socio-demographical characteristics of the participants of this study**

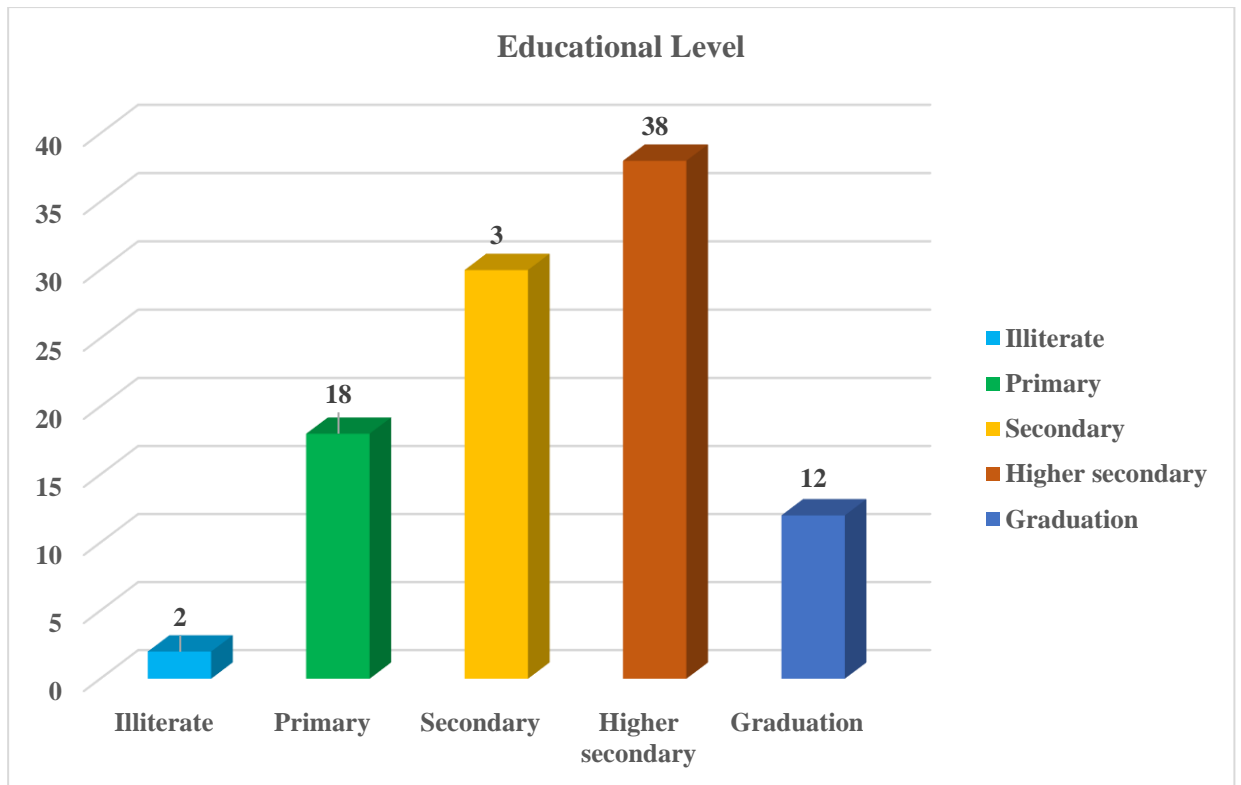
Among 50 participants most of the participants from 18-30 group 46% (n=23). Rest of the other 34% (n=17) participants were in 31-50 age group, 20% (n=10) participants were in 51-85 age of group. Most of the participants attended in this study were male. Data represented that 86% (n=43) were male and 14% (n=7) were female. In the case of educational status 2%(n=1) participants were illiterate, 18% (n=9) participants were primary education, 30% (n=15) participants got secondary education, 38% (n=19) enrolled higher secondary education and 12% (n=6) participants completed their graduation. For the marriage group data presented that 70% (n=35) participants were married and 30% (n=15) participants were unmarried. Data exposed that in case of occupation, 4% (n=2) participants were service holder, 10% (n=5) participants were businessman, 4% (n=8) housewife, 26% (n=13) participants were students, 4% (n=8) participants were worker, 44% (n=22) participants from other occupation. In case of residential area 40% (n=20) were from urban area and 60% (n=30) participants were from rural area. In terms of monthly family income data showed that 6%(n=12) participants salary range 5000-10000, 34% (n=17) participants salary range were 11000-15000, 30% (n=15) participants salary range 16000-20000, 24% (n=12) participants salary range were 21000-50000. According to displayed data traumatic injured participants were 96% (n=48) and 4% (n=2) participant was non traumatic patient. On account of analysis about type of paralysis 76% (n=38) participants were paraplegic and 24% (n=12) participants were tetraplegic patient. In the neurological level demonstration according to ASIA scale 36% (n=18) participants were complete A, 30% (n=15) participants were incomplete B, 26% (n=13) participants were incomplete C, 8% (n=4) participants were incomplete D.

**Table no: 1- Socio-demographical characteristics of the participants**

<b>Variables</b>	<b>Frequencies (n=50)</b>	<b>Percentage (%)</b>
<b>Age</b> (Mean $\pm$ SD) 38.88 $\pm$ 0.777 years		
18 – 30 years	23	46
31 – 50 years	17	34
51 – 85 years	10	20
<b>Gender</b>		
Male	43	86
female	7	14
<b>Marital status</b>		
Married	35	70
Unmarried	15	30
<b>Educational status</b>		
Illiterate	1	2.0
Primary	9	18.0
Secondary	15	30.0
Higher secondary	19	38.0
Graduation	6	12.0
<b>Occupation</b>		
Service holder	2	4
Businessman	5	10
Housewife	4	8
Student	13	26
Worker	4	8
Other	22	44

<b>Residential area</b>		
Urban	20	40
Rural	30	60
<b>Monthly family income</b>		
5000 – 10000	6	12
11000 – 15000	17	34
16000 – 20000	15	30
21000 - 50000	12	24
<b>Cause of injury</b>		
Traumatic	48	96
Non-traumatic	2	4
<b>Type of paralysis</b>		
Paraplegic	38	76
tetraplegic	12	24
<b>Neurological level ASIA scale</b>		
Complete A	18	36
Incomplete B	15	30
Incomplete C	13	26
Incomplete D	4	8

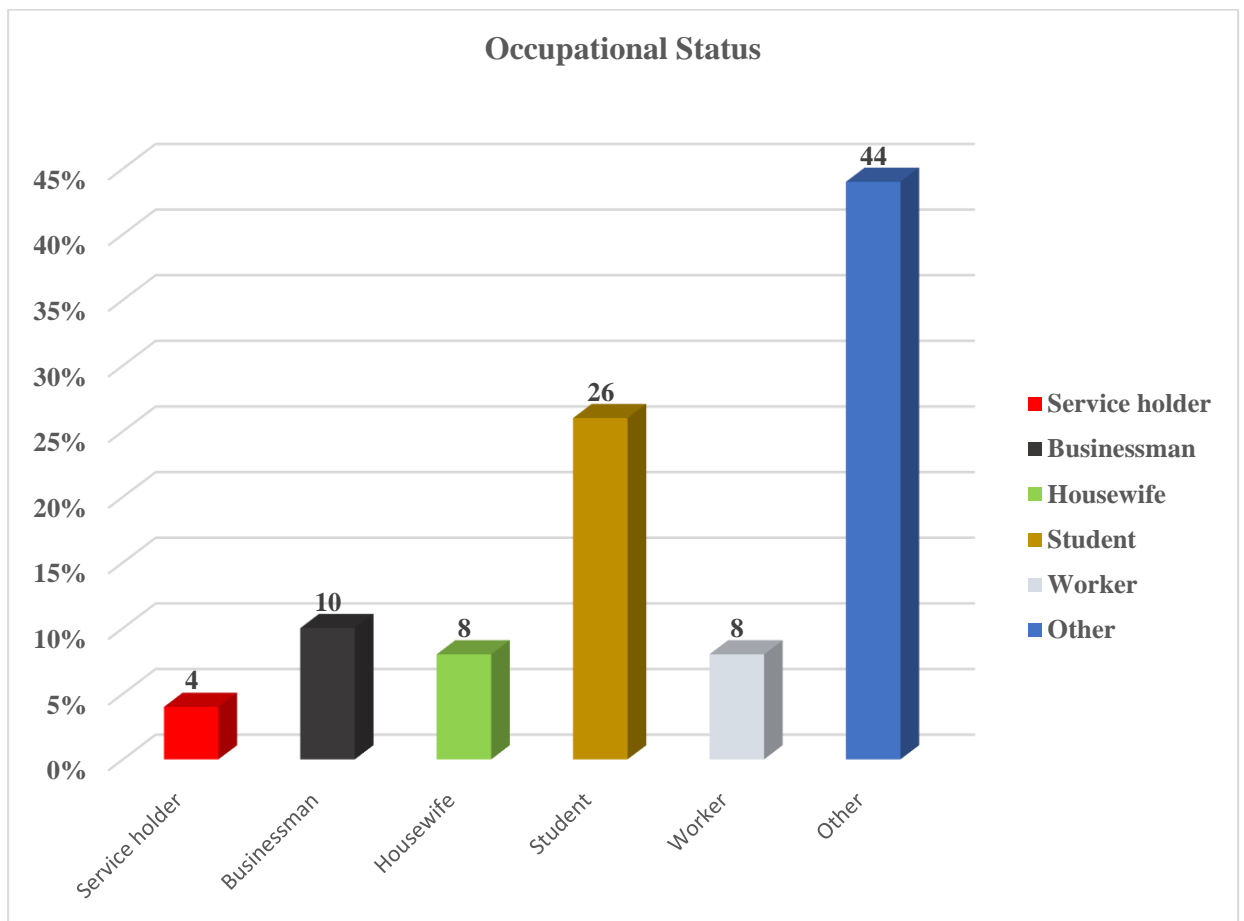
#### 4.1.5 Educational Level



**Figure no: 4- Educational level of the participants**

In the case of educational level 2% (n=1) participants were illiterate, 18% (n=9) participants were primary education, 30% (n=15) participants were completed secondary education, 38% (n=19) enrolled higher secondary education and 12% (n=6) participants completed their graduation.

