

# **FUNCTIONAL OUTCOME OF THE T9 TO L1 SPINAL CORD INJURY (SCI) PATIENTS AT CRP**

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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

**FUNCTIONAL OUTCOME OF THE T9 TO L1 SPINAL CORD INJURY (SCI) PATIENTS AT CRP**

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## **DECLARATION**

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation or dissemination of information of the study. I would be bound to take written consent of my supervisor and head, department of physiotherapy, BHPI.

**Signature:**

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## Acronyms

<b>BHPI</b>	: Bangladesh Health Professions Institute
<b>BMRC</b>	: Bangladesh Medical Research Council
<b>CRP</b>	: Center for the Rehabilitation of the Paralysed
<b>IRB</b>	: Institutional Review Board
<b>SCI</b>	: Spinal Cord Injury
<b>SPSS</b>	: Statistical Package for the Social Sciences
<b>WHO</b>	: World Health Organization

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## Abstract

*Purpose:* To assess the functional outcomes of traumatic spinal cord injury patients with paraplegia (T9 to L1). *Objectives:* To explore the socio-demography (age, economical status, marital status, educational background, living area) of the affected group, to measure the outcome of the SCI patients who have injury in the spinal level T9 to L1, their functional independent after completing the rehabilitation process. *Methodology:* The study design was cross-sectional. Total 20 samples were selected conveniently for this study from the Spinal cord injury unit at CRP. Data was collected by using mixed type of questionnaire. Descriptive statistic was used for data analysis which focused through table, pie chart and bar chart. *Result:* the finding of the study was that among 20 participants 85% were male most of participants were young in age, all of the participants were traumatic SCI, 65% participants were complete A. Fifteen patients became independent in rolling. In lying to sitting and sitting to lying most of them 75% patients became independent. 70 % of participants show independent in prone lying. Most of them 90% achieved 7 from FIM rating scale in lifting. 95% participants were independent in transferring; significant improvement was observed from FIM rating scale. *Conclusion:* The results of this study provided more insight into the functional outcome of a group of patients with traumatic spinal cord injury with paraplegia. More research is needed to evaluate the rehabilitation program for these patients.

### 1.1 Background

Spinal cord injury (SCI) is the most devastating condition that produces severe functional impairment and requires intensive and specialized clinical rehabilitation. SCI occurs often at a young age, and life expectancy of persons with SCI has increased in recent decades (Saulino, 2014).

Each year approximately 10000 persons in the United States incur a spinal cord injury requiring hospitalization (Saulino, 2014). Worldwide 90 million people suffer from spinal cord injury of varying severity per year. The prevalence of spinal cord injury is not well known in many countries. It is estimated that the annual incidence of spinal cord injury (SCI), not including those who die at the scene of the accident, is approximately 40 cases per million populations in the United State. Since there have not been any overall incidence studies of SCI in the United State since the 1970's it is not known if incidence has changed in recent years. The number of people in the United States who are alive in 2008 who have SCI has been estimated to be approximately 259,000 persons, with a range of 229,000 to 306,000 persons (Spinal Cord Injury Statistics, 2009).

The annual incidence of spinal cord injury is 1.5-2 per 100000 in Sweden. In UK every year, there are around 1200 people paralyzed from a spinal cord injury (Spinal Cord Injury Statistics, 2009). In India approximately 20 000 new cases of spinal cord injury are added every year (Singh et al., 2003).

Disability due to SCI changes the patient's circumstances and leads to poor quality of life. Scivoletto et al. (2003) found that most traumatic SCI occurs in young patients, 20 % of all SCI occur in person aged 65 year or older. In UK SCI occur most frequently in younger adults between the ages of 16-30 years, most common age 19 years (Kennedy and Rogers, 2000). Patient with SCI have different features with regard to aetiology, sex, neurological characteristics complications. There are about 11,000 new cases of SCI in the US every year. Males accounts for 82% of all SCI and female for 18 % (National SCI statistical centre, 2006). Traumatic SCI is more

common in persons younger than 40 years, non-traumatic SCI is more common in persons older than 40 years. Greater mortality is reported in the older patients with SCI (Chin, 2014). Approximately 40% of patients with SCI present with complete SCI, 40% with incomplete injury and 20% with either no cord or only root lesions (Rizollo et al., 2000).

In Bangladesh more than 80% of the population lives in villages and 65% of the total labor forces are employed in agriculture (Hossain, 2001). The World Health Organization (WHO) statistics that is the country 10% of the population are disabled. About 4.6% people are disabled due to spinal cord injury or spinal cord lesion (Hoque et al., 2002).

It is a major public health problem in Bangladesh. The incidence of people having SCI in Bangladesh has been estimated as 2.5 cases per million (Hoque et al., 2002). In Bangladesh, spinal cord lesion patients do not survive after their injury or cannot access medical care (Momin, 2003).

The functional independence of persons with spinal cord injury (SCI) is significantly lower than that of the population in general. SCI usually causes severe locomotor disability, due to paralysis of the muscles. Depending on the level and completeness of the lesion, a person with SCI can be completely independent or need total assistance in all the activities of daily living (ADL). Other consequences of SCI, such as sensory alterations, spasticity, pain and neurogenic bladder, also influence the degree of the disability and reduce functional independence (Dahlberg et al., 2003). Patients with spinal cord injuries (SCI) are confronted with motor and sensory deficits and dysfunction of the bladder and bowel, leading to disabilities in daily activities (Hasan et al., 2009).

In several studies, motor and sensory recovery following traumatic SCI has been quantified, based on the initial level of injury. The level of functional independence ultimately achieved by an individual will also be influenced by a variety of medical and non-medical factors, such as age, body size and weight, associated injuries,

severity of spasticity, motivation, family support, living environment, pre-morbid lifestyle, vocation, educational background and financial status (Jongjit et al., 2004). Functional outcome, or gain in functional ability during rehabilitation, reflects the effectiveness of clinical rehabilitation. The aims of the rehabilitation today should be to maximize his/her performance in self care and daily living activities (Wresle, 2002).

The achieved goals depend on a high standard of initial definitive treatment and a coordinated and intensive period of rehabilitation. This involves training in bladder care, skin care, wheelchair skill, bed mobility, transferring, household activities etc. To return to functional activities depends on the level of injury of the spinal cord (Nichols, 2002).

## **1.2 Rationale**

SCI is a common problem in our country and it is increasing day by day. SCI affects a large number of young individuals with a significant cost to affected persons, families and societies both in terms in economic and non economic cost. Damage to the spinal cord has profound and global effect. Paraplegia is a common condition of SCI patient. Our interventions have been limited to prevention, good initial resuscitation, modest pharmacotherapy and nursing care. As Bangladesh is a developing country and trying to develop health care system. We should be more conscious about the management. SCI patient needs long time rehabilitation program. The goal of the medical rehabilitation is to enhance patient's quality of daily living and capacity to function independently. In Bangladesh, Physiotherapy is new and very challenging health care profession and CRP is the only place where the SCI patients are rehabilitated by a holistic approach. It is very important to measure the function and independency of a spinal cord injured persons after rehabilitation. Measurement of functional independence in SCI patients is an essential component of the rehabilitation process and has a variety of applications both in patient care and in clinical research. The research had explore the issue of the functional outcome after complete their rehabilitation at CRP. It also helped to determine the functional independence or outcome of paraplegia patient in order to make more successful rehabilitation program. As a physiotherapist, we need to maximize the functional independence or outcomes of the peoples with SCI. That was why we had to set specific functional activities which the patients can achieve. The research had helped to assess the level of functional independence or outcome of SCI patient when performing activities.

### **1.3 Research Question**

What is the functional outcome of traumatic paraplegic (T9 to L1) SCI patients?

## **1.4 Objectives**

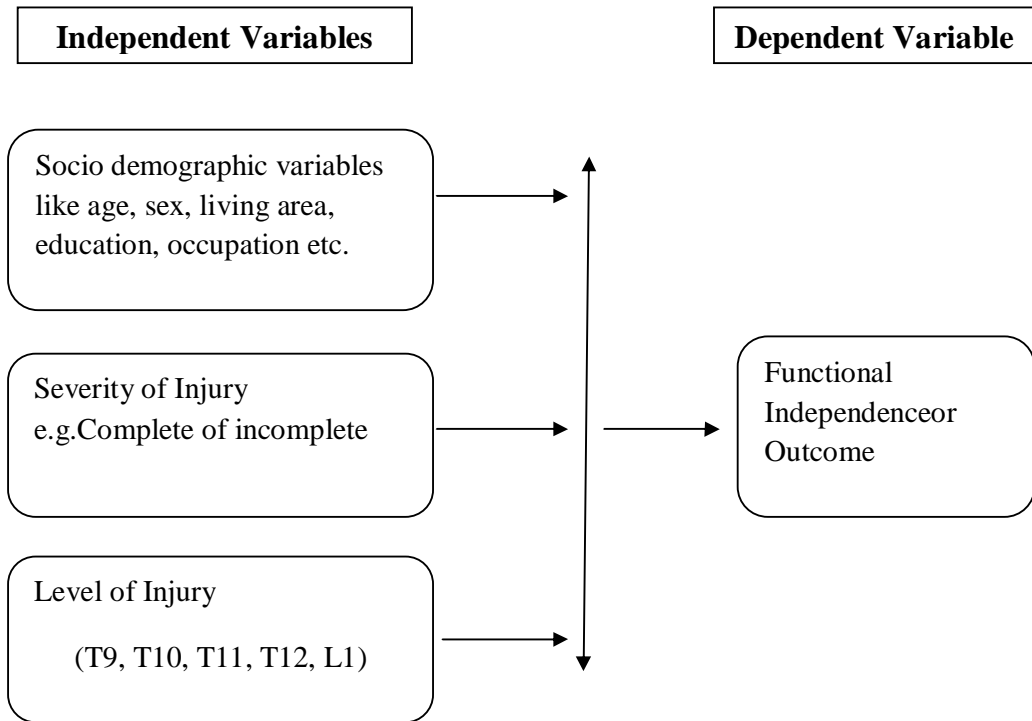
### **1.4.1 General objective**

To assess the functional outcomes of traumatic spinal cord injury patients with paraplegia (T9 to L1)

### **1.4.2 Specific objectives**

1. To find out the socio-demographic characteristics of traumatic paraplegic (T9 to L1) SCI patients.
2. To find out functional outcomes of complete and incomplete paraplegic (T9 to L1) SCI patients.
3. To assess the functional outcomes of traumatic paraplegic (T9 to L1) patients among before and after therehabilitation program.

## 1.5 List of Variables





## **1.6 Operational definitions**

### **Spinal Cord Injury (SCI)**

When the spinal cord is damaged by any causes like trauma or diseases that result sensory and motor loss is called SCI.

#### **Complete**

Absence of sensory and motor functions in the lowest sacral segments.

#### **Incomplete SCI**

Preservation of sensory or motor function below the level of injury, including the lowest sacral segments.

#### **FIM scale**

The FIM is the most widely accepted functional assessment measure in use in the rehabilitation community.

The spinal cord is about 45cm long and 1.25cm wide extending from the base of the brain to the level of the waist. The bundles of nerve fibers that make up the spinal cord itself which contain the upper motor neurons spinal nerves originated from the neck and the back contains the lower motor neurons from the spinal cord (Somers, 2009). The spinal cord has covered tree layers- Durra matter, Arachnoid and Pia matter. The space between the arachnoid matter and pia matter is known as subarachnoid space which contains Cerebrospinal Fluid (CSF) and extends as down as the second sacral vertebra. The spinal cord acts as the main pathway for all incoming and outgoing impulses from the higher center to the periphery for reflex activities and also exerts traffic control over the muscular system (Umphred, 2001).

