FUNCTIONAL OUTCOMES OF TRAUMATIC PARAPLEGIC SPINAL CORD INJURY (SCI) PATIENTS AT THE TIME OF DISCHARGE 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 OUTCOMES OF TRAUMATIC PARAPLEGIC SPINAL CORD INJURY (SCI) PATIENTS AT THE TIME OF DISCHARGE AT CRP

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

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CONTENTS

Acknowledgement

Abbreviations

ASIA: American Spinal Injury Association

BHPI: Bangladesh Health Professions Institute

BMRC: Bangladesh Medical and Research Council

CRP: Centre for the Rehabilitation of the Paralyzed

FIM: Functional Independence Measure

IMSOP: International Medical Society of Paraplegia

SCI: Spinal Cord Injury

SCL: Spinal Cord Lesion

SPSS: Statistical Package of Social Science

US: United States

WC: Wheelchair

WHO: World Health Organization

List of Tables

List of Figures

Abstract

Purpose: To assess the functional outcomes of traumatic paraplegic Spinal Cord Injury (SCI) patients at the time of discharge at CRP. *Objective:* The aim of this study was to describe the functional outcomes of a group of patients with traumatic spinal cord lesions of paraplegic patients being achieved after rehabilitation at time of discharge and find out the socio-demographic characteristics of traumatic paraplegic SCI patients. *Methodology:* The study design was cross – sectional. The sample size were 60 and Purposive sampling technique was used for sample selection from inpatient of Centre for the Rehabilitation of the Paralyzed (CRP) in Bangladesh which is the largest spinal cord injury rehabilitation centre in South Asia. Data was collected by modified FIM scale and it was analyzed by SPSS software version 16.0. *Results:* Among 60 spinal cord injury patients, most of the patients were young age group and male 86.7% (n=52) are predominantly higher than female 13.3% (n=8). Majority of the participants were came from rural area (86.7%) and they were farmer 23.3% (n=14). Complete A (58.3%) was the most common impairment grading. The skeletal level of thoracic was most common than lumber level. The skeletal level of thoracic were 63.4% (n=38) and lumber 36.6% (n=22). In thoracic level, thoracic 12 were most common and in lumber level, lumber 1 most common of traumatic paraplegia. Significant improvements were 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.

| CHAPTER-I: | INTRODUCTION |

1.1 Background

Spinal cord injury (SCI) is a 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. Al though it is still lowers than the life expectancy of the general population (DeVivo et al., 1999).

The functional independence of persons with spinal cord injury (SCI) is significantly lower than that of the population in general. SCI usually causes severe locomotors 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). Following the definitions set down by the World Health Organization in 1980, the philosophy of rehabilitation is to reduce disabilities and handicaps resulting from impairments caused by trauma or disease (WHO, 1980). 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 (Ditunno et al., 1997). The aim of rehabilitation is to treat patients with SCI in order to achieve optimal independence and a satisfying lifestyle in their own community. Fortunately, most patients return home after rehabilitation with a significant achievement in functional independence. In recent years, much attention has been paid to the neurological outcomes after SCI. In several studies, motor and sensory recovery following traumatic SCI has been quantified, based on the initial level of injury. Most motor recovery occurs within the first six months after injury. It is generally accepted that the more distal the spinal cord lesion, the greater the degree of functional independence. 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. Little research is available concerning the number of patients who actually achieve the expected level of independence (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 is self care and daily living activities (Yavuz et al., 1998). The achieved goals depend as 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 functional activities depends on the level of injury of the spinal cord (Nichiols, 1998).

Each year approximately 10000 persons in the United States incur a spinal cord injury requiring hospitalization (DeVivo et al., 1999). 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 etiology, 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 (Dawodu, 2007). 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).

Bangladesh is one of the developing countries and is also a poor and most densely populated country in the world. 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 incidence of SCI as a result from falls from a height and from falling when carrying a heavy weight on the head.

The most common age group (10-40 years) of patients reflects the socio-economic conditions of Bangladesh. The male: female ratio (7.5:1.0) of the patients with a SCI due to the socio-economic status and to the traditional culture of the society. More than 80 percent of Spinal Cord Injury (SCI) patients are men and 55 percent of SCI victims are between 16 and 30 years old (National Institute of Neurological Disorders and Stroke, 2010).