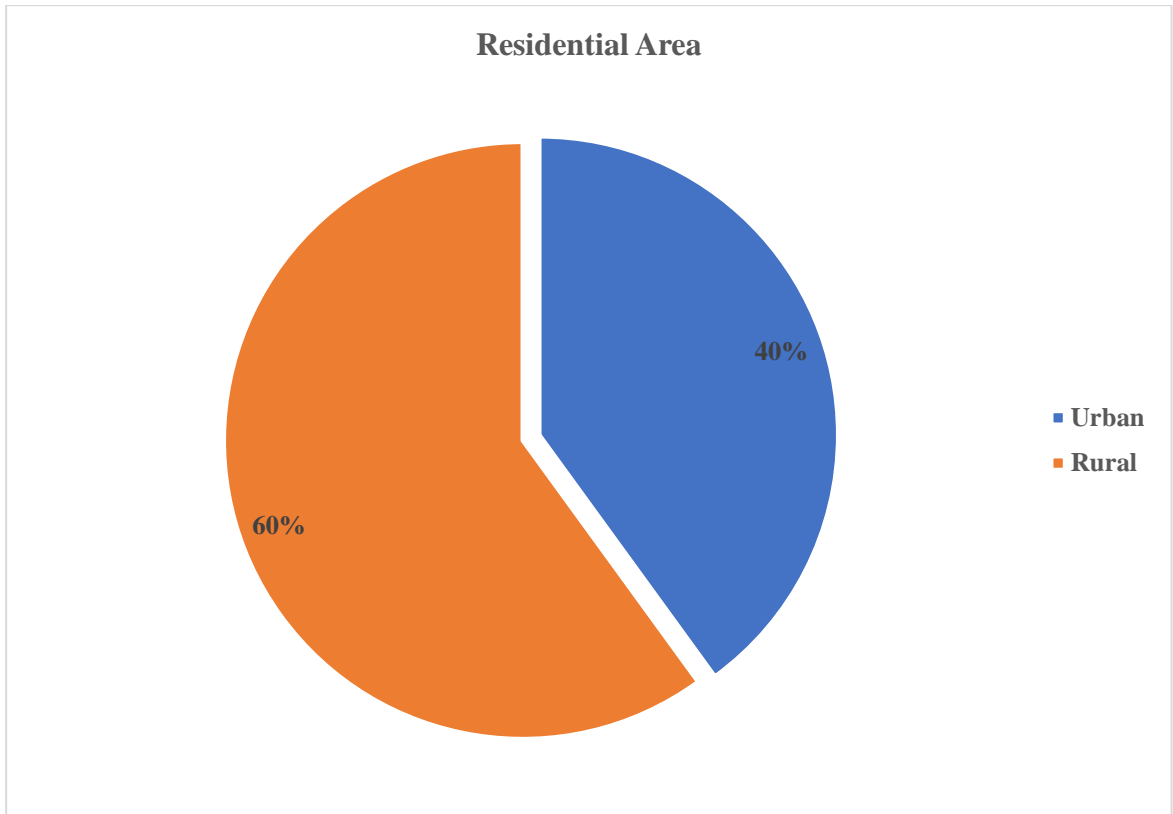
#### 4.1.6 Occupational Status



**Figure no: 5- Occupational status**

Data showed that in case of occupation, 4% (n=2) participants were service holder, 10% (n=5) participants were businessman, 4% (n=8) housewife, 26% (n=13) participants were students, 4% (n=8) participants were worker, 44% (n=22) participants from other occupation.

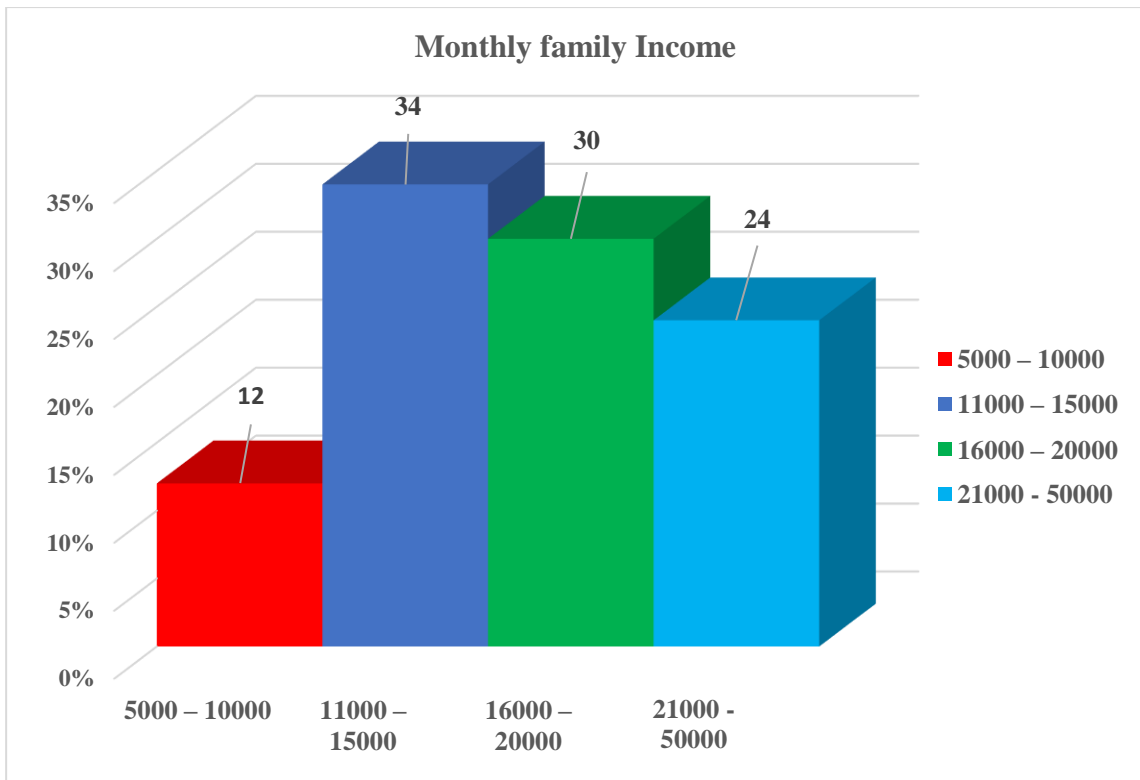
#### 4.1.7 Residential Area



**Figure no: 6- Residential area**

In case of residential area 40% (n=20) were from urban area and 60% (n=30) participants were from rural area.