Spinal Cord Injury (SCI) is damage to the spinal cord that results in a loss of function such as mobility or feeling. The spinal cord does not have to be severed in order for a loss of function to occur. In most SCI cases, the spinal cord is intact, but the damage to it results in loss of function (Palmer et al., 2008).

Spinal cord injury (SCI) is an insult to the spinal cord resulting in a change, either temporary or permanent, in its normal motor, sensory, or autonomic function (Chin, 2015).

A Spinal Cord Injury (SCI) refers to any injury to the spinal cord that is caused by trauma instead of disease (Taber et al., 2009). Depending on where the spinal cord and nerve roots are damaged, the symptoms can vary widely, from pain to paralysis to incontinence. Spinal cord injuries are described at various levels of "incomplete", which can vary from having no effect on the patient to a "complete" injury which means a total loss of function (Lin et al., 2002).

Damage to the spinal cord has profound and global effects. SCI can also affect the functioning of the sensory, respiratory, cardiovascular, gastrointestinal, genitourinary system (Bromely, 2006).

Spinal Cord Injuries are most often traumatic, caused by lateral bending, dislocation, rotation, axial loading, and hyper flexion or hyperextension of the cord or caudaequina. Motor vehicle accidents are the most common cause of SCIs, while other causes include falls, work-related accidents, sports injuries, and penetrations such as stab or gunshot wounds (Bogdanov, 2009). SCIs can also be of a non-traumatic origin, as in the case of cancer, infection, intervertebral disc disease, vertebral injury and spinal cord vascular disease (Fernandez et al., 2010).

Paraplegia - Injury in the spinal cord in the thoracic, lumbar, or sacral segments includes the cauda equina and conus medullaris (Young, 2015).

Tetraplegia or quadriplegia - Injury to the spinal cord in the cervical region, with associated impairment or loss of muscle strength in all four extremities and trunk (Chin, 2015).

Complete – In a complete lesion, there is total absence sensory and or motor function in the lowest sacral segment (S4-S5). Complete injuries often damage the nerve root in the foramen (Umphred, 2001).

In incomplete lesion there is a partial preservation of sensory and/or motor function below the neurological level and in the lowest sacral segment (Umphred, 2001).

ASIA first published an international classification of spinal cord injury in 1982, called the International Standards for Neurological and Functional Classification of Spinal Cord Injury. It is based on neurological responses, touch and pinprick sensations tested in each dermatome, and strength of ten key muscles on each side of the body (Young, 2015):

A indicates a "complete" spinal cord injury where no motor or sensory function is preserved in the sacral segments S4-S5. B indicates an "incomplete" spinal cord injury where sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5. C indicates an "incomplete" spinal cord injury where motor function is preserved below the neurological level and more than half of key muscles below the neurological level have a muscle grade of less than 3. D

indicates an "incomplete" spinal cord injury where motor function is preserved below the neurological level and at least half of the key muscles below the neurological level have a muscle grade of 3 or more. E indicates "normal" where motor and sensory scores are normal.

A functional outcome or evaluation investigation what a person is capable of doing how much assistance he/she needs and what equipment have to need to perform his/her activities. The major thrust of the physiotherapy components of rehabilitation is to increase functional capability; this part of evaluation is very important. The therapeutic program measures according to the evaluation of the functional gain. Documentation of functional abilities must be accurate as all other areas of the evaluation (Somers, 2009).

Depending on the level of the spinal cord injury, whatever sparing the patient has is optimized. Bed mobility, transfers, wheelchair mobility skills, and performing other activities of daily living (ADLs) are just a few of the interventions that physical therapists can help the patient with spinal cord injury. ADLs can be difficult for an individual with a spinal cord injury. However, through the rehabilitation process, individuals with SCI may be able to live independently in the community with or without full-time attendant care, depending on the level of their injury (Radomski and Latham, 2008).

Further interventions focus on support and education for the individual and caregivers (Radomski and Latham, 2008). This includes an evaluation of limb function to determine what the patient is capable of doing independently, and teaching the patient self-care skills (Ozelie et al., 2009). Independence in daily activities like eating, bowel and bladder management and mobility is the goal, as obtaining competency in self-care tasks contributes significantly to an individual's sense of self confidence (Radomski and Latham, 2008) and reduces the burden on caregivers. Quality of life issues such as sexual health and function are also addressed (Atchison and Dirette, 2007).

Functional Independence Measure (FIM) is a functional assessment tool and is used to assess the impact of SCI on the patient's functional abilities. It quantifies the extent of individual disability and complements the neurological assessment by providing scores (Ditunno et al., 2007). It is an 18-item, 7-level ordinal scale designed to assess severity of patient disability, estimate burden of care and determine medical rehabilitation functional outcome. The items are rated two times by the physiotherapist, first at admission of rehabilitation and second at discharge of rehabilitation (Dawson et al., 2008). FIM scores range from one to seven: a FIM item score of seven is categorized as "complete independence" while a score of one is "total assistance" (performs less than 25% of the activity). Scores falling below six require another person for supervision or assistance (Wright, 2000).

The seven levels rating of FIM are (ASIA/IMSOP, 2005):

Independent (no human assistance is required):

7= Complete independence: The activity is typically performed safely, without modification, assistive devices or aids, and within reasonable time.

6= modified independence: The activity requires an assistive device and/or more than reasonable time and/ or is not performed safely.

Dependent (human supervision or physical assistance is required):

5=Supervision or setup: No physical assistance is needed, but cuing, coaxing or setup is required.

4=Minimal contact assistance: Subject requires no more than touching and expends 75% or more of the effort required in the activity.

3=Moderate assistance: Subject requires more than touching and expends 50 ± 75% of the effort required in the activity.

2=Maximal assistance: Subject expends 25 ± 50% of the effort required in the activity.

1=Total assistance: Subject expends 0 ± 25% of the effort required in the activity.

It appears to be the best functional outcome scale used to describe disability among SCI patients, both early and late after injury. It is easy to administer and is valid and reliable.

Short and long term functional targets are determined by the calculation of the patients' ASIA scale, taking into consideration medical and social status and the

individualized rehabilitation plan. Expected functions of motor complete injury patients at the end of the first year according to the level of the injury are given below (Nas et al., 2015).

High-Cervical Injury (C1 – C4), Most severe of the spinal cord injury levels, Leads to quadriplegia and trunk paralysis, may affect respiration too. Patient may have speaking problems, bladder and bowel incontinence and would always require assistance if no recovery occurs.

Low-Cervical Injury (C5 – C8), This spinal injury level involves C5 to C8 nerve roots. There would be no breathing or speech problems. The disability depends on spinal injury level.

C5 injury has to have some or total paralysis of wrists, hands, trunk and legs, will require assistance with most activities of daily living, but can move from one place to another independently in wheelchair.

C6 injury – Paralysis in hands, trunk and legs, should be able to bend wrists back, can move in and out of wheelchair and bed with assistance/aid, No voluntary control of bowel/bladder, but may manage on their own with special equipment

C7 injury- Most have normal movement of their shoulders, can do most activities of daily living , but need assistance with more difficult tasks, may be able to drive an adapted vehicle, no voluntary control of bowel or bladder but, may be able to manage on their own with special equipment

C8 injury – Able to grasp and release objects, can do most activities of daily living by themselves, but may need assistance with more difficult tasks, may also be able to drive an adapted vehicle, little or no voluntary control of bowel or bladder, but may be able to manage on their own with special equipment.

Upper Thoracic Injury (T1 – T5), This spinal cord injury levels affect affect muscles of upper chest, mid-back and abdomen. Arm and hand function is usually normal, paraplegia is present. Patients are able to use manual wheelchair. Some can stand in a standing frame, while others may walk with braces.

Lower Thoracic Injury (T6 – T12), This spinal cord injury level affects muscles of the trunk , usually results in paraplegia and there is normal upper-body movement, there is little or no voluntary control of bowel or bladder but can manage on their own with

special equipment, can use a manual wheelchair, learn to drive a modified car, stand in a standing frame, while others may walk with braces.

Lumbar Injury (L1 – L5), these generally result in some loss of function in the hips and legs. Little or no voluntary control of bowel or bladder, but can manage on their own with special equipment. Depending on strength in the legs, may need a wheelchair and may also walk with braces.

Sacral Injury (S1 – S5), Injuries generally result in some loss of functioning the hips and legs. Little or no voluntary control of bowel or bladder, but can manage on their own with special equipment. Most likely was able to walk (Singh, 2015).

Spinal cord injuries can be devastating leading to partial or complete paralysis. Spinal cord injuries were once frequently fatal, but over the past fifty years many new treatments have been developed to help people with spinal cord injuries survive and possibly recover a great deal of function. Within the past twenty years, even more promising treatments have been developed for spinal cord injury (Newsome & Melton, 2015).

Treatment of spinal cord injury may involve medication, and surgery, and always requires physical therapy. In the case of traumatic spinal cord injury due to an accident, immediate, comprehensive trauma care is crucial for both survival and long-term outcome. A competent trauma team can do much to minimize the spread of damage from a spinal cord injury. The long-term prognosis for a spinal cord injury depends on the nature and location of the injury, as well as the quality of care received (Newsome & Melton, 2015).

Physical rehabilitation is a common form of restoring process. It may often be utilized after a major surgery, an accident or any event that reduce the mobility or function of an individual. This form of rehabilitation pairs the patient with the trained personnel who help him/her to recover as much of his/her previous physical powers as possible (Greek, 2010).

Rehabilitation techniques can greatly improve patients' health and quality of life by helping them learn to use their remaining abilities. They start by setting functional

goals. Functional goals are a realistic expectation of activities that a person with SCI eventually should be able to do with a particular level of injury. These goals are set during rehabilitation with the medical team. They help the patient with SCI learn new ways to manage his/her daily activities and stay healthy. The SCI units include kitchens and laundry facilities, vocational training center and other equipment so that patients can learn independent living skills, such as cooking meals or ironing clothes (Nesathurai, 2000). A spinal cord injury can also affect the nerves and muscles and can cause bowel and bladder problems and skin problems. Special care is needed for the children, especially for teenagers. Parents of spinal cord injured children also need to learn how to take care of their spinal-cord injured child. Having a spinal cord injury does not mean that children have to stop participating in games and enjoyable activities. Most SCI units have recreational therapists on staff to show kids how to play wheelchair basketball, volleyball, and tennis, as well as specially adapted games (Somers, 2009).

A rehabilitation team includes physician, physiotherapist, occupational therapists, recreational therapist, rehabilitation nurse, rehabilitation psychologist, counsellor, social workers, nutritionists and other specialists. A case-worker or program manager coordinates care. Physiotherapists focus both upper and lower extremity function and on difficulties with mobility (National Institute of Neurological Disorders and Stroke, 2010). Physiotherapists also help to remain clear the airway of those who has excess secretion in the chest. Occupational therapists addressed upper extremity dysfunction and difficulties in activities of daily living. Rehabilitation nurses are concerned with the issues of bowel and bladder dysfunction and the management of pressure ulcers. Psychologists deal with emotional and behavioural concerns of the newly injured patient and with any potential cognitive dysfunction. Case manager and social workers are the primary interface among the rehabilitation team, the patient and his/her family (Saulino, 2009).



### **3.1 Study design**

A cross sectional study was selected as appropriate to achieve the aims. A cross-sectional study is a descriptive study in which disease and exposure status is measured simultaneously in a given population. Cross-sectional studies can be thought of as providing a "snapshot" of the frequency and characteristics of a disease in a population at a particular point in time (Environmental Health Investigations branch, 2009).