The patients of SCI are going into the different hospital for the treatment. But every hospital does not have the facilities about the SCI management. In Bangladesh there is only one non government organization CRP has realized the importance of conducting a rehabilitation program for these patients through which the patients can improve their lifestyle and functional independency after disability due to SCL or SCI.

The purpose of this study was to provide a description of the recovery from impairments and disabilities of a group of traumatic spinal cord injury patients during discharge. The aims of this study were to evaluate the functional independence of the population with SCI to assess the proportion of the population with SCI, who are independent or are in need of total assistance in ADL.

1.2 Justification of the study

SCI is a common problem in our country and it will increase 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 (Somers, 1992). 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 will explore the issue of the functional outcome after complete their rehabilitation at CRP. It will also help 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 is why we have to set specific functional activities which the patients can achieve. The research will help 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 SCI patient at the time of discharge?

1.4 Study objective

1.4.1 General objective

To assess the functional outcomes of traumatic spinal cord injury patients with paraplegia during discharge.

1.4.2 Specific objectives

- To find out the socio-demographic characteristics of traumatic paraplegic SCI patients.
- To find out functional outcomes of complete and incomplete paraplegic SCI patients.
- To assess the functional outcomes of traumatic paraplegic patients being achieved after rehabilitation during discharge.

1.5 List of Variables

Independent Variables	Dependent Variable

Socio demographic variables like age, sex, living area, education, occupation etc.

Severity of Injury e.g. Complete of incomplete

Level of Injury

Functional Independence or Outcome
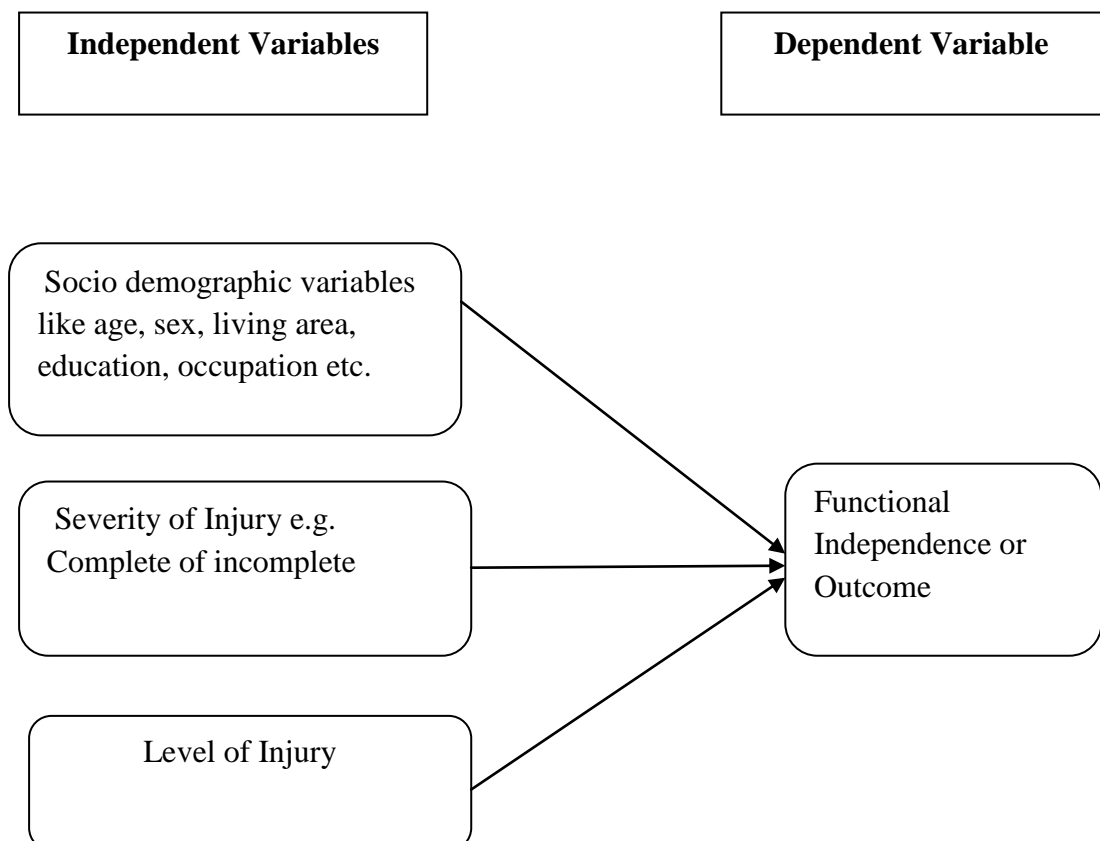
1.6 Operational Definitions of Terms

Spinal Cord Injury (SCI): When the spinal cord is damaged by any causes like trauma or disease that result sensory and motor loss is called SCI.