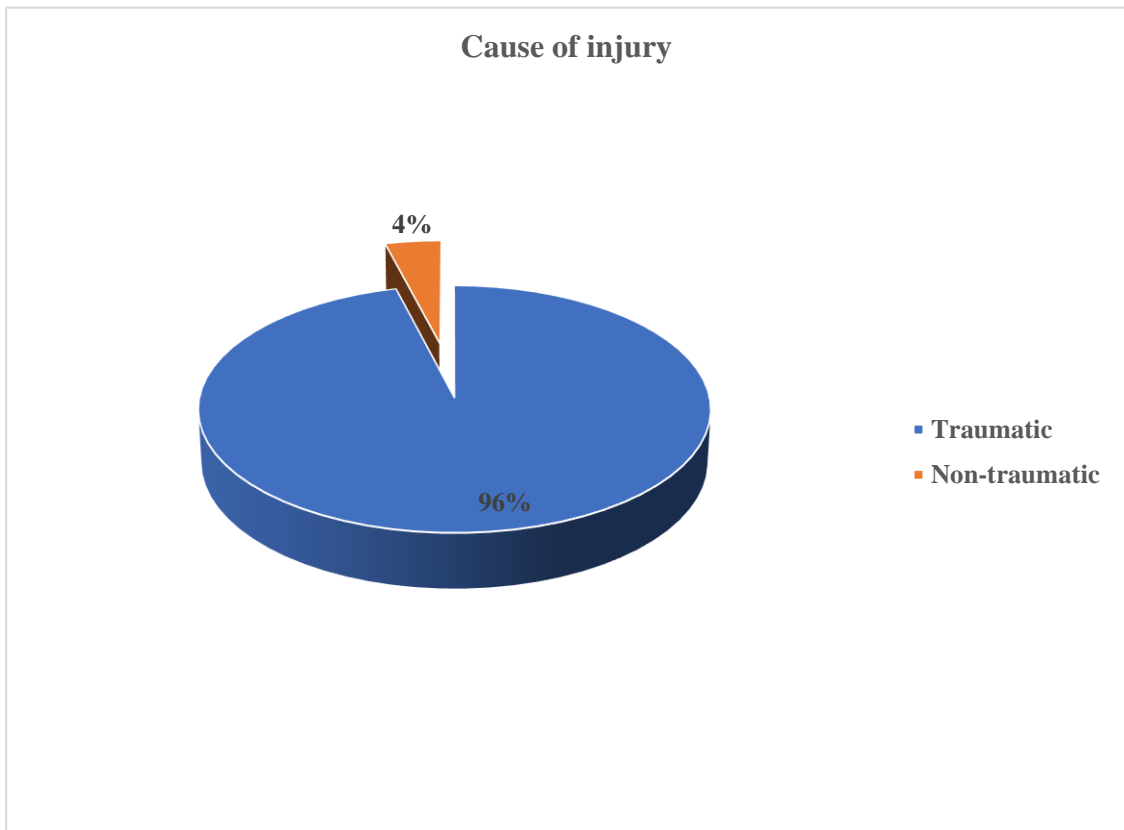
#### 4.1.8 Monthly Family Income



**Figure no: 7- Monthly family income**

In terms of monthly family income data showed that 6% (n=12) participants salary range 5000-10000 BDT, 34% (n=17) participants salary range were 11000-15000 BDT, 30% (n=15) participants salary range 16000-20000 BDT, 24% (n=12) participants salary range were 21000-50000 BDT.

#### 4.1.8 Cause of Injury

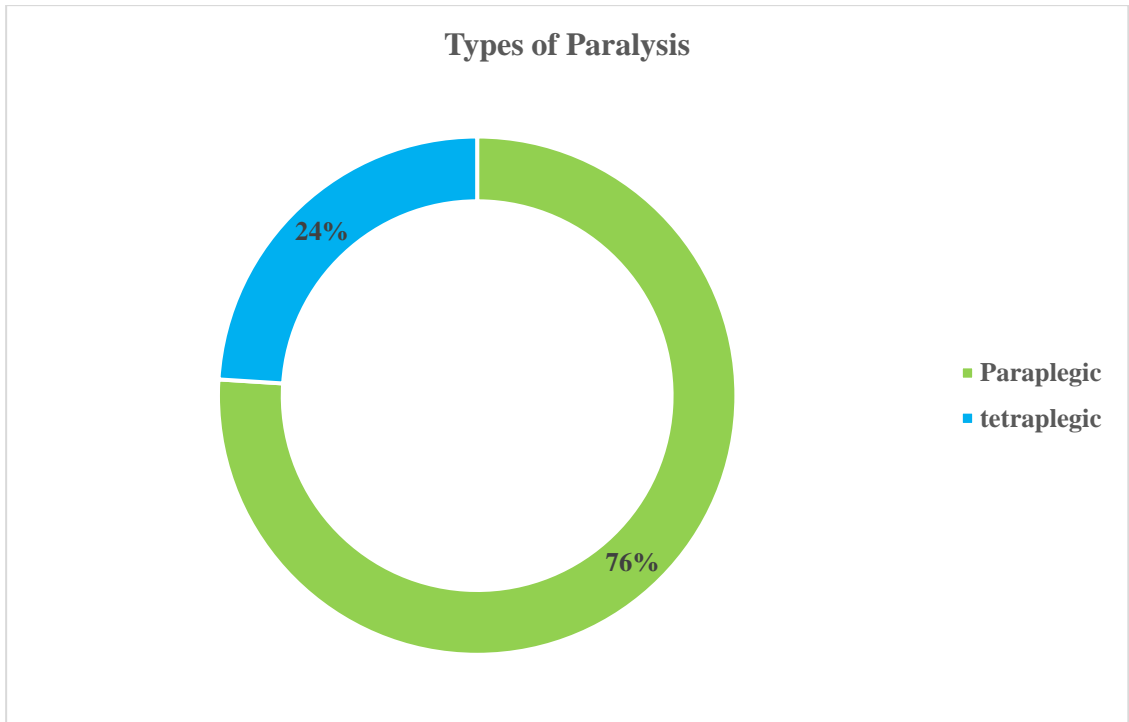


**Figure no: - 8 Cause of injury**

Data showed that 96% (n=48) participants were traumatic injured patients and 4% (n=2) participant was non traumatic patient.



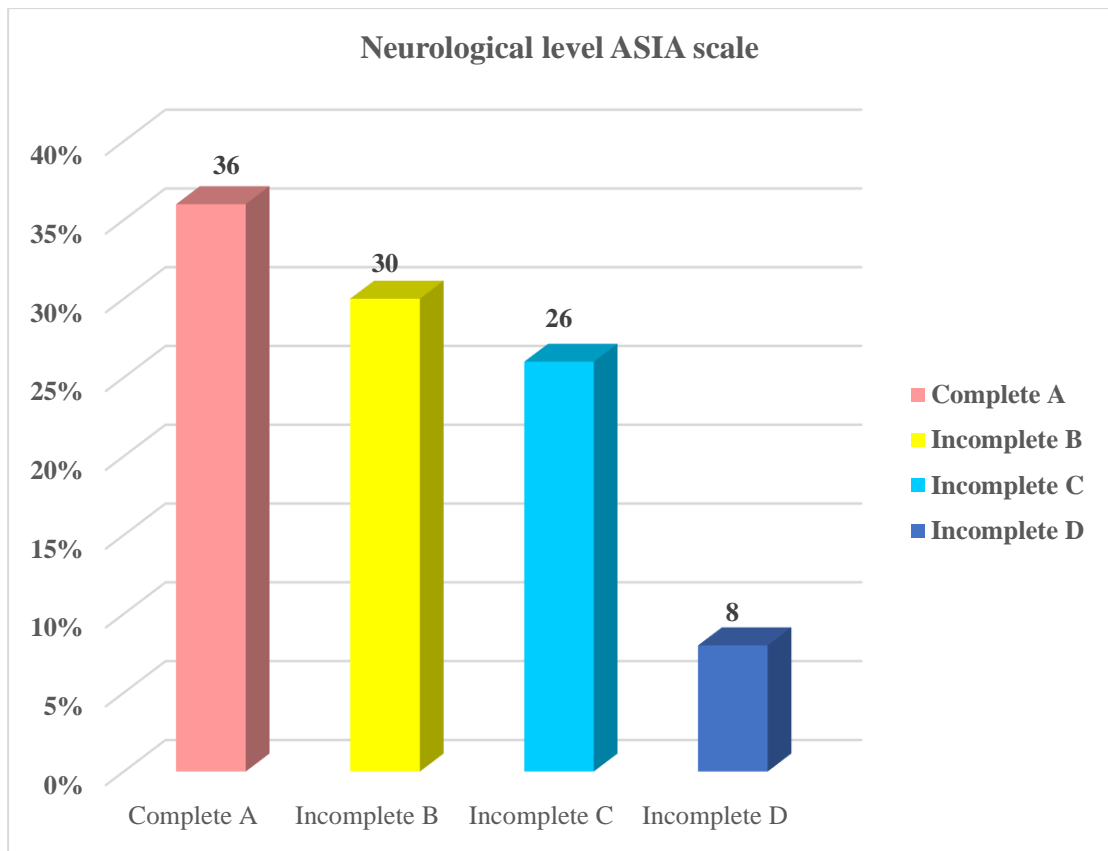
#### 4.1.9 Types of Paralysis



**Figure no: 9- Types of Paralysis**

On account of analysis about type of paralysis 76% (n=38) participants were paraplegic and 24% (n=12) participants were tetraplegic patient.

#### 4.1.10 Neurological Level ASIA Scale



**Figure no: 10- Neurological level ASIA scale**

Data exhibited that neurological level according to ASIA scale 36% (n=18) participants were complete A, 30% (n=15) participants were incomplete B, 26% (n=13) participants were incomplete C, 8% (n=4) participants were incomplete D.

#### **4.2 Comparison between mean, P value of socio-demographic factors for each total score of SCIM III initially discharged and after 6 months (Man-Whitney U test or Kruskal-Wallis test).**

The results of the analysis are provided in table 2 in comparison with Total SCIM score at discharge and total SCIM scores after 6 months of rehabilitation, as well as the sociodemographic domains in this study. All the independent variables were compared with the domains of total SCIM scores initial discharge and after 6 months of rehabilitation in total SCIM scores. Comparison between the independent age variable and with Total SCIM scores at Initial discharged and after 6 month was highly significant ( $p < 0.01$ ) and association with gender group between total initial discharge SCIM III scores presented p-value 0.341 and after 6 months scores presented p-value 0.114. In the marital status variable total SCIM scores discharged displayed p-value 0.84 and after 6 months total SCIM scores showed 0.19. In the educational status variable, the p-value for discharged total SCIM scores 0.285, after 6-month p-value 0.631. In the comparison of occupational status with total SCIM score during discharge p-value showed 0.210 and after 6 months p-value was 0.284. Comparison of residential area variables with total SCIM scores during discharged exhibited p-value 0.166, after 6 months exhibited p-value was 0.817. In the comparison of monthly family income variables with total SCIM score of discharged showed p-value 0.392 and after 6 months p-value showed 0.664. In comparison of cause of injury variables with total SCIM Discharge score the p-value was 0.234 and after 6 months p-value was 0.113. Again, in type of paralysis with total SCIM discharge score comparison showed p-value was 0.145 and after 6 months p-value was 0.035 which was statistically significant. It denotes that type of paralysis had a significant association on after 6 months community integration people with SCI. Again, in the comparison of neurological level ASIA scale with total SCIM discharge score, p-value was 0.065 and after 6 months p-value was 0.098.