### **3.2 Study site**

The study was conducted at the Centre for the Rehabilitation of the Paralyzed (CRP) in Bangladesh which is the largest spinal cord injury rehabilitation centre for the patient with spinal cord injury in South Asia..

### **3.3 Study population**

The target population was the patient with Spinal Cord Injury with paraplegia who has completed their rehabilitation program at CRP spinal cord injury unit, Savar, Dhaka.

### **3.4 Sampling procedure**

The study was conducted by using the convenience sampling methods because it is the easiest, cheapest and quicker method of sample selection. It was be easy to get those subjects according to the criteria concerned with the study purpose through the convenience sampling procedure.

### **3.5 Inclusion criteria**

1. All patients with traumatic paraplegic and who get injury at T9 L1 level and had completed the rehabilitation program successfully from the CRP.
2. Both male and female patients with any age group will be selected.
3. Subject who were willing to participate in the study- Otherwise they will not give exact information that will helpful to the study.

### 3.6 Exclusion criteria

1. Non traumatic SCI patient including cord contusion.
2. SCI patients who had psychiatric problem who may give irrelevant information which will not helpful for study.

### 3.7 Sample size

The equation of sample size calculation are given below-

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

Here,

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

P= 0.47 (Here P=Prevalence and P=47%)

$$q = 1 - p$$

$$= 1 - 0.47$$

$$= 0.53$$

$$d = 0.05$$

According to this equation the sample should be more than 334 people but due to lack of opportunity the study sample was 20 patients with spinal cord injury who have injury in T9 to L1 skeletal level.

### 3.8 Data collection

#### 3.8.1 Data collection instrument

Questionnaire was designed with mixed question. That was open ended question and close ended question. Data was collected using Functional Independence Measure (FIM) scale, Papers, Pen, Pencil, Diary, Computer and pen drive.

#### 3.8.2 Questionnaire

A structured questionnaire was used for measuring the functional outcome of SCI patients. This questionnaire is developed after reviewing literature about the spinal cord injury and functional outcome. In the questionnaire participant's socio-demographic information including age, sex, occupation, marital status, family type, living area, educational level. Functional improvement including bed mobility(rolling,

lying to sitting, sitting to lying, prone lying, sitting balance), lifting (lifting in wheelchair, lifting on bed, lifting forwards, lifting sideways, lifting backwards), transfer (wheelchair ↔ bed, high and low transfer), wheelchair skills (wheelie, up and down slopes, rough ground, small steps), standing (sit to stand, standing balance, standing table, tilt table), walking (flat surface, rough surface, steps or slopes) fitting brace.

### **3.8.3 FIM Scale**

Functional Independence Measure (FIM) is a functional assessment tool and is used to assess the impact of SCI on the patient's functional abilities. It quantifies the extent of individual disability and complements the neurological assessment by providing scores.

The seven levels rating of FIM are

**7= Complete independence:** The activity is typically performed safely, without modification, assistive devices or aids, and within reasonable time.

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**1=Total assistance:** Subject expends 0 ± 25% of the effort required in the activity.

It appears to be the best functional outcome scale used to describe disability among SCI patients, both early and late after injury. It is easy to administer and is valid and reliable.

### **3.9 Data analysis**

The data was collected using Modified Functional Independence Measure (FIM) Scale. And for the analysis of data descriptive statistics was used. Use the graph technique for analyzing data, calculated as percentages, and presented this using bar, column, table and pie charts by SPSS software version 16.0.

### **3.10 Ethical consideration**

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guideline and World Health Organization (WHO) research guidelines. The proposal of the dissertation including methodology was approved Institutional Review Board and obtained permission from the concern authority of ethical of Bangladesh Health Profession Institute (BHPI). The participants were explained about the purpose and goal of the study before collecting data from the participants. Pseudonyms were used in the notes, transcripts and throughout the study. It was ensured to the participants that the entire field notes, transcripts and all the necessary information was kept in a locker to maintain confidentiality and all information was destroyed after completion of the study. The participants were also reassured that their comments were not affect them about any bad thing.

The aim of this study was to assess the functional outcome of traumatic spinal cord injury (SCI) with paraplegia (T9- L1). Data were numerically coded and analysis the data by using an SPSS 16.0 version software program and the result captured in Microsoft Excel. The descriptive data was collected from the CRP SCI unit and calculated as percentages and presented by using bar and pie chart and in table, for this study 20 SCI patients who have injury in the thoracic 9 to lumber 1 spine were taken as a sample to assess the functional outcome of traumatic spinal cord injury (SCI) with paraplegia (T9- L1).

### **Socio demographical information**

#### **Age of the participants**

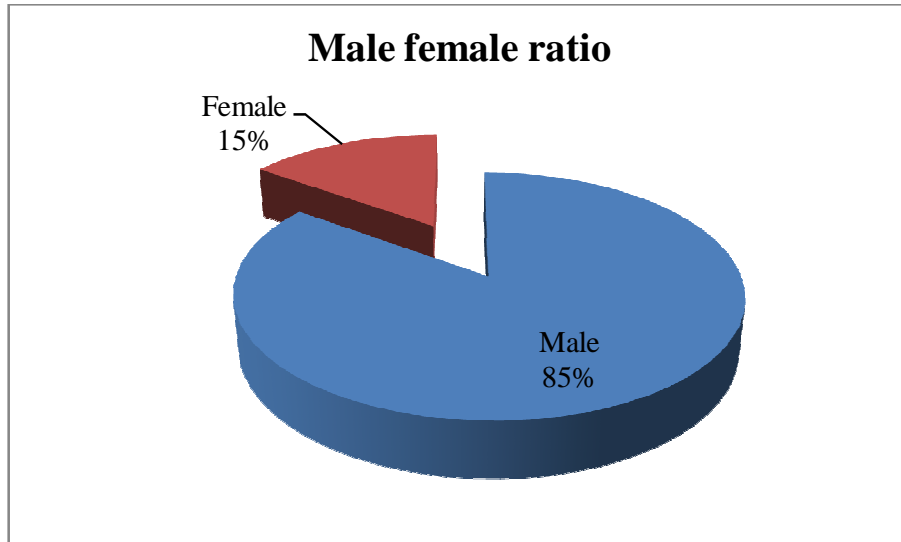
The study was conducted on 20 participants of spinal cord injury patients with injury from T9 to L1. Out of the participant the mean age of the participants was 28.30( $\pm$ 11.25) years. The range is 45 with minimum age 15 years and maximum 60 years. Among the participants the higher number of the participants were at the of 20 and 25 years respectively and the numbers were 3 (15%). The number of  $\leq$ 30 years were 65% (13) and  $>$ 30 were 35% (7) (Table- 1).

<b>Age of participants</b>	<b>Number</b>	<b>Percentage %</b>
15- 25 Years	10	<b>50</b>
26- 35 Years	6	<b>30</b>
36-45 Years	3	<b>15</b>
46- 60 Years	1	<b>5</b>
<b>Total</b>	<b>20</b>	<b>100</b>

**Table - 1:** Age of the participants

### Male & Female ratio

Among the 20 participants 85% (17) were male and 15% (3) were female. Study showed that male were predominantly higher than female (Figure – 1).



**Figure - 1:** Male & female ratio

### Occupation

Study found that among the 20 participants 20% (n= 4) were farmer, 25% (n = 5) were day labourer, 20% (n = 4) were driver, 15% (n = 3) were house wife and 20% (n = 4) were students (Table -2).

Occupation	Number	Percentage (%)
Farmer	4	20
Day labourer	5	25
Driver	4	20
House wife	3	15
Student	4	20
<b>Total</b>	<b>20</b>	<b>100</b>

**Table - 2:** Occupation of the participants

### Marital status of the participant

According to the study among the 20 participant majority of the participants are married 60% (n = 12) and rest of the participants are unmarried 40% (n = 8) (Figure – 2)

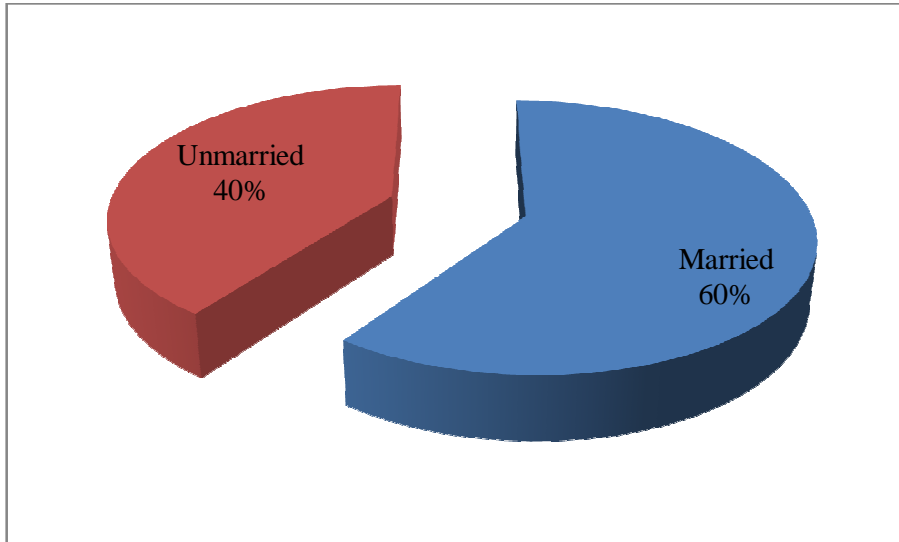


Figure - 2: Marital status of the participants

### Family type of the participants

Study found that among the 20 participants, 60% (n = 12) participants were from extended family and 40% (n = 8) participants were from nuclear family (Figure – 3).

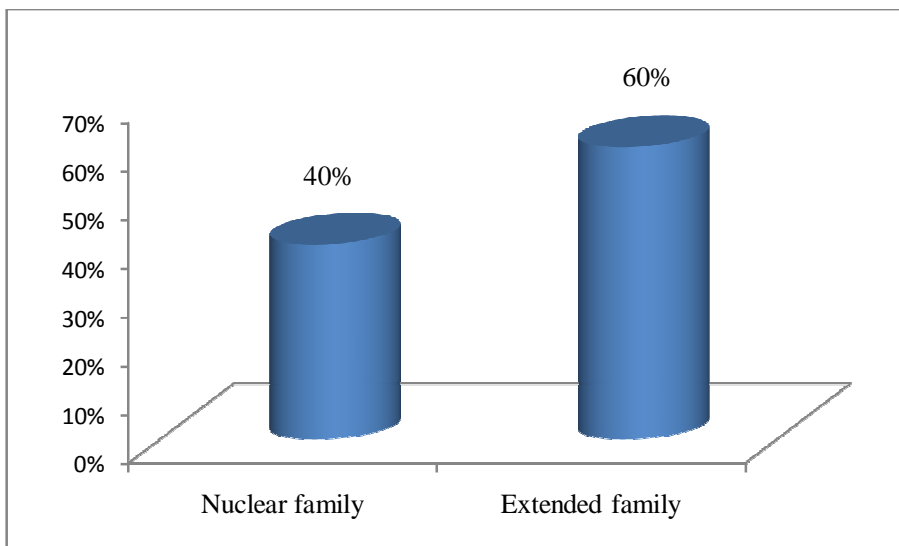


Figure – 3: Family type of the participants

### Living area

Study showed that among 20 participants majority of participants 85% (n=17) were lived in rural area and rest of the participants 15% (n=3) were lived in urban area (Figure – 4).