Paraplegia: Paralysis of lower portion of the body and of both legs.

Tetraplegia: Injury to the spinal cord in the cervical region, with associated loss of muscle strength in all 4 extremities

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

Rehabilitation: Rehabilitation is the course of training that is required to develop who some disability illness their physical progress, psychological well-being, social status and capacity for gainful occupational according to their capability.

Functional outcome: Investigation what a person's capable of doing how much assistance he/she needs and what equipment have to need to perform his/her activities.

2.1 Spinal Cord

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, 1992). 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).

2.2 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. 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 (Sara, 2000).

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 (American Spinal Injury Association, 2000).

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, 1998).

2.3 Causes

Spinal Cord Injuries are most often traumatic, caused by lateral bending, dislocation, rotation, axial loading, and hyper flexion or hyperextension of the cord or cauda equina. 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).

2.4 Types of Spinal cord injury

- Paraplegia - Injury in the spinal cord in the thoracic, lumbar, or sacral segments, including the caudaequina and conus medullaris (Ditunno et al., 1997).
- 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 (American Spinal Injury Association, 2000).
- 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).

2.5 Classification by the American Spinal Injury Association (ASIA)

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 (Ditunno et al., 1997):

- 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.

2.6 Functional outcome

A functional outcome or evaluation investigation what a parson 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, 1992).

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).

2.7 Rehabilitation

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 and Shanker, 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, 1992).

A rehabilitation team includes physician, physiotherapist, occupational therapists, recreational therapist, rehabilitation nurse, rehabilitation psychologist, counselor, 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 behavioral 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).

2.8 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 (Ditunno et al., 1997). 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 (Dodds et al., 1993). The items are rated two times by the physiotherapist, first at admission of rehabilitation and second at discharge of rehabilitation (Marino and Goin, 1999). 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, 1996):

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 $50 \pm 75\%$ of the effort required in the activity.

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

1=Total assistance: Subject expends $0 \pm 25\%$ 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 (ASIA/IMSOP, 1996).

CHAPTER-III:	METHODOLOGY

3.1 Study design

A cross sectional study design is used. A cross sectional study was chosen 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). All the measurements on each person are made at one point in time. The most important advantage of cross sectional studies is that in general they are quick and cheap. As there is no follow up, less resource are required to run the study. The quantitative methods are appropriate if the issue is known about relatively simple and unambiguous (Bailey, 1997).

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.

3.2 Study area

The researcher selects the Spinal Cord Injury (SCI) Unit of CRP for data collection.

3.4 Study population and Sampling

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.

3.4.1 Sampling technique

Purposive sampling technique was used for sample selection. Purposive sampling starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose. Usually, the population is too large for the researcher to attempt to survey all of its members. A small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn.

A purposive sample is one which is selected by the researcher subjectively. The researcher attempts to obtain sample that appears to him/her to be representative of the population and will usually try to ensure that a range from one extreme to the other is included. Purposive sampling is different from convenience sampling is that the researchers does not simply study whoever is available, but uses their judgment to select that they believe, based on prior information, will provide the data they need (Frankel and Waller, 2000). A large sample is more likely to be representative of the population than a smaller one and secondly small sample size would be corrected by an increase in the stringency with which the analysis will conduct (Hicks, 1999)

3.4.2 Inclusion criteria

- Patient with traumatic paraplegia.
- Rehabilitation program should be completed successfully from CRP.
- Both male and female will be included.

3.4.3 Exclusion criteria

- Non traumatic SCI patient including cord contusion.
- Tetraplegic patient will be excluded.
- SCI patient with psychological disturbances.

3.5 Sample size

It is very difficult to establishing the best size of sample since this decision depends very largely on the research which is being undertaken (Hicks, 1999). The total 60 paraplegic SCI patients were taken for the study.

3.6 Data collection tools

Data was collected using Functional Independence Measure (FIM) scale, Papers, Pen, Pencil, Diary, Computer and pen drive.

3.7 Data management and 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.

SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses.