**Table no: 2- Comparison between Median and mean, P value of socio-demographic factors for each total score of SCIM III initially discharged and after 6 months (Man-Whitney U test or Kruskal-Walis test).**

This study revealed that within 50 samples association between different socio-demographic components with total SCIM score and after 6 months SCIM scores were not statistically significant.

Socio-demographic factors	Total SCIM III Scores Initial Discharged		Total SCIM III After 6 Months	
	Mean	P value	Mean	P value
<b>Age</b>				
18-30 years			58.39	
31-50 years	68.74	0.001*	51.06	0.001*
51-85 years	60.24		35.50	
	49.10			
<b>Gender</b>				
Male	60.91	0.341	49.79	0.114
Female	68.14		60.71	
<b>Marital status</b>				
Married	60.74	0.84	49.31	0.19
Unmarried	64.67		56.00	
<b>Educational status</b>				
Illiterate	59.00		38.00	
Primary	55.56	0.285	46.89	0.631
Secondary	63.73		55.80	
Higher secondary	64.58		51.63	
Graduate	59.00		48.00	

**Occupational status**

Service Holder	48.50		34.50	
Businessman	69.80	0.210	55.60	0.284
Housewife	56.25		48.00	
Student	64.38		55.23	
Worker	48.00		37.75	
Other	63.45		52.64	

**Residential area**

Urban	65.05	0.166	53.95	0.817
Rural	59.83		49.57	

**Monthly family Income**

6000 - 10000	55.50		48.00	
11000 - 15000	58.29	0.392	49.24	0.664
16000 - 20000	64.87		53.00	
21000 - 50000	66.58		53.83	

**Cause of injury**

Traumatic	61.37		50.63	
Non traumatic	75.00	0.234	68.00	0.113

**Type of paralysis**

Paraplegic	63.93		54.24	
Tetraplegic	57.25	0.145	42.08	0.035*

**Neurological level according to ASIA scale**

<b>Complete A</b>	50.83		40.28	
<b>Incomplete B</b>	64.20	0.065	54.20	0.098
<b>Incomplete C</b>	68.00		57.46	
<b>Incomplete D</b>	83.50		70.25	

### **4.3 Comparison between mean scores of self-care, respiratory and sphincter management, mobility subtotal and total score of SCIM immediate discharge condition and after 6 months condition.**

In this table among 50 participants statistical analysis presented significant decrease in means scores of self-care, respiratory and sphincter management, mobility subtotals and total SCIM score during immediate discharge and after 6 months living in community. Analysis represented that, subtotal of selfcare during immediate discharge was 16.62 and after 6 months of living in community was decreased to 13.60. Subtotal of respiratory and sphincter management during immediate discharge was 28.82 and after 6 months were reduced to 23.88. Subtotal score of mobility during discharge were 16.94 and after 6 months of living in community were decreased to 13.34. Total score of SCIM score during discharge were 61.92 and after 6 months scores were decreased in 51.32.

**Table no: 3- Comparison between mean scores of self-care, respiratory and sphincter management, mobility subtotal and total score of SCIM immediate discharge condition and after 6-month condition.**

<b>Component</b>	<b>Immediate discharge mean score</b>	<b>After 6 months mean score</b>
Self-care sub total	16.62	13.60
Respiratory and sphincter management sub total	28.82	23.88
Mobility sub total	16.94	13.34
Total SCIM score	61.92	51.32



The aim of this study was to evaluate the functional changes in ability and community participation of patients with SCI who completed their rehabilitation into CRP and now living in community after 6 months. Total 50 patients were taken in this in study period. Data showed that 86% (n=43) were male and 14% (n=7) were female. According to Razzak et al., (2013), found that among 56 participants 84% were male and 16.0% were female. Anderson et al., (2007), discovered that among 231 participants male were 63% and female were 37% following SCI. An epidemiological in Southeast Nigeria found that the male and female ratio was 4.3:1 and the 31–45-year age group was more frequently affected (Nwankwo et al., 2013).

In the present study, the age ranged from 18 to 85 years of the participants. In this study the mean age of the patients were 38.88 years with standard deviation ( $\pm 0.777$ ). In other study conduct in Brazil, the mean age was  $30.3 \pm 1.1$  years (Islam et al., 2016). Another study showed that, mean the age was  $40.8 \pm 14.1$  years. In USA, a study showed that the mean age was 29.7 years and the patients were reasonably spread over the age groups and had a mean age of 40.8714.1 years (Burns et al., 2016).

In India, another study exhibited that the mean age was 34.3 years (Chhabra et al., 2012). The majority of the patients were aged between 21-30 years. Chhabra et al., (2012) in their study found among 849 participants 15% was (25-49 years) age group.

Most of the patients were young age. Among 107 patients 97.2% had traumatic SCI. Other hand in Netherland, traumatic cause was 75% (Islam et al., 2016). Out of total respondents, most of them were farmers (46.7 percent), student was 14 percent, daily labor were 9.3 percent, businessman were 8.4 percent, house wife were 7.5 percent, service holder were 6.5 percent, garments worker were 2.8 percent and others were 4.7 percent. Similarly, around 27% of the participants were farmers, while daily laborer's, service holders, business, garment workers, housewives, rickshaw pullers and students were 22%, 18%, 11%, 4%, 9%, 4%, and 4% respectively.4 This differs from the Nigerian study, where it was found that farmers were the fifth most common occupation group who suffered from SCI (Nwankwo et al., 2013).

In the present study, among 50 participants 24% have tetraplegia, 76% have paraplegia. In Thailand, Amatachaya et al., (2011) specified that among 44 participants ,18 people have tetraplegia and 26 people have paraplegia.

Out of 50 patients the impairment grading in ASIA scale A were 36%, ASIA scale B were 30%, ASIA scale C were 26%, ASIA scale D were 8%. Wang HF et al., (2013) in their study stated that, in China cervical injury was 46.3%, thoracic injury was 20.4% and lumber injury was 33.3%. In this study according to the grading scale ASIA A were 74.2%, ASIA B were 5.4%, ASIA C were 5.9% and ASIA D were 13.4%. Most of them are traumatic injured patients.

According to Nwankwo et al., (2013) study, out of total respondents, most of them was others (44 percent) occupation, student was 26 percent, daily worker was 8 percent, businessman was 10 percent, house wife were 8 percent, service holder were 4 percent. In China a 34-study showed that farmer was 57.2%, labor was 13.3%, student 2.6%, service holder 3.4% and others 12.4%. In Nigeria showed that students were 20%, farmers 12.9%, service holders 14% (Wang HF et al., 2013).

After statistical test, this study found significant changes in overall functional abilities, activity limitation and community participation. It shows significant decrease in mean values between total SCIM III scores of immediate discharge (61.92) and 6 months of community living after rehabilitation (51.32). In Comparison between mean & P value of age factors for each total score of SCIM III initially discharged and after 6 months were both <0.005 and total SCIM III scores during discharge and after 6 months scores showed statistically significance with type of paralysis and age factors.

In Thailand, after 6 months, the SCIM II scores of subjects showed a slight decrease ( $58.60 \pm 21.22 - 58.37 \pm 22.06$  scores). The significant decrement was illustrated in self-care and mobility scores of subjects with chronic motor incomplete SCI ( $P < 0.05$ ). The functional ability of subjects with SCI, particularly those with chronic motor incomplete SCI, significantly decreased after discharge (Amatachaya et al., 2011).

## **5.1 Limitations of this study**

There are some limits which were completely taken by the researcher into account during the study period. The researcher always tried to consider the limitations during the period of study. These are given below:

- First, data was collected only from CRP's patient's file. Researcher collected 2<sup>nd</sup> data over phone calls due to COVID-19 Pandemic situation and restrictions.
- Researcher used quantitative method and it was time consuming to collect data from documents.
- The findings of this study did not represent people with SCI because the sample size was small.
- Researcher collected data only those patients who discharged in September to October 2021 from CRP.
- The one of major limitation was time limitation. To conduct the research project on this topic, time period was very limited. As the study period was short so the adequate number of samples could not arrange for the study.

## **5.2 Recommendation**

This research project overall presented that the significant reduction of functional ability and community engagement in people with Spinal cord injury living in community for 6 months after completing rehabilitation treatment from CRP. This significant changes in functional ability are affecting activity of daily living, quality of life, community engagement, physical, mental health issues a lot. The impact it seen on both physical function, alteration of mental health and overall survival lifespan. This result confirms the importance of community-based physiotherapy treatment, outpatients and rehabilitation. Monthly follow up, checkup, evaluation and physiotherapy treatment are necessary to ensure overall functional activity and preventing changes in functional abilities and mortality rate. Community based rehabilitation and physiotherapy treatment, outpatient's management, monthly follow up is necessary for this vulnerable group of people to ensure better lifespan and survival rate. Further comparative RCT studies between Institute based rehabilitation and

community-based rehabilitation is recommended to measure the effectiveness of treatment and enriching evidence-based treatment protocol for community-based physiotherapy treatment and rehabilitation.