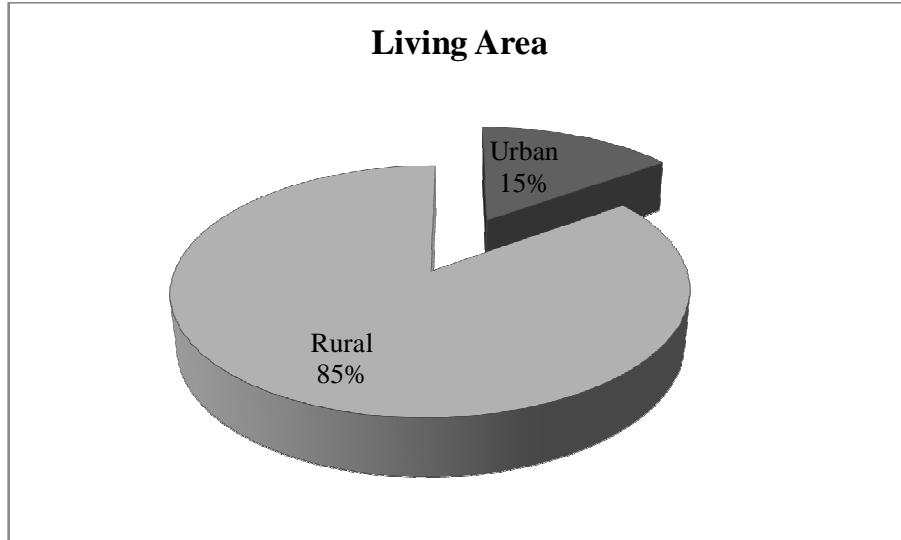


Figure – 4: Living area of the participants

### Educational level

Among the 20 participants 15% (n=3) participants were illiterate, 15% (n=3) participants were literate, 20% (n=4) participants were primary passed, 45% (n=9) participants were secondary passed, only 5% (n=1) participants completed S.S.C level (Figure – 5).

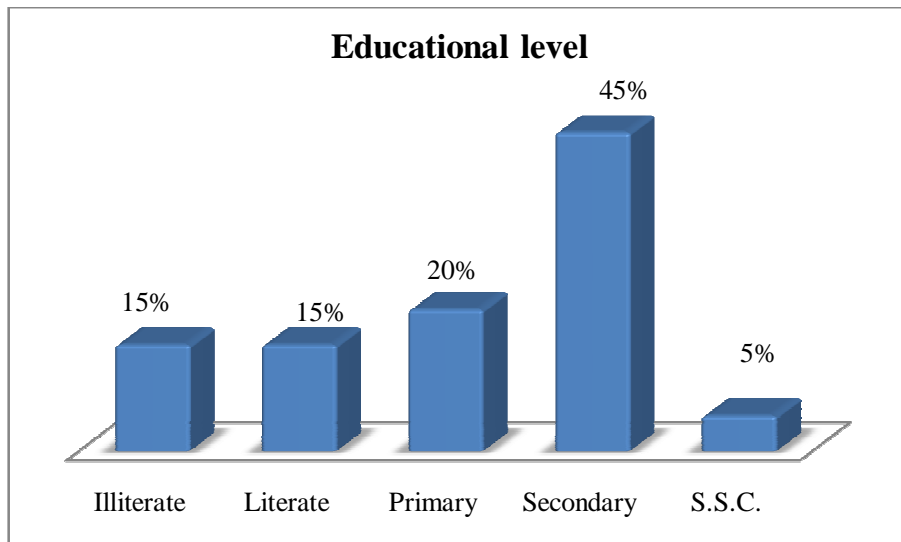


Figure – 5: Educational level of the participants



## Spinal cord injury (SCI) related information

### Skeletal level of injury

According to that study it were found that among the 20 participants of SCI patients most of the participants were injury in thoracic level T12 60% (n = 12), thoracic level T9 were only 5% (n=1), thoracic level T11 were 10% (n=2) and lumber level were 25% (n=5) (Table – 3).

Skeletal Level	Number(n)	Percentage %
T9	1	5
T11	2	10
T12	12	60
L1	5	25
<b>Total</b>	<b>20</b>	<b>100</b>

Table – 3: Skeletal level of injury

### ASIA impairment scale

Among the 20 participants of SCI patients most of 65% (n=13) participants were Complete A, 15% (n=3) were Incomplete B, 15% (n=3) were Incomplete C and only 5% (n=1) participant was Incomplete D (Figure – 6).

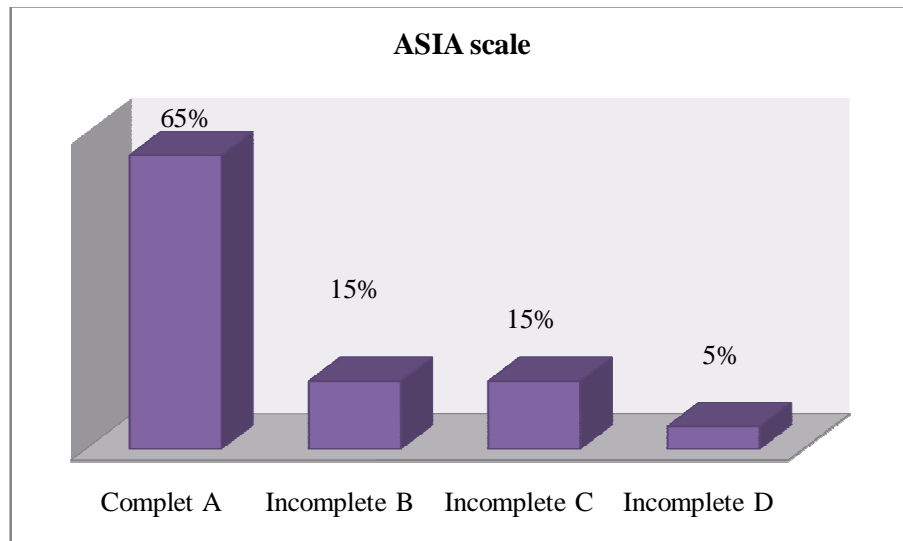


Figure – 6: ASIA scale of the participants

## Rolling

According to the study it was found that among the 20 participants most of the participant 75% (n=15) were independent in rolling, 20% (n=4) participants were needed minimal assistance and only 5% (n=1) participant need moderate assistance in rolling after the rehabilitation (Table – 4).

<b>FIM</b>	<b>Number</b>	<b>Percentage %</b>
Independent	15	75
Minimal assistance	4	20
Moderate assistance	1	5
<b>Total</b>	<b>20</b>	<b>100</b>

Table – 4: Rolling

### **Lying to sitting and sitting to lying**

Study found that among 20 participants 75% (n=15) participants become independent in their bed mobility lying to sitting and sitting to lying, 15% (n=3) participants needed minimum assistance and 10% (n=2) participants needed moderate assistance in lying to sitting and sitting to lying (Figure – 7).

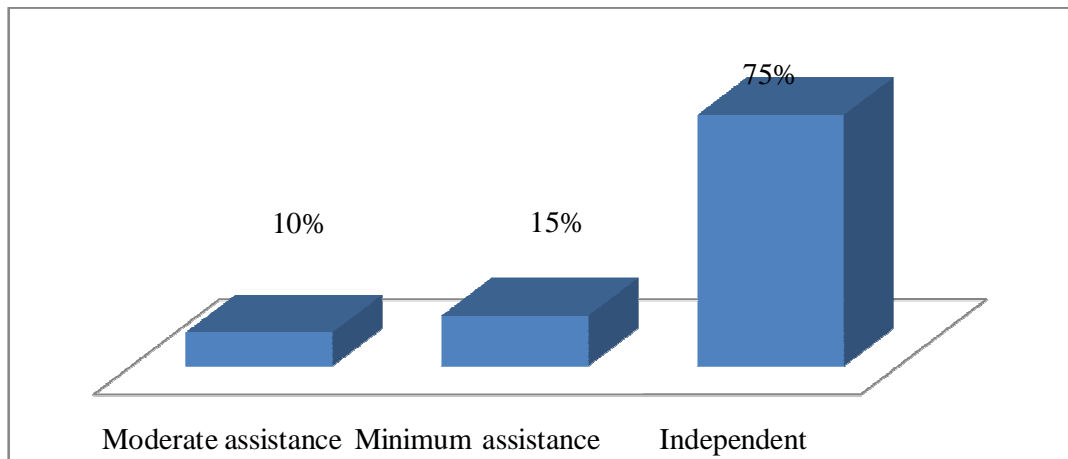


Figure -7: Lying to sitting and sitting to lying

### **Prone lying**

Among 20 participants most of the participants 70% (n=14) had become independent in prone lying, 20% (n=4) participants needed minimum assistance and only 10% (n=2) participants needed moderate assistance during prone lying after the end of the rehabilitation from CRP (Figure – 8).

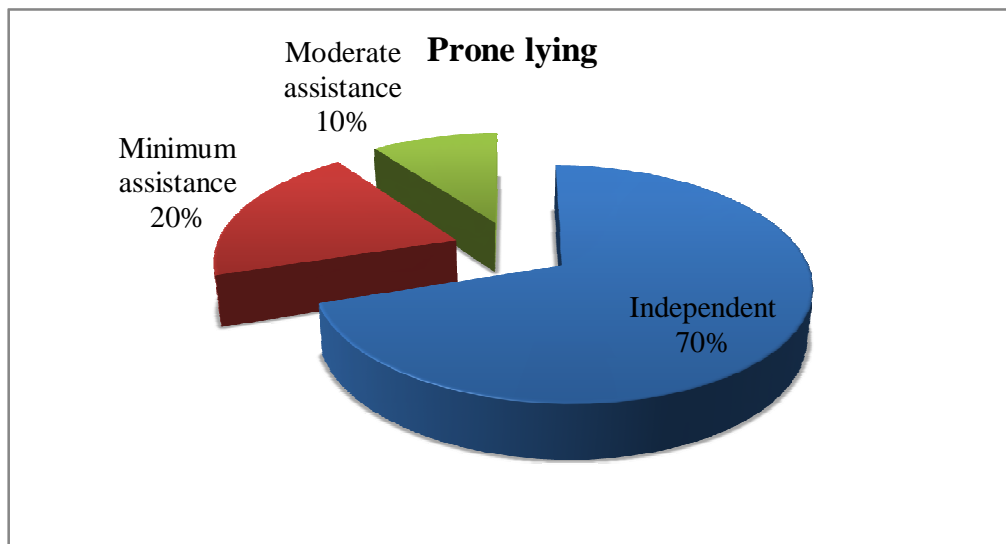


Figure – 8: Prone lying

### Sitting balance

According to the FIM scale among 20 participant 80% (n=15) participants were independent in sitting balance, 5% (n=1) participant needed supervision, 5% (n=1) participant needed minimum support and 10% (n=2) participants needed moderate assistance during sitting balance (Figure – 9).

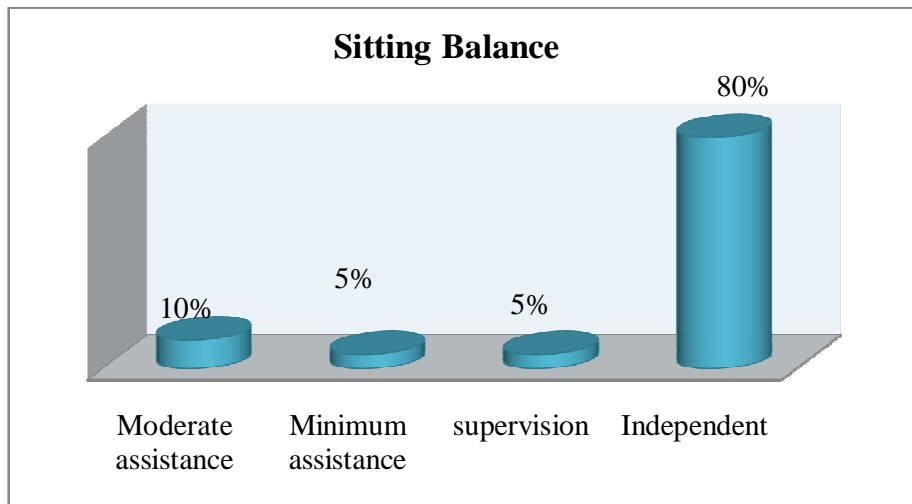


Figure – 9: Sitting Balance

### Lifting in Wheelchair

Among 20 participants most of participants 95% (n=19) were independent in lifting in wheelchair and only 5% (n=1) participant needed moderate assistance during lifting in wheelchair (Figure – 10).