3.8 Informed Consent

A written consent was given to all participants. Consent form was explained to the participants verbally. The researcher explained to the participants about his or her role in this study. The researcher received a written consent from every participants including signature. So the participant assured that they could understand about the consent form and their participation was on voluntary basis. The participants were informed clearly that their information would be kept confidential. The researcher assured the participants the study would not be harmful for them. It was explained that there might not a direct benefit from the study for the participants but in the future cases like them might got benefit from it. The participants have the right to withdraw consent at any time. Information from this study was anonymously coded to ensure confidentiality. They would not be embarrassed by the study.

3.9 Ethical consideration

A research proposal was submitted to the physiotherapy department of BHPI for approval and the proposal was approved by the faculty members. Beginning the data collection, permission was obtained from the concerned authorities ensuring the safety of the participants. The formal permission was taken from the head of the physiotherapy Dept. to check patient file and collect the data. Data collection was

started and completed within the allocate time frame. All information was kept in secure. World Health Organization (WHO) and Bangladesh Medical and Research Council (BMRC) rules were followed to conduct the study.

3.10 Limitations of the study

Regarding this study as below there were some situational limitation or barriers to consider the result of the study:

- The limitation of this study was small sample size. It was taken only 60 samples and could not able to collect samples by random selection because, there were not adequate subjects and study period was short.
- The one of major limitation was time. To conduct the research project on this topic, time period was very limited. As the study period was short so the adequate number of sample could not arrange for the study.
- In this study, differentiation of complete and incomplete patient's outcome was not done. So, the result cannot generalize the outcome of the whole population.
- The study only focuses on the general outcome of the paraplegic patients not the outcome of "per level injury" which was a major limitation of this study.
- The functional outcome that found in this study was not compared with standard functional expectation guideline which was also a limitation of this study
- Time and resources were limited which have a great deal of impact on the study.
- As the study was conducted at Centre for the Rehabilitation of the paralyzed (CRP) which may not represent the whole country.

Socio-demographic Information

Age

Among the 60 participants mean age were 30.48 with standard deviation (± 17.439). Median was 30.50 and mode was 56 (Table-1).

Mean	30.48
Median	30.50
Mode	56
Std. Deviation	17.439
Variance	304.118
Range	59

Table-1: Age of the participants

Among the age of the participants, 10-20 years were 21.7 %, 21-30 years were 33.3%, 31-40 years were 30.0%, 41-50 years and 51-60 years were 6.7% and 61-70 years were 1.7% (Table-2).

Age	Frequency	Percent
10-20	13	21.7
21-30	20	33.3
31-40	18	30.0
41-50	4	6.7
51-60	4	6.7
61-70	1	1.7
Total	60	100.0

Table-2: Age of the participants

Sex

Male were predominantly higher than female. Out of 60 participants 52 (86.7%) were male and 8 (13.3%) were female. The study shows the sex distribution among the participants (Figure-1).
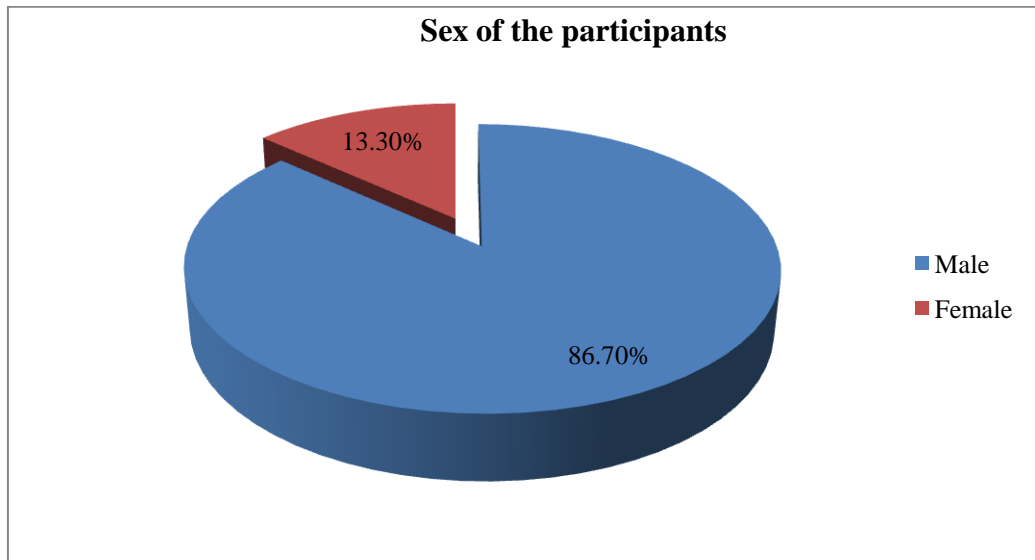
Figure-1: Sex distribution of the participants