**6.1 Conclusion**

SCI is a condition that can be caused by either traumatic or non-traumatic events. It can have a negative impact on a person's entire life at any age. Bangladesh is a densely populated country, and men are more likely than women to work outside the home. Males are employed at every location while avoiding any safety hazards. As a result, guys are more as a result of having SCI. Males grow dependent on their families after suffering a spinal cord injury. Their revenue is likewise decreasing day by day. They get depressed, which can be harmful. SCI physically impacts an individual and their family, reducing QOL. psychologically, socially, and financially. The aim of the study was to evaluate changes in functional ability, activity and community participation immediate after discharge from CRP by completing full treatment and rehabilitation and after 6 months of rehabilitation. The study is focused on mainly how the changes is occurring of functional activity after 6 months of rehabilitation living in community. Through SCIM III questionnaire tool, the researcher tried to identify functional abilities and community participation changes by evaluating difference between total scores of SCIM III initially discharged and total score of SCIM III after 6 months of rehabilitation. The researchers showed that results of 50 sample initial discharge and after 6 months of rehabilitation total SCIM scores significant reduction due to community barriers, environmental factors, didn't maintained home advices or unable to take proper care due to socio-economic barriers. The results show significance decrease in total SCIM scores. So, urgent attention and modification, community-based physiotherapy treatment and rehabilitation, outpatient service is needed on this field for this vulnerable group of disable people to ensure functional activity, community engagement and quality of life improvement those who are living in community area.

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## Appendix-A

### সম্মতি পত্র

আসালামুআলাইকুম/নমস্কার,

আমার নাম প্রসূন রক্ষিত হিমেল, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেসন ইনস্টিটিউট (বি এইচ পি আই) এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম “মেরুরঙ্গুতে আঘাতপ্রাপ্ত রোগীদের কার্যক্ষমতা ও সম্প্রদায়িক অংশগ্রহণ সি আর পি থেকে সম্পূর্ণ রিহ্যাবিলিটেশানের পর সরাসরি মুক্তির অবস্থা ও ৬ মাস পরের অবস্থার তুলনা” আমি এক্ষেত্রে আপনার কিছু ব্যক্তিগত এবং আনুষঙ্গিক প্রশ্ন মেরুরঙ্গু ক্ষতিগ্রস্ত হওয়ার পর কার্যক্ষমতা ও সম্প্রদায়িক অংশগ্রহণ সম্পর্কে করতে চাচ্ছি। এতে আনুমানিক ৩০-৪০ মিনিট সময় নিবো।

আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্যকোন উদ্দেশ্যে ব্যবহার হবে না। গবেষণা সরাসরি এই স্নায়ুজ্ঞান অধ্যয়নের সাথে অন্তর্ভুক্ত নয়। তাই এই গবেষণায় আপনার অংশগ্রহণ বর্তমান ও ভবিষ্যৎ চিকিৎসায় কোন প্রকার প্রভাব ফেলবে না। আপনি যে সব তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে।

এই অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছাপ্রণোদিত এবং আপনি যে কোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজে থেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকারও আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা /এবং এহসানুর রহমান, সহযোগী অধ্যাপক, ফিজিওথেরাপি বিভাগ, সিআরপি, সাভার, ঢাকা-১৩৪৩-তে যোগাযোগ করতে পারেন।

সাক্ষাৎকার শুরু করার আগে আপনার কি কোন প্রশ্ন আছে?

আমি আপনার অনুমতি নিয়ে এই সাক্ষাৎকার শুরু করতে যাচ্ছি।

হ্যাঁ...

না...

১। অংশগ্রহণকারীর স্বাক্ষর.....।

২। সাক্ষাৎগ্রহণকারীর স্বাক্ষর.....।

## Appendix-B

### CONSENT FORM

Assalamualaikum/Namasker, my name is, Proshoun Rakshit Himel, I am conducting this study for a B. Sc in Physiotherapy project study dissertation titled “**Comparison of functional abilities and community integration of spinal cord injury patient’s immediate discharge and after 6 months of rehabilitation**” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding after Spinal cord injury functional abilities and community integration. You will perform some tasks which are mention in this form. This will take approximately 30-40 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 Spinal cord injury area, 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 with my supervisor Ehsanur Rahman , Associate Professor, department of physiotherapy, 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 \_\_\_\_\_

## Appendix-C

### Socio-Demographic Information Chart

পার্ট ১: ব্যক্তিগত তথ্য

আইডি:

তারিখ:

মোবাইল নং:

নাম:

ঠিকানা:

পার্ট ২: অর্থ সামাজিক প্রেক্ষাপটের তথ্য

ক্রমিক নাম্বার	প্রশ্নাবলি	উত্তর
২.১	বয়স	.....বছর
২.২	লিঙ্গ	১. ছেলে ২. মেয়ে
২.৩	বৈবাহিক অবস্থা	১. বিবাহিত ২. অবিবাহিত ৩. ডিভোর্সড
২.৪	শিক্ষাগত যোগ্যতা	১. অশিক্ষিত ২. প্রাইমারি ৩. সেকেন্ডারি ৪. ইন্টারমিডিয়েট ৫. গ্রাজুয়েট ৬. পোস্ট গ্রাজুয়েট



২.৫	পেশা	১. সরকারি চাকুরিজীবী ২. ব্যবসায়ী ৩. অবসরপ্রাপ্ত ৪. গৃহিণী ৫. শিক্ষার্থী ৬. দিনমজুর ৭. অন্যান্য
২.৬	আবাসন	১. শহর ২. গ্রাম
২.৭	পরিবারের সদস্য সংখ্যা	
২.৮	উপার্জনকারীর সংখ্যা	
২.৯	পরিবারের মাসিক আয়	
৩.০	টয়লেটের ধরন	১ এশিয়ান ২ ওয়েস্টারন
৩.১	টয়লেটের দূরত্ব	..... হাত

পার্ট ৩: স্বাস্থ্য বিষয়ক তথ্য

ক্রমিক নাম্বার	প্রশ্নাবলি	উত্তর
৩.১	ইনজুরির কারণ	১. আঘাতজনিত ২. আঘাতজনিত নয়
৩.২	স্কেলেটাল লেভেল	
৩.৩	নিউরোলজিকাল লেভেল	১. কমপ্লিট A ২. ইনকমপ্লিট B

		৩. ইনকমপ্লিট C ৪. ইনকমপ্লিট D
৩.৪	প্যারালাইসিসের ধরণ	১. প্যারাপ্লেজিক ২. টেট্রাপ্লেজিক
৩.৫	নির্গিত রোগ	
৩.৬	অন্যান্য	

### পার্ট ৪: স্পাইনাল কর্ড ইন্ডিপেন্ডেন্ট মেজারমেন্ট স্কেল - III

নিজস্ব যত্ন	Data - 1	Data - 2
<p><b>১. খাওয়ানো</b> (কাটা, কন্টেইনার খোলা, ঢালা, খাবার মুখে নেওয়া, তরল ভর্তি কাপ ধরে রাখতে পারা)</p> <p>০. প্যারেন্টেরাল, গ্যাস্ট্রোটমি অথবা সম্পূর্ণ মুখে খাওয়াতে সহযোগীতার প্রয়োজন।</p> <p>১. খাওয়া, পান করা অথবা অ্যাডাপ্টিভ ডিভাইস পরিধানে আংশিক সাহায্যের প্রয়োজন।</p> <p>২. স্বাধীনভাবে খেতে পারা; শুধুমাত্র খাবার কাটা, ঢালা অথবা কন্টেইনার খোলায় অ্যাডাপ্টিভ ডিভাইস প্রয়োজন</p> <p>৩. স্বাধীনভাবে খেতে এবং পান করতে পারা; কোনো ধরণের সহযোগীতা বা অ্যাডাপ্টিভ ডিভাইসের প্রয়োজন হয় না।</p>		
<p><b>২. গোসল করা</b> (সাবান মাখানো, ধোয়া, মাথা ও শরীর শুকানো, কল ব্যবহার করা). <b>ক-উর্ধ্বাংশ;খ-নিম্নাংশ</b></p> <p><b>ক.</b> ০. সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. আংশিক সাহায্যের প্রয়োজন।</p> <p>২. অ্যাডাপ্টিভ ডিভাইস বা নির্দিষ্ট সেটিংস এর সাথে স্বাধীনভাবে ধৌত করতে পারা।</p> <p>৩. স্বাধীনভাবে ধৌত করতে পারা; কোনো ধরণের</p>		