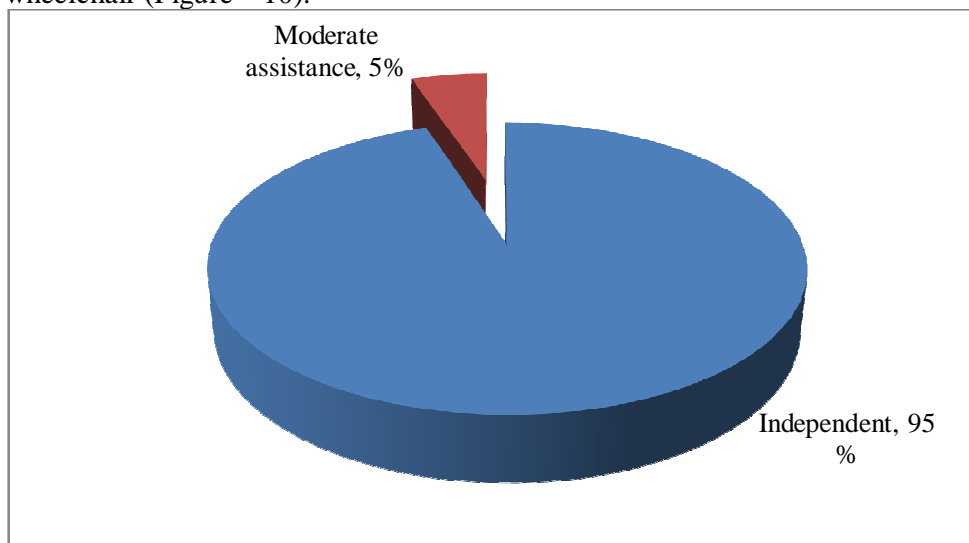


Figure -10: Lifting in wheelchair

### Lifting in Bed

Study found that among 20 participants most of the participants 90% (n=18) were able to perform lifting in bed independently, 5% (n=1) participant performed lifting in bed independent with assisted device and 5% (n=1) participant needed moderate assistance (Figure –11).

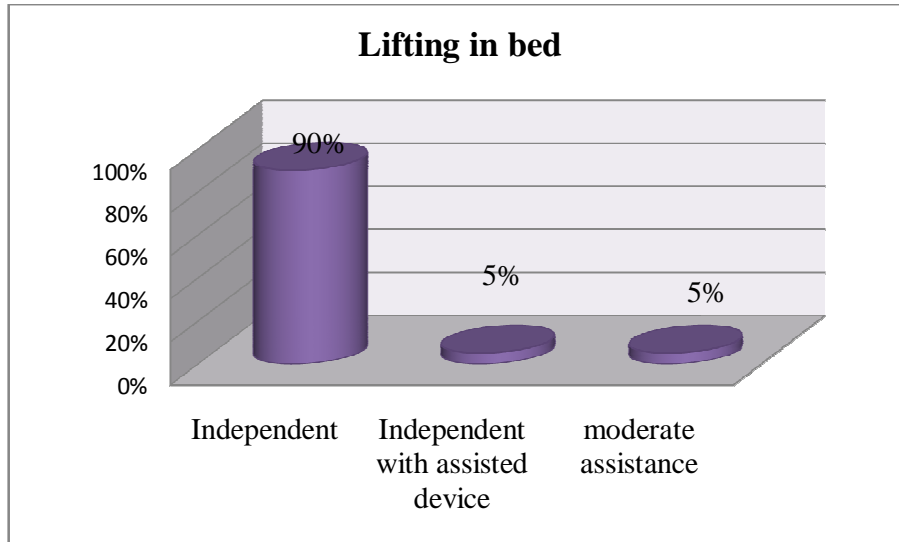


Figure – 11: Lifting in bed

### Lifting forward

Among 20 participants most of the participants 90% (n=18) were able to perform lifting forward independently, 5% (n=1) participant performed lifting forward independent with assisted device and 5% (n=1) participant needed moderate assistance (Figure – 12).

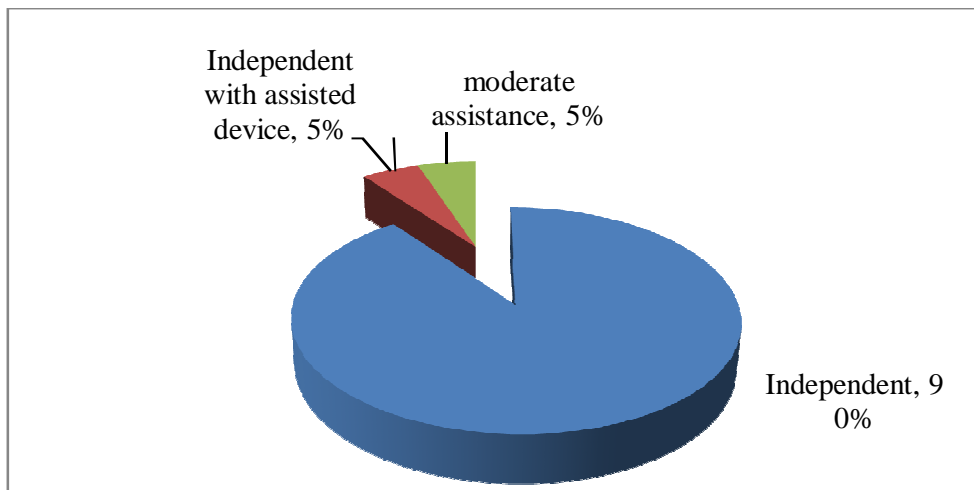


Figure – 12: Lifting forward

### Lifting sideways

Among 20 participants most of the participants 90% (n=18) were independent in lifting sideways, 5% (n=1) participant performed lifting sideways independent with assisted device and 5% (n=1) participant needed moderate assistance (Figure – 13).

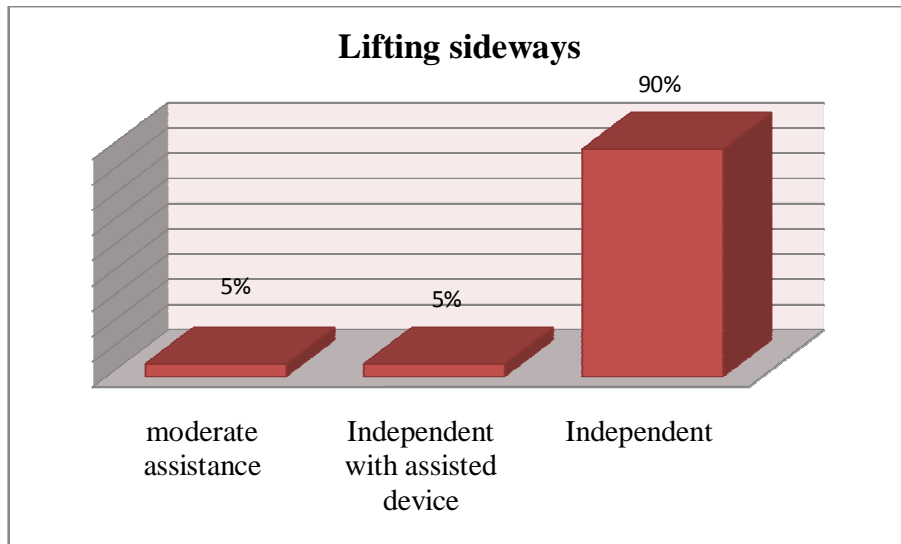


Figure – 13: Lifting sideways

### Lifting backwards

Study found that among 20 participants most of the participants 90% (n=18) were independent in lifting backwards, 5% (n=1) participant performed lifting backwards independent with assisted device and 5% (n=1) participant needed moderate assistance (Figure – 14).

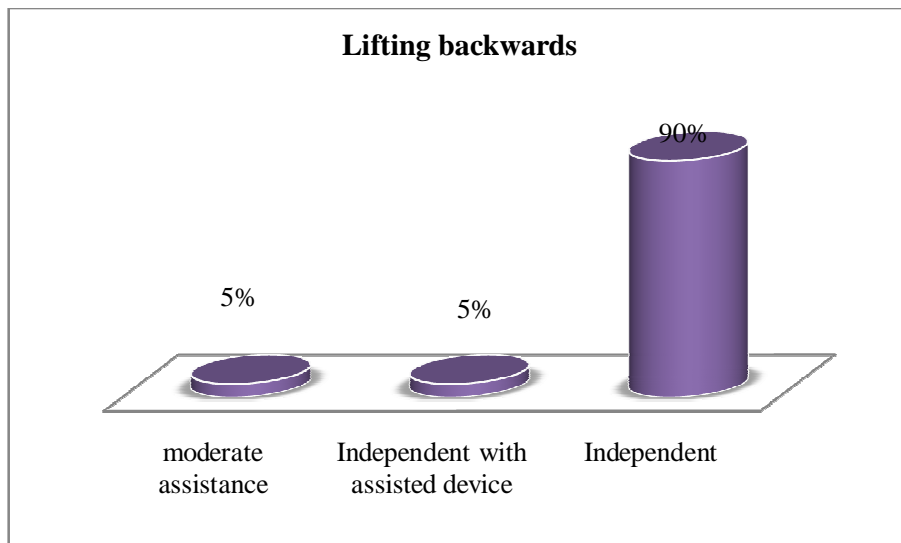


Figure – 14: Lifting backwards

### Wheelchair to bed and bed to wheelchair transfer

Study shows that among 20 participants most of participants 95% (n = 19) were independent in transferring from wheelchair to bed and bed to wheelchair and rest of 5% (n = 1) participant had needed moderate assistance during wheelchair to bed and bed to wheelchair transfer (Figure – 15).

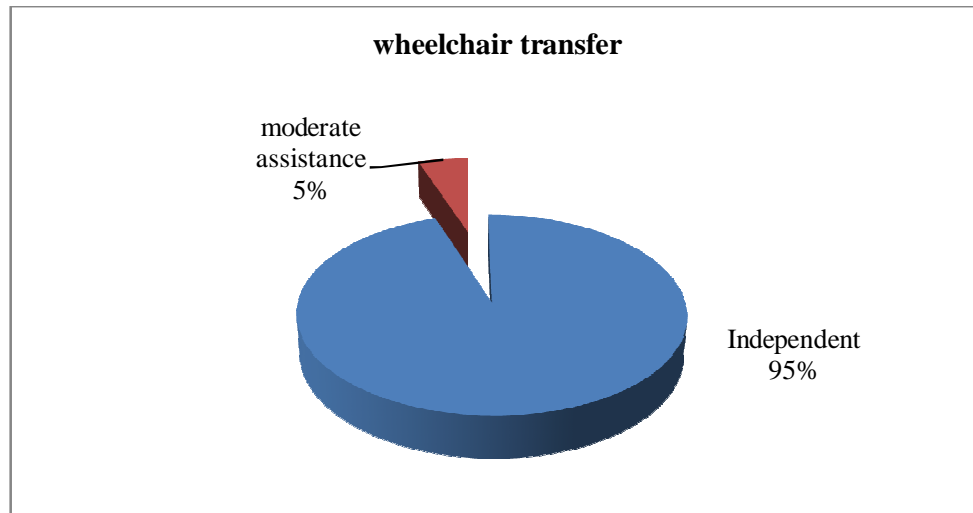


Figure – 15: Wheelchair to bed and bed to wheelchair transfer

### High and low transfer

Study shows that among 20 participants 35% (n = 7) participants were able to perform high and low transfer independently, 30% (n = 6) participants needed minimum support, 10% (n = 2) participants needed moderate support and 20% (n = 4) participants needed maximum assistance during high and low transfer. Only 5% (n = 1) participant was unable to do high and low transfer (Table – 5).