Living Area

Most of participants among 60 patients who sufferings from spinal cord injury were from rural (86.7%).Only 13.3% were from urban (Figure-2).
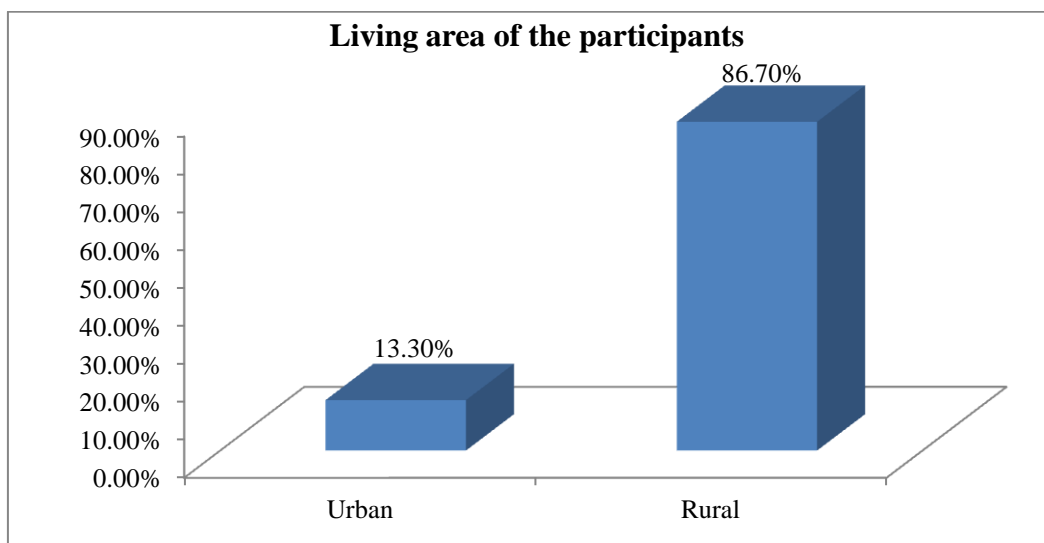
Figure-2: Living area of the participants

Educational Status

Among 60 participants, most of them were 35% primary level education. After that illiterate (can able to signature only) was the second most common 26.7% and 3rd most common was secondary (SSC) level 25%. The study shows the details about the educational status of the participants (Table-3).

Educational Status	Frequency	Percent
Illiterate	16	26.7
Primary	21	35.0
SSC (Secondary)	15	25.0
HSC (Higher Secondary)	5	8.3
Bachelor/ Graduate/ Degree	3	5.0
Total	60	100.0

Table-3: Educational status of the participants

Occupation

Out of 60 participants, most of them were farmer 23.3% (n=14). Day labors were the second most common 16.7% (n=10) and students are 3rd one 13.3% (n=8).The study shows about the details information of the occupations of the participants (Table-4).

Occupation	Frequency	Percent
Farmer	14	23.3
Day labor	10	16.7
Business	4	6.7
Student	8	13.3
Housewife	2	3.3
Mason	3	5.0
Rickshaw puller	3	5.0
Driver	2	3.3
Carpenter	2	3.3
Service holder	1	1.7
Shop keeper	3	5.0
Gardener	1	1.7
Garments(sweeter factory worker)	1	1.7
Van driver	1	1.7
Wood cutter	1	1.7
Saw mill worker	1	1.7
Others	3	5.0
Total	60	100.0

Table 4: Occupation of the participants

Spinal cord injury (SCI) related information

Skeletal Level during discharge

Among 60 participants, the skeletal level of thoracic was most common than lumber level. The skeletal level of thoracic were 63.4% (n=38) and lumber 36.6% (n=22). In thoracic level, thoracic 12 were most common and in lumber level, lumber 1 most common. The study shows the details about the skeletal level of the participants (Table-5).