<p>অ্যাডাপ্টিভ ডিভাইস বা নির্দিষ্ট সেটিংস এর প্রয়োজন নেই।</p>		
<p><b>খ.০.</b> সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. আংশিক সাহায্যের প্রয়োজন।</p> <p>২. অ্যাডাপ্টিভ ডিভাইস বা নির্দিষ্ট সেটিংস এর সাথে স্বাধীনভাবে ধৌত করতে পারা।</p> <p>৩. স্বাধীনভাবে ধৌত করতে পারা; কোনো ধরণের অ্যাডাপ্টিভ ডিভাইস বা নির্দিষ্ট সেটিংস এর প্রয়োজন নেই।</p>		
<p><b>৩. পরিধান করা</b> (জামা, জুতো, স্থায়ী অর্থোসিস: পরিধান করা এবং খোলা). <b>ক-উর্ধাংশ;খ-নিম্নাংশ</b></p> <p><b>ক. ০.</b> সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. বোতাম, চেইন অথবা ফিতাবিহীন জামার ক্ষেত্রে আংশিক সাহায্যের প্রয়োজন।</p> <p>২. Cwobzl এর ক্ষেত্রে adds এর সাহায্যে স্বাধীনভাবে করতে পারা।</p> <p>৩. adds এর সাহায্য ব্যতীত cwobzl স্বাধীনভাবে করতে পারা; শুধুমাত্র bzl এর ক্ষেত্রে adds এর প্রয়োজন।</p> <p>৪. যে কোনো ধরণের কাপড় স্বাধীনভাবে পরতে পারা; কোনো ধরণের adds এর প্রয়োজন নেই।</p>		
<p><b>খ. ০.</b> সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. cwobzl ক্ষেত্রে আংশিক সাহায্যের প্রয়োজন।</p> <p>২. Cwobzl এর ক্ষেত্রে adds এর সাহায্যে স্বাধীনভাবে করতে পারা।</p> <p>৩. adds এর সাহায্য ব্যতীত cwobzl স্বাধীনভাবে করতে পারা; শুধুমাত্র bzl এর ক্ষেত্রে adds এর প্রয়োজন।</p>		

<p>৪. যে কোনো ধরণের কাপড় স্বাধীনভাবে পরতে পারা; কোনো ধরণের adds এর প্রয়োজন নেই।</p>		
<p><b>৪. পরিষ্কার-পরিচ্ছন্নতা</b> (হাতমুখ ধোয়া, দাত মাজা, চুল আঁচড়ানো, শেভিং, সাজসজ্জা করা)</p> <p>০. সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. আংশিক সাহায্যের প্রয়োজন।</p> <p>২. অ্যাডাপ্টিভ ডিভাইসের সাহায্যে স্বাধীনভাবে পরিচ্ছন্ন থাকা।</p> <p>৩. অ্যাডাপ্টিভ ডিভাইসের সাহায্য ব্যতীত স্বাধীনভাবে পরিচ্ছন্ন থাকা।</p>		
<p><b>SUBTOTAL (0-20)</b></p>		
<p><b>শ্বসন এবং স্ফিংটার পরিচালনা</b></p> <p><b>৫. শ্বসন</b></p> <p>০. ট্র্যাকিয়াল টিউব (TT) এবং পারমানেন্ট অথবা ইন্টারমিনেন্ট অ্যাসিস্টেড ভেন্টিলেশন (IAV) প্রয়োজন।</p> <p>২. TT এর সাহায্যে স্বাধীনভাবে শ্বাস নিতে পারা; এক্ষেত্রে অক্সিজেন প্রয়োজন, কাশি অথবা TT ম্যানেজমেন্ট এর ক্ষেত্রে সর্বোচ্চ সহায়তা প্রয়োজন।</p> <p>৪. TT এর সাহায্যে স্বাধীনভাবে শ্বাস নিতে পারা, কাশি কিংবা TT ম্যানেজমেন্ট এর ক্ষেত্রে সামান্য সহায়তা প্রয়োজন।</p> <p>৬. TT ব্যতীত স্বাধীনভাবে শ্বাস নিতে পারা; অক্সিজেন প্রয়োজন এবং কাশির ক্ষেত্রে সর্বোচ্চ সহায়তা প্রয়োজন; মাস্ক এবং IAV প্রয়োজন।</p> <p>৮. TT ব্যতীত স্বাধীনভাবে শ্বাস নিতে পারা; কাশির জন্য সামান্য সহায়তা প্রয়োজন।</p>		

<p>১০. কোনোরকম সহায়তা বা ডিভাইস ব্যতীত স্বাধীনভাবে শ্বাস নিতে পারা</p>		
<p><b>৬. স্ফিংটার পরিচালনা: ব্লাডার</b></p> <p>০. স্থায়ী ক্যাথেটার।</p> <p>৩. অবশিষ্ট মূত্রের পরিমাণ(RUV)&gt;100cc. রেগুলার অথবা অ্যাসিস্টেড ইন্টারমিনেন্ট ক্যাথেটারের প্রয়োজন নেই।</p> <p>৬. RUV&lt;100cc অথবা ইন্টারমিনেন্ট সেলফ ক্যাথেটারাইজেশন; নিষ্কাশন যন্ত্র প্রয়োগের জন্য সাহায্যের প্রয়োজন।</p> <p>৯. ইন্টারমিনেন্ট সেলফ ক্যাথেটারাইজেশন; বাইরের নিষ্কাশন যন্ত্র ব্যবহার করা হয় এবং প্রয়োগের জন্য কোনো প্রকার সাহায্যের প্রয়োজন হয় না।</p> <p>১১. ইন্টারমিনেন্ট সেলফ ক্যাথেটারাইজেশন; কোনো ধরণের বাইরের ড্রেনেজ ব্যবস্থাপনা নেই।</p> <p>১৩. RUV&lt;100cc; শুধুমাত্র বাইরের ড্রেনেজ ব্যবস্থা প্রয়োজন; কোনো প্রকার সাহায্যের প্রয়োজন নেই।</p> <p>১৫. RUV&lt;100cc; কন্টিনেন্ট; বাইরের ড্রেনেজ ব্যবস্থা প্রয়োজন নেই।</p>		
<p><b>৭. স্ফিংটার পরিচালনা: পায়খানা</b></p> <p>০. অনিয়মিত বা খুব কম পায়খানা হওয়া (৩ দিনে একবারেরও কম)</p> <p>৫. নিয়মিত কিন্তু সাহায্যের প্রয়োজন (উদাহরণস্বরূপ, সাপোজিটরি প্রয়োগের মাধ্যমে); ব্যতিক্রমী দূর্ঘটনা (মাসে দুইবারেরও কম)।</p> <p>৮. সাহায্যব্যতীত নিয়মিত হয়; ব্যতিক্রমী দূর্ঘটনা (মাসে দুইবারেরও কম)।</p> <p>১০. কোনো সাহায্য ছাড়াই নিয়মিত মলত্যাগ হয়; কোনো দূর্ঘটনা নেই।</p>		

<p><b>৮. টয়লেটের ব্যবহার</b> (পেরিনিয়াল অঞ্চলের স্বাস্থ্যরক্ষা। মলত্যাগের আগে/পরে কাপড়ের সমন্বয়, ন্যাপকিন কিংবা ডায়পার ব্যবহার করা)</p> <p>০. সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. আংশিক সাহায্যের প্রয়োজন; নিজে পরিষ্কার করতে সক্ষম নয়।</p> <p>২. আংশিক সাহায্যের প্রয়োজন; নিজে পরিষ্কার করতে সক্ষম।</p> <p>৪. adds এর সাহায্যে টয়লেটের যাবতীয় কাজ নিজে নিজেই সম্পন্ন করতে পারা।</p> <p>৫. adds এর সাহায্য ব্যতীত নিজে নিজেই স্বাধীনভাবে টয়লেট ব্যবহার করতে পারা।</p>		
<p>SUBTOTAL (0-40)</p>		
<p><b>গতিশীলতা (রুম এবং টয়লেট)</b></p>		
<p>৯. বিছানায় নড়াচড়া এবং চাপজনিত ঘা প্রতিরোধে করণীয়</p> <p>০. সকল কাজেই সাহায্যের প্রয়োজন; বিছানায় শরীরের উপরের এবং নিচের অংশ ঘুরানো, বিছানায় বসা, হুইলচেয়ারে পুশ আপ ইত্যাদিতে অ্যাডাপ্টিভ ডিভাইসের সাহায্য অথবা সাহায্য ছাড়া, কিন্তু কোনো ইলেক্ট্রিক যন্ত্রের নয়।</p> <p>২. উপরের যেকোনো একটি কার্যক্রম সাহায্য ছাড়া করতে পারা।</p> <p>৪. সাহায্যব্যতীত দুইটি অথবা তিনটি কাজ সম্পন্ন করতে পারা।</p> <p>৬. বিছানায় সকল প্রকার নড়াচড়া ও চাপমুক্ত করার কাজ স্বাধীনভাবে করতে পারা।</p>		