FIM	Number (n)	Percentage %
Independent	7	35
Minimal assistance	6	30
Moderate assistance	2	10
Maximal assistance	4	20
Unable to do	1	5
<b>Total</b>	<b>20</b>	<b>100</b>

Table – 5: High and low transfer

## Wheelchair skill

### Wheelie

Study shows that among 20 participants 70% (n = 14) participants were independent in wheelie, 25% (n = 5) participants needed minimum assistance and only 5% (n = 1) participant needed maximum assistance during wheelie (Figure – 16).

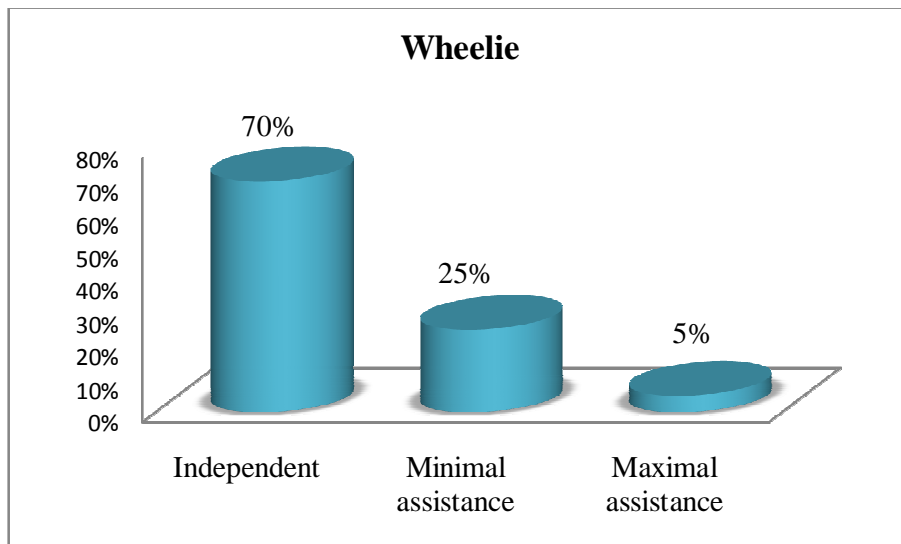


Figure – 16: Wheelie



### Up and down slopes

Among 20 participants of SCI patients who had injury in spine T9 to L1 55% (n = 11) participants were independent in wheelchair skill up and down slopes, 40% (n = 8) participants needed minimal assistance and only 5% (n = 1) participant needed maximal assistance in wheelchair skill up and down slopes (Figure – 17).

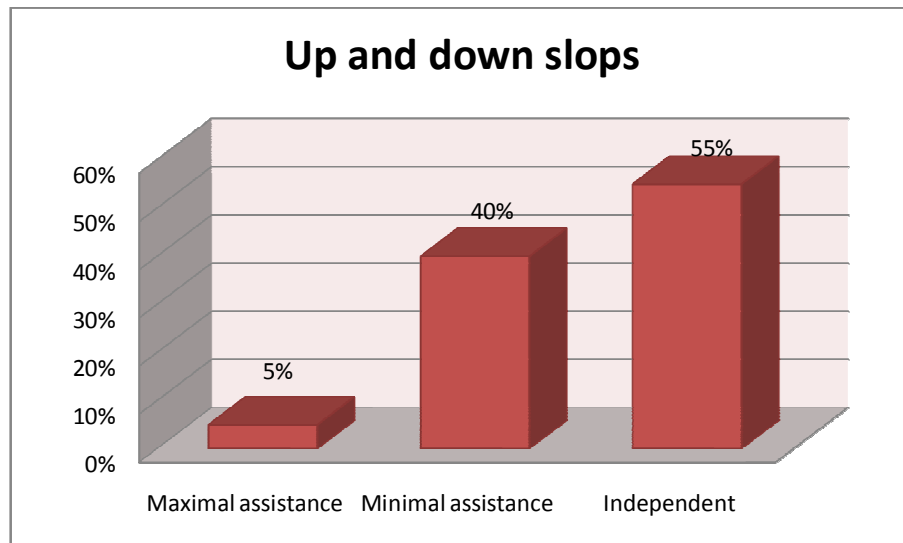


Figure – 17: Up and down slopes

### Wheelchair skill in rough ground

Study shows that among 20 participants of SCI patients 85% (n = 17) participant were able to perform wheelchair skill in rough ground independently, 5% (n =1) participant needed supervision, 5% (n = 1) participant needed minimal assistance and 5% (n = 1) participant needed maximal assistance in wheelchair skill in rough ground (Table – 6).

<b>FIM</b>	<b>Number (n)</b>	<b>Percentage %</b>
Independent	17	85
Supervision	1	5
Minimal assistance	1	5
Maximal assistance	1	5
<b>Total</b>	<b>20</b>	<b>100</b>

Table – 6: wheelchair skill in rough ground

### Small steps

Among 20 participants 55% (n = 11) participants were independent in wheelchair skill in small steps, 40% (n = 8) participants needed minimal assistance and only 5% (n = 1) participant needed maximal assistance during wheelchair skill in small steps (Figure – 18).

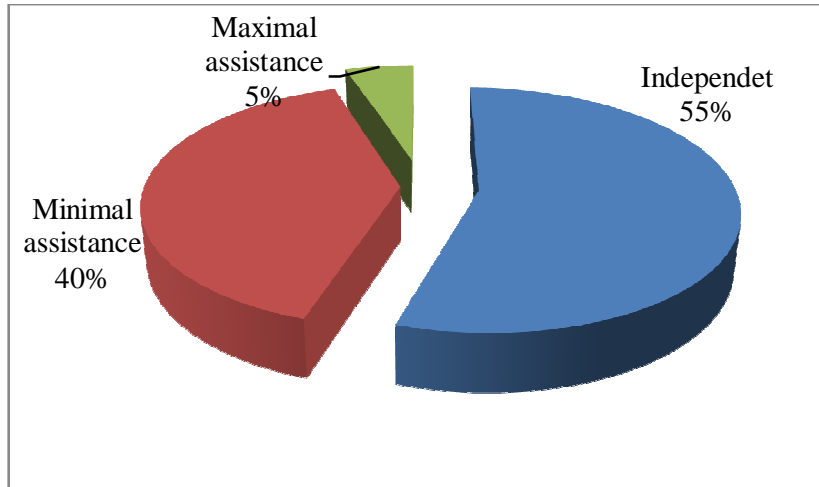


Figure – 18: Wheelchair skill in small steps

### Sit to stand

Study shows that among 20 participant of SCI patients with injury in T9 to L1 both complete and incomplete patients 20% (n = 4) were independent during sit to standing, 5% (n = 1) participant was independent with assisted device, 5% (n = 1) participant needed moderate assistance, 15% (n = 3) participants needed maximal assistance in sit to standing and 55% (n = 11) participants were unable to do sit to stand (Figure – 19).

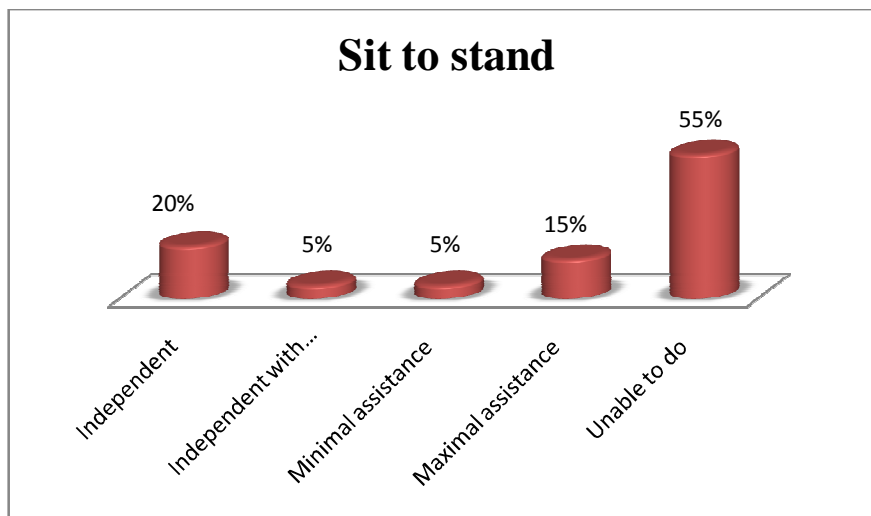


Figure – 19: Sit to stand

### Standing balance

Among 20 participants of SCI patients 20% (n = 4) were independent in standing balance, 5% (n = 1) were independent with assisted device, 10% (n =2) participants needed moderate assistance and 10% (n = 2) participants needed maximal assistance in standing balance. 55% (n =11) participants were unable to do perform standing balance (Figure – 20).

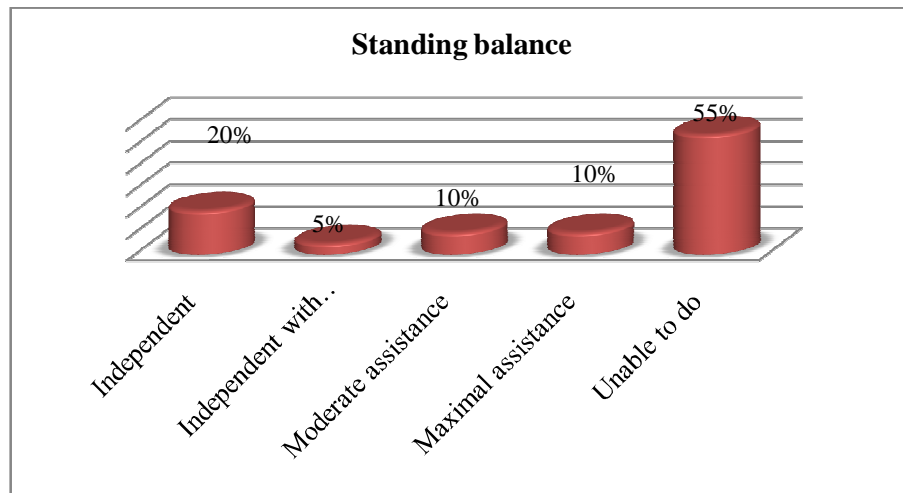


Figure – 20: standing balance

### Standing on standing table

Study shows that among 20 participants of SCI patients 20% (n = 4) were independent, 5% (n = 1) were independent with assisted device, 10% (n = 2) participants needed minimal assistance, 15% (n = 3) participants needed moderate assistance and 10% (n = 2) participants needed maximal assistance during standing on standing table. 40% (n = 8) participants were unable to stand on standing table (Table – 7)

FIM	Number (n)	Percentage %
Independent	4	20
Independent with assisted device	1	5
Minimal assistance	2	10
Moderate assistance	3	15
Maximal assistance	2	10
Unable to do	8	40
<b>Total</b>	<b>20</b>	<b>100</b>

Table – 7: Standing on standing table

### Standing on tilt table

Study shows that among 20 participants of SCI patients 35% (n = 7) were independent, 5% (n = 1) were independent with assisted device, 10% (n = 2) participants needed moderate assistance, 10% (n = 2) participants needed maximal assistance in standing on tilt table and 40% (n = 8) participants are unable to stand on tilt table (Figure – 21).