<p><b>১০. স্থানান্তর: বিছানা-ছইলচেয়ার</b>(ছইলচেয়ার লক করা, ফুটরেস্ট তোলা, হাতল সরানো বা অ্যাডজাস্ট করা, স্থানান্তরণ, পা তোলা)</p> <p>০. সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. আংশিক সহায়তা এবং/অথবা সুপারভিশন এবং/অথবা অ্যাডাপ্টিভ ডিভাইসের প্রয়োজন।</p> <p>২. নিজেই করতে পারা (অথবা ছইলচেয়ারেরই প্রয়োজন নেই)।</p>		
<p><b>১১. স্থানান্তর: ছইলচেয়ার-টয়লেট</b></p> <p>০. সম্পূর্ণ সাহায্যের প্রয়োজন।</p> <p>১. আংশিক সহায়তা এবং/অথবা সুপারভিশন এবং/অথবা অ্যাডাপ্টিভ ডিভাইসের প্রয়োজন।</p> <p>২. নিজেই করতে পারা (অথবা ছইলচেয়ারেরই প্রয়োজন নেই)।</p>		
<p><b>চলাচল (ঘরের ভেতরে বা বাইরে এমনকি সমতলে)</b></p> <p><b>১২. ভেতরে চলাচল</b></p> <p>০. সম্পূর্ণ সহায়তা প্রয়োজন।</p> <p>১. ম্যানুয়েল ছইলচেয়ার চালানোর জন্য ইলেক্ট্রিক অথবা আংশিক সহায়তা প্রয়োজন।</p> <p>২. ম্যানুয়েল ছইলচেয়ারে স্বাধীনভাবে চলাচলে সক্ষম।</p> <p>৩. হাঁটার সময় সুপারভিশন প্রয়োজন (ডিভাইস সহ/ব্যতীত)।</p> <p>৪. ওয়াকিং ফ্রেম বা ক্রাচের সাহায্যে হাঁটা (সুইং)।</p> <p>৫. ক্রাচ অথবা দুই কেইনের সাহায্যে হাঁটা।</p> <p>৬. একটি কেইনের সাহায্যে হাঁটা।</p> <p>৭. শুধুমাত্র পায়ের অর্থোসিস প্রয়োজন।</p> <p>৮. ওয়াকিং এইড ব্যতীত হাঁটা।</p>		
<p><b>১৩. মোটামুটি দূরত্বে চলাচল (১০-১০০মিটার)</b></p> <p>০. সম্পূর্ণ সহায়তা প্রয়োজন।</p> <p>১. ম্যানুয়েল ছইলচেয়ার চালানোর জন্য ইলেক্ট্রিক অথবা আংশিক সহায়তা প্রয়োজন।</p> <p>২. ম্যানুয়েল ছইলচেয়ারে স্বাধীনভাবে চলাচলে সক্ষম।</p>		

<p>৩. হাট্টার সময় সুপারভিশন প্রয়োজন (ডিভাইস সহ/ব্যতীত)।</p> <p>৪. ওয়াকিং ফ্রেম বা ক্রাচের সাহায্যে হাটা (সুইং)।</p> <p>৫. ক্রাচ অথবা দুই কেইনের সাহায্যে হাটা।</p> <p>৬. একটি কেইনের সাহায্যে হাটা।</p> <p>৭. শুধুমাত্র পায়ের অর্থোসিস প্রয়োজন।</p> <p>৮. ওয়াকিং এইড ব্যতীত হাটা।</p>		
<p><b>১৪. বাইরে চলাচল (১০০মিটারের বেশি দূরত্ব)</b></p> <p>০. সম্পূর্ণ সহায়তা প্রয়োজন।</p> <p>১. ম্যানুয়েল হুইলচেয়ার চালানোর জন্য ইলেক্ট্রিক অথবা আংশিক সহায়তা প্রয়োজন।</p> <p>২. ম্যানুয়েল হুইলচেয়ারে স্বাধীনভাবে চলাচলে সক্ষম।</p> <p>৩. হাট্টার সময় সুপারভিশন প্রয়োজন (ডিভাইস সহ/ব্যতীত)।</p> <p>৪. ওয়াকিং ফ্রেম বা ক্রাচের সাহায্যে হাটা (সুইং)।</p> <p>৫. ক্রাচ অথবা দুই কেইনের সাহায্যে হাটা।</p> <p>৬. একটি কেইনের সাহায্যে হাটা।</p> <p>৭. শুধুমাত্র পায়ের অর্থোসিস প্রয়োজন।</p> <p>৮. ওয়াকিং এইড ব্যতীত হাটা।</p>		
<p><b>১৫. সিঁড়ি ব্যবস্থাপনা</b></p> <p>০. সিঁড়ি বেয়ে উপরে উঠতে বা নিচে নামতে না পারা।</p> <p>১. অন্যব্যক্তির সাপোর্ট বা সুপারভিশনের সাহায্যে কমপক্ষে ৩টি ধাপ উঠতে বা নামতে পারা।</p> <p>২. হ্যান্ডরেইল এবং/অথবা ক্রাচ অথবা কেইনের সাপোর্টে কমপক্ষে ৩ ধাপ উঠতে বা নামতে পারা।</p> <p>৩. কোনো সাপোর্ট বা সুপারভিশন ছাড়াই কমপক্ষে ৩ ধাপ উঠতে বা নামতে পারা।</p>		
<p><b>১৬. স্থানান্তর (হুইলচেয়ার-গাড়ি)</b></p> <p>০. সম্পূর্ণ সহায়তা প্রয়োজন।</p> <p>১. আংশিক সহায়তা এবং/অথবা সুপারভিশন এবং/অথবা অ্যাডাপ্টিভ ডিভাইসের প্রয়োজন।</p>		



<p>২. নিজে স্বাধীনভাবে স্থানান্তর করতে পারা; কোনো ধরণের অ্যাডাপ্টিভ ডিভাইসের প্রয়োজন নেই।</p>		
<p><b>১৭. স্থানান্তর (গ্রাউন্ড-হুইলচেয়ার)</b>          ০. সাহায্যকারী প্রয়োজন।          ১. নিজে স্বাধীনভাবে স্থানান্তর করতে পারা; অ্যাডাপ্টিভ ডিভাইসের সাহায্য অথবা সাহায্য ছাড়া (অথবা হুইলচেয়ারের প্রয়োজন নেই)।</p>		
<p><b>SUBTOTAL (0-40)</b></p>		
<p><b>Total SCIM Score (0-100)</b></p>		

**Appendix-D**

**Socio-Demographic Information Chart**

**Part I:- Personal Information**

ID: \_\_\_\_\_ Date: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Name: \_\_\_\_\_ Address: \_\_\_\_\_

**Part II:- Social Context information**

Question Number	Questions/ Information	Answers
2.1	Age	..... Year
2.2	Gender	1. Male 2. Female
2.3	Marital Status	1. Married 2. Unmarried 3. Divorced 4. Widow
2.4	Educational status	1. Illiterate 2. Primary 3. Secondary 4. Higher secondary 5. Graduation 6. post-graduation
2.5	Occupation	1. Service Holder 2. Businessman 3. Retired 4. Housewife 5. Students 6. Worker 7. Other

2.6	Residual area	1. Urban 2. Semi-urban 2. Rural
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2.7	Toilet	1. Asian 2. Western
2.8	Distance	..... Hands
2.9	Total Family member	
3.0	Total Earning member	
3.1	Monthly family income	

**Part III:**

**Health information**

<b>Question Number</b>	<b>Questions/ Information on</b>	<b>Answer</b>
3.1	Cause of injury	1. Traumatic 2. Non traumatic
3.2	Skeletal level	
3.3	Neurological Level ( ASIA scale)	1. Complete A 2. incomplete B 3. Incomplete c 4. incomplete D

3.4	Type of paralysis	1. Paraplegic 2. Tetraplegic
3.5	Diagnosis	
3.6	Other	

## SCIM-SPINAL CORD INDEPENDENCE MEASURE

Self care	Data 1	Data 2
<p><b>1. Feeding</b> (cutting, opening container, pouring, bringing food to mouth, holding cup with fluid)</p> <p>0. Need pare anal, gastrotomy or fully assisted oral feeding.</p> <p>1. Need partial assistance for eating and /or drinking, or for wearing adaptive devices.</p> <p>2. Eats independently; needs adaptive or assistance only for cutting food and/or pouring and/or opening containers.</p> <p>3 Eats independently; doesn't require assistance or adaptive devices.</p>		
<p><b>2. Bathing</b> (soaping, washing, drying body and head, manipulating water tap). <b>A-upper body; B-lower body</b></p> <p><b>A.</b> 0. Requires total assistance</p> <p>1. Requires partial assistance</p> <p>2. Washes independently with adaptive devices or in a specific setting (e.g., bars, chair)</p> <p>3. Washes independently; does not require adaptive devices or specific setting (not customary for healthy people) (adss)</p>		
<p><b>B.</b> 0. Requires total assistance</p> <p>1. Requires partial assistance</p> <p>2. Washes independently with adaptive devices or in a specific setting (adss)</p> <p>3. Washes independently; does not require adaptive devices (adss) or specific setting</p>		

<p><b>3. Dressing</b> (clothes, shoes, permanent orthoses: dressing, wearing, undressing). <b>A-upper body; B-lower body</b></p> <p><b>A.</b> 0. Requires total assistance</p> <p>1. Requires partial assistance with clothes <b>without buttons, zippers or laces</b></p> <p>2. Independent with cwobzl; requires <b>adaptive devices</b> and/or <b>specific settings</b></p> <p>3. Independent with cwobzl; does not require adss; needs assistance or adss only for bzl</p> <p>4. Dresses (any cloth) independently; does not require adaptive devices or specific setting</p>		
<p><b>B.</b> 0. Requires total assistance</p> <p>1. Requires partial assistance with clothes <b>without buttons, zipps or laces</b></p> <p>2. Independent with cwobzl; requires adaptive devices and/or specific settings (adss)</p> <p>3. Independent with cwobzl without adss; needs assistance or adss only for bzl</p> <p>4. Dresses (any cloth) independently; does not require adaptive devices or specific setting</p>		
<p><b>4. Grooming</b> (washing hands and face, brushing teeth, combing hair, shaving, applying makeup)</p> <p>0. Requires total assistance</p> <p>1. Requires partial assistance</p> <p>2. Grooms independently with adaptive devices</p> <p>3. Grooms independently without adaptive devices</p>		
<p><b>SUBTOTAL (0-20)</b></p>		