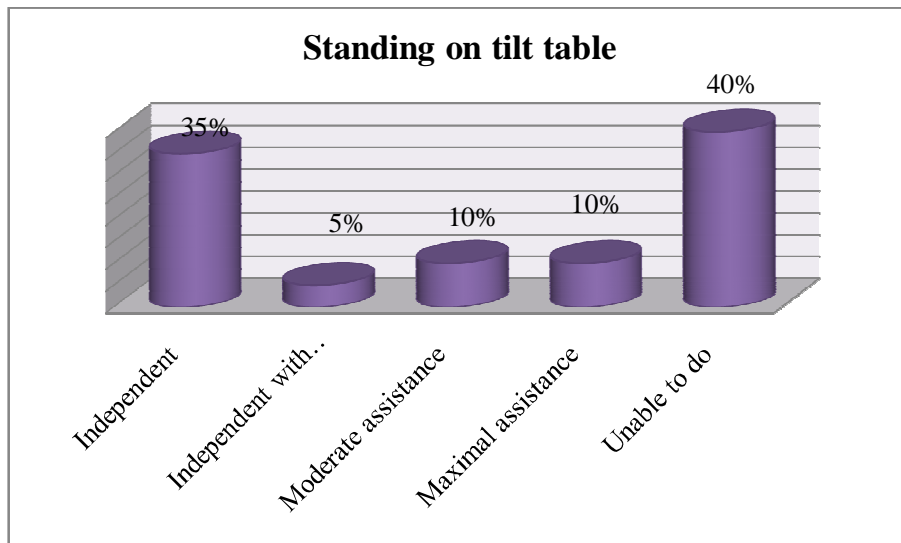


Figure – 21: Standing on tilt table

### Walking on flat surface

Among 20 participants of SCI patients 15% (n = 3) were independent in walking on flat surface, 10% (n = 2) participants were independent with assisted device, 5% (n = 1) participant needed supervision in walking on flat surface. 70% (n = 14) participants were unable to walk on flat surface (Figure – 22).

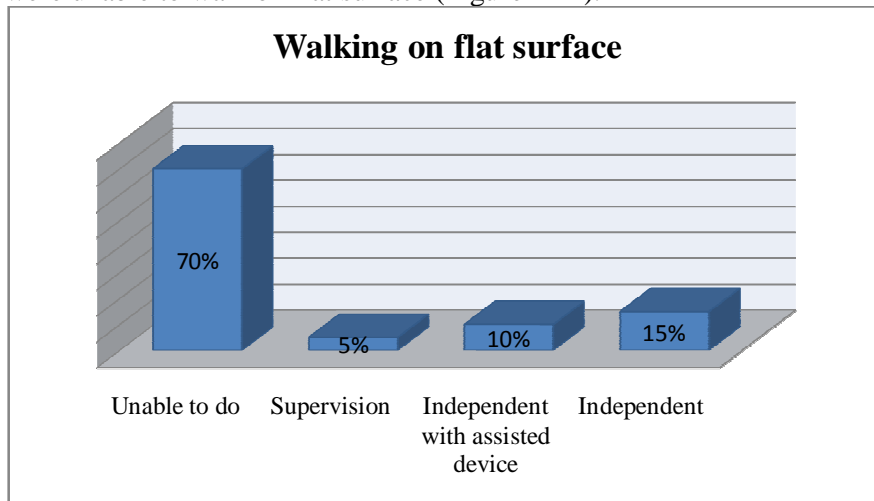


Figure – 22: walking on flat surface

### Rough surface walking

Among 20 participants of SCI patients 15% (n = 3) were independent, 10% (n = 2) were independent with assisted device, 5% (n = 1) participant needed supervision in rough surface walking and 70% (n = 14) participants were unable to walk on rough surface (Table – 8)

<b>FIM</b>	<b>Number (n)</b>	<b>Percentage %</b>
Independent	3	15
Independent with assisted device	2	10
Supervision	1	5
Unable to do	14	70
<b>Total</b>	<b>20</b>	<b>100</b>

Table – 8: Rough surface walking

### Walking steps/ slopes

Among 20 participants of SCI patients 15% (n = 3) were independent in walking steps/ slopes, 10% (n = 2) were independent with assisted device, 5% (n = 1) participant needed minimal assistance and 70% (n = 14) participants were unable to walk steps or slopes (Figure – 23).

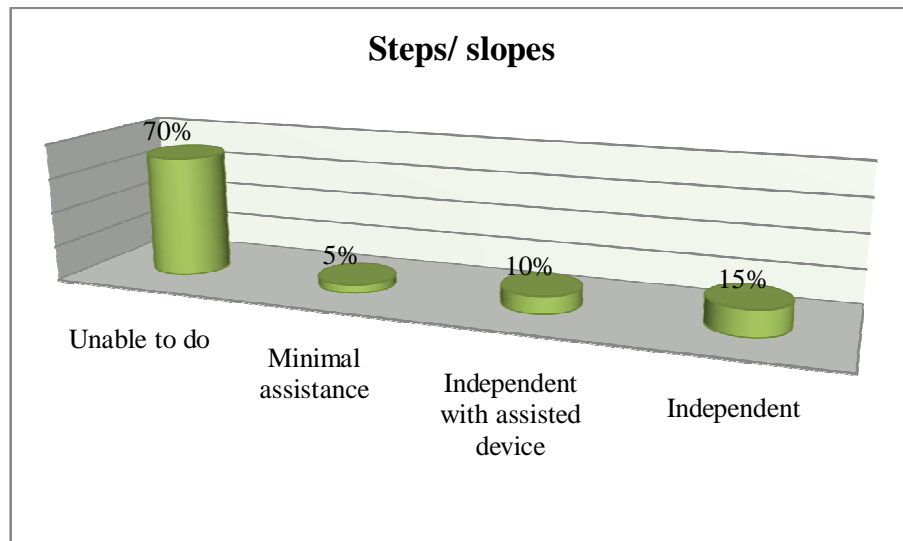


Figure – 23: walking steps/ slopes

### **Fitting brace**

Among 20 participants 25% (n = 5) were independent in fitting brace, 5% (n = 1) participant was independent with assisted device and 70% (n = 14) participants were unable to perform fitting brace (Table – 9).

FIM	Number (n)	Percentage %
Independent	5	25
Independent with assisted device	1	5
Unable to do	14	70
Total	20	100

Table – 9: Fitting brace

The aim of the study was to measure the functional outcome of the SCI patients with injury in the L9 to L1 who were admitted and completed their rehabilitation from Centre for the Rehabilitation program of the Paralyzed (CRP). Although it was realized that the sample size was small; this study provides information about patients with traumatic spinal cord lesions with paraplegia (From T9 to L1) in our country. Total 20 patients were taken in this in study period. Measurement of functional outcomes is an integral part of any goal-orientated, multidisciplinary rehabilitation program and requires suitable assessment tools. The study population consisted of 17 males (85%) and 3 (15%) females. Their age ranged from 15 to 60 years with a mean age of the patients were 28.30 years with standard deviation ( $\pm 11.25$ ). The majority of the patient's were aged between 15-25 years. Most of the patients were young age. All 20 patients had traumatic spinal cord lesions. Scivoletto et al. (2003) found that most traumatic spinal cord injury occurs in young patients, 20% of all spinal cord injury occurs in person aged 65 year or older. National SCI statistical centre found that males accounts for 82% of all spinal cord injuries and females for 18%. Traumatic SCI is more common in persons younger than 40 years, non-traumatic SCI is more common in persons older than 40 years. Greater mortality is reported in the older patients with SCI (Dawodu, 2007). Male was predominantly higher than female. Majority of the patient were lives in rural area same situation also seen in India (Singh et al., 2003). Study shows that most of the participants lived in rural area 85% and most of participants were day labourer and farmer. The people of rural area are mostly poor and they are engage in risky work that may causing SCI. Day labourer was the common occupation where spinal cord injury seen. More than 80% of the population lives in villages and 65% of the total labour forces are employed in agriculture (Hossain, 2001).

In this study it was found that among the participants with SCI most had secondary level education and second most majority educational level was primary.

The skeletal level of thoracic was most common than lumber level. The skeletal level of thoracic were 75% (n=15) and lumber 25% (n=5). In thoracic level, thoracic 12 were most common.

In this study it was found the most common 65% (n=13) impairment grading in ASIA scale was complete-A 15% (n=3) were incomplete B, 15% were incomplete C. Approximately 40% of patients with spinal cord injury (SCI) present with complete SCI, 40% with incomplete injury, and 20% with either no cord or only root lesions (Rizollo et al., 2000).

In this study FIM scale shows that among 20 participants 15 patient became independent in rolling. In lying to sitting and sitting to lying most of them 75% patients became independent. 70 % of participants show independent in prone lying. According to the FIM scale among 20 participant 80% (n=15) participants were independent in sitting balance. Somers (2009) suggest that in the section of rolling, prone lying and sitting balance the goal is to become total independent.

In this study significant improvement also show in lifting in wheelchair, lifting in bed, lifting forwards, sideways and backwards. Most of them (n=18) achieved 7 from FIM rating scale in lifting. As in the section of lifting the goal was to be total independent (Atrice et al., 2001).

In the section of transferring from wheelchair to bed and bed to wheelchair among 20 participants, 95% (n=19) of them achieved 7 from FIM rating scale. That means they could perform transferring from wheelchair to bed and bed to wheelchair total independently without any assistive device. As in the section of transferring from bed to wheelchair the goal is to gain total independent (Atrice et al., 2001)

The study shows that 70% (n=14) of the participants became independent in wheelie. In wheelchair skills in rough ground 85% (n=17) participants gain 7 from FIM rating scale. Somers (2009) and Atrice et al. (2001) claim in the section of wheelchair propelling in rough surfaces the goal is to gain total independence.

In this study it was found that most of participants 55% (n= 11) were unable to stand only 20% (n = 4) participants were able to make score 7 in standing balance.



In case of walking in flat surface most of the patient 70% and in rough surface most of the patient 70% were unable to do. It means they needed total assistance in gait.

There were a number of limitations and barriers in this research project which had affected the accuracy of the study, these are as follow:

First of all, time of the study was very short which had a great deal of impact on the study. If enough time was available knowledge on the thesis could be extended. The samples were collected only from the CRP spinal cord injury unit and the sample size was too small, so the result of the study could not be generalized to the whole population of spinal cord injury persons in Bangladesh. This study has provided for the first time data on the functional outcome of the spinal cord injury persons in Bangladesh. No research has been done before on this topic. So there was little evidence to support the result of this project in the context in Bangladesh. The research project was done by an undergraduate student and it was first research project for her. Therefore, the researcher had limited experience with techniques and strategies in terms of the practical aspects of research. As it was, the first study of the researcher so might be there were some mistakes that overlooked by the supervisor and the honourable teacher.

### **6.1 Conclusion**

Spinal cord injury (SCI) is one of the most devastating conditions known to mankind. It is a serious condition that affects lives dramatically. Spinal cord injury (SCI) is an insult to the spinal cord resulting in a change, either temporary or permanent, in its normal motor, sensory, or autonomic function. Although spinal cord injury is one of the most serious injuries that a person can survive, it is possible to return to a healthy, happy and productive life after even the most severe of cord injuries. Achieving this outcome, however, is a monumental task that requires the coordinated efforts of the spinal cord injured person, his or her family and a specialized multidisciplinary team of professionals. From the moment of injury onward, specialized care is essential for maximization of health as well as psychosocial and functional adaptation. After SCI, patients lose some extent of functional abilities. But it is very important to try to return their functional ability. It is very important to measure the function and independency of a spinal cord injured person after rehabilitation program which may be measure through functional independence measure (FIM). Early rehabilitation is required for patients with spinal cord injury. The aim of rehabilitation is to teach patients with SCI how to achieve an optimal independent and satisfying lifestyle in their own community. Fortunately, most patients go home after rehabilitation and a significant number achieve functional independence. The results of this study provided more insight into the functional outcome of a group of patients with traumatic paraplegia (T9 to L1). More research is needed to evaluate the rehabilitation program for these patients.

The finding of the study was that among 20 participants 85% were male most of participants were young in age, all participants were traumatic SCI, 65% participants were complete A, 15 patients became independent in rolling. In lying to sitting and sitting to lying most of them 75% patients became independent. 70 % of participants show independent in prone lying. . Most of them 90% achieved 7 from FIM rating scale in lifting. 955 participants were independent in transferring; significant improvement was observed from FIM rating scale. The results of this study provided more insight into the functional outcome of a group of patients with traumatic spinal cord injury with paraplegia. More research is needed to evaluate the rehabilitation program for these patients.

## **6.2 Recommendation**

The aim of the study was to assess the functional outcome of the SCI patients who have injury in the T9 to L1 at the CRP spinal cord injury unit. However, the study had some limitations it some further steps were identified that might be taken for the better accomplishment of further study. The main recommendations would be as follow:

The random sampling technique rather than the convenient would be chosen in further in order to enabling the power of generalization the results. The duration of the study was short, so in future wider time would be taken for conducting the study. Investigator use only 20 participants as the sample of this study, in future the sample size would be more. In this study, the investigator took the sample from CRP SCI unit; it was small area to take available sample. So for further study investigator strongly recommended to include the person with SCI from the community or all over the Bangladesh to ensure the generalizability of this study.

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## APPENDIX

### CONSENT FORM

(Please read out to the participants)

Assalamualaikum/Namasker, my name is Syfunnaher Suma, I am conducting this study for a B.Sc in Physiotherapy project study dissertation titled “**Functional outcome of the T9 to L1 spinal cord injury (SCI) patients at the CRP**” 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. You will perform some tasks which are mention in this form. This will take approximately 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 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 **Mohammad Anwar Hossain**, 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 \_\_\_\_\_

## সম্মতি পত্র

(অংশগ্রহনকারীকে পড়ে শোনাতে হবে)

আসসালামুআলাইকুম/নমস্কার,

আমার নাম সাইফুন নাহার সুমা, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)-এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হল-“সিআরপিতে থোরাসিক ৯ থেকে লাম্বার ১ মেরুরজ্জুতে আঘাত প্রাপ্ত রোগীদের ফাংশনাল ফলাফল”। আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তিগত এবং আনুষঙ্গিক প্রশ্ন মেরুরজ্জু ক্ষতিগ্রস্ত সম্পর্কে করতে চাচ্ছি। এতে আনুমানিক ৩০ মিনিট সময় নিবো।

আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্যকোন উদ্দেশ্যে ব্যবহৃত হবে না। গবেষক সরাসরি এই স্নায়ুজ্ঞান অধ্যয়নের সাথে অন্তর্ভুক্ত নয়। তাই এই গবেষণায় আপনার অংশগ্রহণ বর্তমান ও ভবিষ্যৎ চিকিৎসায় কোন প্রকার প্রভাব ফেলবেনা। 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 নিজেই 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 অংশগ্রহনকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং মোঃ মোহাম্মদ আনোয়ার হোসেন, সহযোগী অধ্যাপক, ফিজিওথেরাপিবিভাগ, 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। অংশগ্রহনকারীর স্বাক্ষর.....

২। সাক্ষাৎগ্রহনকারীর স্বাক্ষর.....

## English questionnaire

### Personal details

Code no :

Name of participant

Address:

Village/house no.....

Post office.....

Thana.....

District.....

Contact number:

Date of interview:DD/MM/YY.....

**1. Socio demographic information:**

**Code no:**

Age.....years

Sex:

1= male            2= female

Occupation :

1= Farmer            2= Day laborer      3= Service holder    4= Garments/  
Factory worker            5= Driver  
6= Businessman    7= Unemployed      8= Housewife      9= Student  
10= Other ( Specify).....

Marital status:

1= Married            2= Unmarried            3 = Widow  
4 = Divorce            5= Single

Family type:

1= Nuclear family            2= Extended family

Living area:

1= Rural            2= Urban

Educational level:

1 = Illiterate            2=literate            3= Primary            4=Secondary  
5 = S.S.C            6=H.S.C.            7= Graduate            8= Post Graduate

Monthly family income:.....taka

## **2. Participant related information**

Diagnosis:

Date of injury:

Skeletal Level:

Date of Admission to CRP:

Initial Neurological level:

Neurological Level during discharge:

ASIA scale (Impairment Grading):

1= Complete A	2= Incomplete B	3= Incomplete C
4= Incomplete D	5= Normal E	

### **Functional Progress Rating Scale:**

7= Independent

6= Independent with assisted device

5= Supervision

4= Minimal assistance

3= Moderate assistance

2= Maximal assistance

1= Unable to do

## Functional Improvement

Activities	Initial scores	Discharge Scores
<b>Bed Mobility</b>		
Rolling		
Lying to sitting		
Sitting to lying		
Prone lying ↔		
Sitting balance		
<b>Lifting</b>		
Lifting in Wheelchair		
Lifting on bed		
Lifting to forwards		
Lifting sideways		
Lifting backwards		
<b>Transfers</b>		
Wheelchair to Bed, Bed to Wheelchair		
High and Low transfers		
<b>Wheel Chair Skills</b>		
Wheelie		
Up and down slopes		
Rough ground		
Small steps		
<b>Standing</b>		
Sit to Stand		
Standing Balance		
Standing Table		
Tilt Table		
<b>Walking</b>		
Flat Surface		
Rough Surface		
Steps/ Slopes		
Fitting Brace		
<b>Total</b>		

## প্রশ্নাবলী

ব্যক্তিগত তথ্যাবলী

পরিচিতি নং.....

অংশগ্রহনকারীর নামঃ

ঠিকানাঃ

গ্রাম/বাসা নম্বর.....

পোস্ট অফিস.....

থানা.....

জেলা.....

মোবাইল নম্বরঃ

সাক্ষাৎকার গ্রহণের তারিখ.....

১। আর্থ-সামাজিক তথ্যাবলী

পরিচিতি নং.....

বয়সঃ.....বৎসর।

লিঙ্গঃ

১= পুরুষ

২= মহিলা

পেশাঃ

১= কৃষক

২= দিন মজুর

৩= চাকরিজীবী

৪= গার্মেন্টস/কারখানা শ্রমিক

৫= গাড়ি চালক

৬= ব্যবসায়ী

৮= বেকার

৯= গৃহিণী

১০= ছাত্র

১১= অন্যান্য.....

বৈবাহিক অবস্থাঃ

১= অবিবাহিত

২= বিবাহিত

৩= বিধবা

৪= বিপত্তীক

৫= তালাক প্রাপ্ত

৬= আলাদা থাকেন

পরিবারের ধরনঃ

১= একক পরিবার

২= যৌথ পরিবার

বসবাসের এলাকাঃ

১= গ্রাম

২= শহর

শিক্ষাগত যোগ্যতাঃ

১= নিরক্ষর

২= স্বাক্ষর করতে পারে

৩= প্রাথমিক

৪= মাধ্যমিক

৫= এস এস সি

৬= এইচ এস সি

৭= স্নাতক

৮= স্নাতকোত্তর

পরিবারের মাসিক আয়ঃ.....টাকা।



২। অংশগ্রহণকারী সম্পর্কিত তথ্যাবলীঃ

রোগের ধরণঃ

আঘাত প্রাপ্তের তারিখঃ

মেরুদণ্ডের আঘাত প্রাপ্ত অংশঃ

ভর্তির তারিখঃ

প্রাথমিক স্নায়ুতন্ত্রের অবস্থাঃ

ডিসচার্জের সময় স্নায়ুতন্ত্রের অবস্থাঃ

অ্যামেরিকান স্পাইনাল অ্যাসোসিয়েশন স্কেলঃ

ফাংশন্যাল প্রেসেস রেটিং স্কেলঃ

৭= স্বয়ংসম্পূর্ণ

৬= সাহায্যকারী ডিভাইস/ সহায়ক

৫= তত্বাবধান

৪= অল্প সাহায্য

৩= বেশী সাহায্য

২= খুব বেশী সাহায্য

১= অক্ষম

ফাংশন্যাল ইমপ্রভমেন্ট/উন্নতি

কর্মশীলতা (অ্যাকটিভিটিজ)	প্রাথমিক স্কোর	ডিসচার্জের স্কোর
বিছানায় গতিশীলতা		
গড়াগড়ি		
শোয়া থেকে বসা		
বসা থেকে শোয়া		
উপুর হয়ে শোয়া		
বসে থাকার ভারসাম্য		
উত্তোলন		
হুইলচেয়ারের মধ্যে উত্তোলন		
বিছানার উপর উত্তোলন		
সামনের দিকে উত্তোলন		
দুইপাশে উত্তোলন		
পিছনের দিকে উত্তোলন		
স্থানান্তর		
হুইলচেয়ার $\leftrightarrow$ বিছানা		
উপরে এবং নিচে স্থানান্তর		
হুইলচেয়ারের দক্ষতা		
হুইলচেয়ার চালানোর ক্ষমতা		
উঁচু এবং নিচু ঢাল		
অমসৃণ ছমি/তল		
ছোট ধাপ		
দাঁড়ানো		
বসা থেকে দাঁড়ানো		
দাঁড়ানোর ভারসাম্য		
দাঁড়ানোর টেবিল		
টিল্ট টেবিল		
হাঁটা		
মসৃণ তল		
অমসৃণ তল/ অসমতল		
ধাপ/ঢাল		
উপযুক্ত ব্রেস/ ফিটিং ব্রেস		
মোট		

Permission Letter

Date: 2<sup>nd</sup> September, 2015.

To  
The Head of the Department,  
Physiotherapy Department,  
Center for the Rehabilitation of the Paralyzed (CRP)  
Savar, Dhaka-1343

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

**Subject:** Permission to collect data to conduct a research study.

Sir,

I respectfully to state that I am a student of 4<sup>th</sup> year B.Sc in physiotherapy at Bangladesh Health Professions Institute(B.H.P.I). In 4<sup>th</sup> year we have to do a research project and I have chosen a title that is "Functional outcome of the T9 to L1 spinal cord injury (SCI) patients at the CRP" and my supervisor is Mohammad Anwar Hossain, Associat professor, department of Physiotherapy. I would like to collect data from spinal cord injury unit at physiotherapy department of CRP in Saver. Data will be collected within 8.00 a.m. to 5.00 p.m.

I therefore pray and hope that you would be kind enough to give me permission to do this study successfully in your department.

Yours faithfully  
Syfunnaher suma

Syfunnaher Suma  
Bachelor of Science in Physiotherapy (B.Sc PT)  
Session: 2010- 2011  
BHPI, CRP, Savar, Dhaka.

*checked*  
*MSB*  
*02/09/15*  
*she may be allowed for data collection*  
*9/1/15*  
*02/09/15*  
Md. Obaidul Haque  
Associate Professor & Head of the Department  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapaian, Savar, Dhaka.

*Permission is given, contact with kazi Imdadul Hoque, CPT, as a counterpart of the data collection procedure.*

*MSB*  
*02/09/15*  
Md. Anwar Hossain  
Associate Professor / Dept.  
of Physiotherapy  
CRP, Chapaian, Savar, Dhaka-1343