<p><b>Respiration and Sphincter Management</b></p> <p><b>5. Respiration</b></p> <p>0. Requires tracheal tube (TT) and permanent or intermittent assisted ventilation (IAV)</p> <p>2. Breathes independently with TT; requires oxygen, much assistance in coughing or TT management</p> <p>4. Breathes independently with TT; requires little assistance in coughing or TT management</p> <p>6. Breathes independently without TT; requires oxygen, much assistance in coughing, a mask (e.g., peep) or IAV (bipap)</p> <p>8. Breathes independently without TT; requires little assistance or stimulation for coughing</p> <p>10. Breathes independently without assistance or device</p>		
<p><b>6. Sphincter Management - Bladder</b></p> <p>0. Indwelling catheter</p> <p>3. Residual urine volume (RUV) &gt; 100cc; no regular catheterization or assisted intermittent catheterization</p> <p>6. RUV &lt; 100cc or intermittent self-catheterization; needs assistance for applying drainage instrument</p> <p>9. Intermittent self-catheterization; uses external drainage instrument; does not need assistance for applying</p> <p>11. Intermittent self-catheterization; continent between catheterizations; does not use external drainage instrument</p> <p>13. RUV &lt;100cc; needs only external urine drainage; no assistance is required for drainage</p> <p>15. RUV &lt;100cc; continent; does not use external drainage instrument</p>		

<p><b>7. Sphincter Management - Bowel</b></p> <p>0. Irregular timing or very low frequency (less than once in 3 days) of bowel movements</p> <p>5. Regular timing, but requires assistance (e.g., for applying suppository); rare accidents (less than twice a month)</p> <p>8. Regular bowel movements, without assistance; rare accidents (less than twice a month)</p> <p>10. Regular bowel movements, without assistance; no accidents</p>		
<p><b>8. Use of Toilet</b> (perineal hygiene, adjustment of clothes before/after, use of napkins or diapers).</p> <p>0. Requires total assistance</p> <p>1. Requires partial assistance; does not clean self</p> <p>2. Requires partial assistance; cleans self independently</p> <p>4. Uses toilet independently in all tasks but needs adaptive devices or special setting (e.g., bars)</p> <p>5. Uses toilet independently; does not require adaptive devices or special setting)</p>		
<p><b>SUBTOTAL (0-40)</b></p>		
<p><b>Mobility (room and toilet)</b> <b>Mobility in Bed and Action to Prevent Pressure Sores</b></p>		
<p>9. Mobility in Bed and Action to Prevent Pressure Sores</p> <p>0. Needs assistance in all activities: turning upper body in bed, turning lower body in bed, sitting up in bed, doing push-ups in wheelchair, with or without adaptive devices, but not with electric aids</p> <p>2. Performs one of the activities without assistance</p> <p>4. Performs two or three of the activities without assistance</p>		



<p>6. Performs all the bed mobility and pressure release activities independently</p>		
<p><b>10. Transfers: bed-wheelchair</b> (locking wheelchair, lifting footrests, removing and adjusting arm rests, transferring, lifting feet).</p> <p>0. Requires total assistance</p> <p>1. Needs partial assistance and/or supervision, and/or adaptive devices (e.g., sliding board)</p> <p>2. Independent (or does not require wheelchair)</p>		
<p><b>11. Transfers: wheelchair-toilet-tub</b> (if uses toilet wheelchair: transfers to and from; if uses regular wheelchair: locking wheelchair, lifting footrests, removing and adjusting armrests, transferring, lifting feet)</p> <p>0. Requires total assistance</p> <p>1. Needs partial assistance and/or supervision, and/or adaptive devices (e.g., grab-bars)</p> <p>2. Independent (or does not require wheelchair)</p>		
<p><b>Mobility (indoors and outdoors, on even surface)</b></p> <p><b>12. Mobility Indoors</b></p> <p>0. Requires total assistance</p> <p>1. Needs electric wheelchair or partial assistance to operate manual wheelchair</p> <p>2. Moves independently in manual wheelchair</p> <p>3. Requires supervision while walking (with or without devices)</p> <p>4. Walks with a walking frame or crutches (swing)</p> <p>5. Walks with crutches or two canes (reciprocal walking)</p>		

<ul style="list-style-type: none"> <li>6. Walks with one cane</li> <li>7. Needs leg orthosis only</li> <li>8. Walks without walking aids</li> </ul>		
<p><b>13. Mobility for Moderate Distances (10-100 meters)</b></p> <ul style="list-style-type: none"> <li>0. Requires total assistance</li> <li>1. Needs electric wheelchair or partial assistance to operate manual wheelchair</li> <li>2. Moves independently in manual wheelchair</li> <li>3. Requires supervision while walking (with or without devices)</li> <li>4. Walks with a walking frame or crutches (swing)</li> <li>5. Walks with crutches or two canes (reciprocal walking)</li> <li>6. Walks with one cane</li> <li>7. Needs leg orthosis only</li> <li>8. Walks without walking aids</li> </ul>		
<p><b>14. Mobility Outdoors (more than 100 meters)</b></p> <ul style="list-style-type: none"> <li>0. Requires total assistance</li> <li>1. Needs electric wheelchair or partial assistance to operate manual wheelchair</li> <li>2. Moves independently in manual wheelchair</li> <li>3. Requires supervision while walking (with or without devices)</li> <li>4. Walks with a walking frame or crutches (swing)</li> <li>5. Walks with crutches or two canes (reciprocal walking)</li> <li>6. Walks with one cane</li> <li>7. Needs leg orthosis only</li> <li>8. Walks without walking aids</li> </ul>		

<p><b>15. Stair Management</b></p> <p>0. Unable to ascend or descend stairs</p> <p>1. Ascends and descends at least 3 steps with support or supervision of another person</p> <p>2. Ascends and descends at least 3 steps with support of handrail and/or crutch or cane</p> <p>3. Ascends and descends at least 3 steps without any support or supervision</p>		
<p><b>16. Transfers: wheelchair-car</b> (approaching car, locking wheelchair, removing arm and footrests, transferring to and from car, bringing wheelchair into and out of car)</p> <p>0. Requires total assistance</p> <p>1. Needs partial assistance and/or supervision and/or adaptive devices</p> <p>2. Transfers independent; does not require adaptive devices (or does not require wheelchair)</p>		
<p><b>17. Transfers: ground-wheelchair</b></p> <p>0. Requires assistance</p> <p>1. Transfers independent with or without adaptive devices (or does not require wheelchair)</p>		
<p><b>SUBTOTAL (0-40)</b></p>		
<p><b>Total SCIM Score (0-100)</b></p>		

## Appendix-E



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

Ref:

CRP/BHPI/IRB/03/2022/580

Date:

02/03/2022

Proshoun Rakshit Himel  
4<sup>th</sup> Year B.Sc. in Physiotherapy  
Session: 2016 – 2017  
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

**Subject:** Approval of the research project proposal “**Comparison of functional abilities and community integration of spinal cord injury patient’s immediate discharge and after 6 months of rehabilitation**” by ethics committee.

Dear Proshoun Rakshit Himel,  
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 and Mohammad Anwar Hossain as thesis supervisor. The Following documents have been reviewed and approved:

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

The purpose of the study is to compare the functional abilities and community integration of spinal cord injury patients, immediate after discharge and after 6 months of rehabilitation. Since the study involves questionnaire that takes maximum 20-30 minutes and have no likelihood of any harm to the participants, the members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on 12<sup>th</sup> October, 2021 at BHPI (30<sup>th</sup> 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

Permission letter

10/03/2022

The Head,

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka-1343.

**Through:** Head, Department of Physiotherapy, BHPI

**Subject:** Seeking permission for data collection of 4<sup>th</sup> year physiotherapy research project.

Respected Sir,

With due respect and humble submission to state that I am Proshoun Rakshit Himel, student of 4<sup>th</sup> Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The ethical committee has approved my research project entitled on “**Comparison of functional abilities and community integration of spinal cord injury patient’s immediate discharge and after 6 months of rehabilitation**” under the supervision of Ehsanur Rahman, Associate Professor & MPT coordinator (BHPI), department of Physiotherapy, CRP, Savar, Dhaka-1343, Bangladesh. Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect data for my research project from the patients who completed rehabilitation from Spinal Cord Injury unit, department of Physiotherapy, CRP-Savar. So, I need permission for data collection from the spinal cord injury unit of Physiotherapy department of CRP-Savar. I would like to assure that anything of my study will not be harmful for the participants.

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

Yours obediently,

*Proshoun Rakshit Himel*

Proshoun Rakshit Himel

4<sup>th</sup> professional B.Sc. in Physiotherapy

Roll: 39, Session: 2016-17, ID No: 112160368

Bangladesh Health Professions Institute (BHPI)

(An academic Institute of CRP)

CRP, Chapain, Savar, Dhaka-1343.

*Forwarded  
E.R.  
10/03/22*

*Recommended  
Shofiq*

*13.03.22*  
Md. Shofiqul Islam  
Associate Professor & Head  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapain, Savar, Dhaka-1343

*Approved  
M.I.  
13/03/22*