Skeletal Level	Frequency	Percent
T8	6	10.0
T9	1	1.7
T10	3	5.0
T11	4	6.7
T12	24	40.0
L1	11	18.3
L2	6	10.0
L3	3	5.0
L4	2	3.3
Total	60	100.0

Table-5: Skeletal level of the participants

Neurological Level during discharge

Among 60 participants, the neurological level during discharge were thoracic level 41.7% (n=25) and lumber 58.3% (n=35). Lumber level were most common than thoracic level. In lumber level, lumber 1 were most common and in thoracic level, thoracic 10 were most common. The study shows the details about neurological level of the participants during discharge (Table-6).

Neurological Level	Frequency	Percent
T5	2	3.3
T6	1	1.7
T8	4	6.7
T9	2	3.3
T10	8	13.3
T11	1	1.7
T12	7	11.7
L1	17	28.3
L2	12	20.0
L4	4	6.7
L5	2	3.3
Total	60	100.0

Table-6: Neurological level of the participants

Impairment grading in ASIA Scale during discharge

Out of 60 participants, complete A was most common grading 58.3% (n=35) and the second one was incomplete D 23.3% (n=14) and the 3rd one was incomplete C 16.7% (n=10). The study shows the information about the ASIA Scale of the participants during discharge (Figure-3).
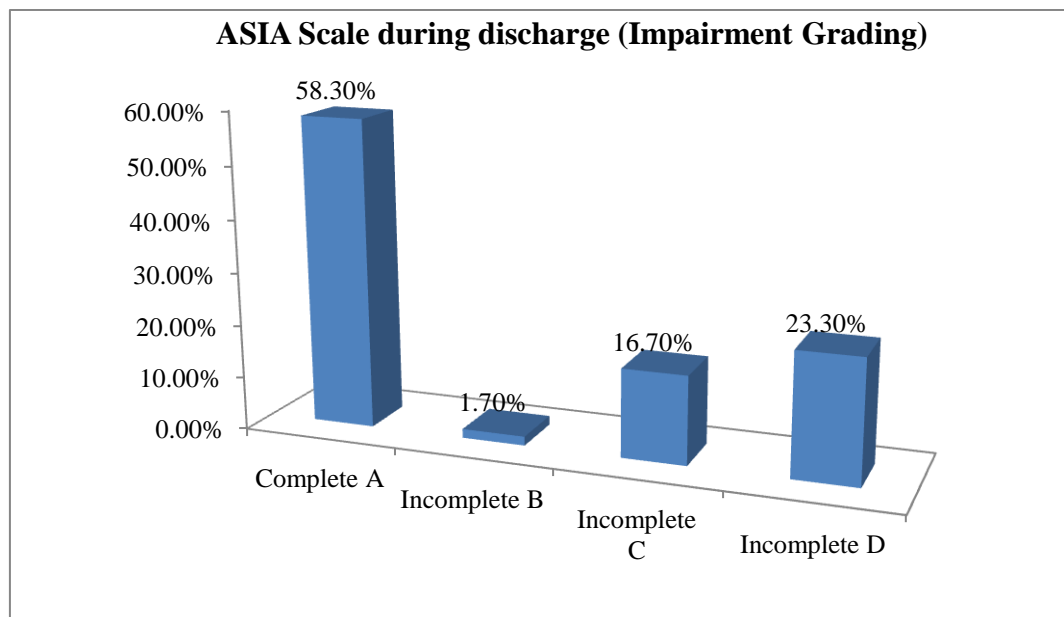

Figure-3: ASIA Scale during discharge (Impairment Grading)

Functional Independence Measure (FIM) related information

Discharge Score of Rolling

Among 60 participants, most of them 93.3% (n=56) became independent in rolling during discharge after completing rehabilitation and 3.3% (n=2) of the patients needs minimal assistance. The study shows the discharge scores of the rolling according to the functional independence measure (FIM) (Table-7).

Rolling	Frequency	Percent
Moderate assistance	1	1.7
Minimal assistance	2	3.3
Supervision	1	1.7
Independent	56	93.3
Total	60	100.0

Table-7: Rolling for FIM scale of the participants during discharge

Discharge outcome of Lying to Sitting

Out of 60 participants, most of them 93.3% (n=56) became independent in lying to sitting during discharge. The study shows the discharge outcome of lying to sitting according FIM (Table-8).

Rolling	Frequency	Percent
Moderate assistance	1	1.7
Minimal assistance	2	3.3
Supervision	1	1.7
Independent	56	93.3
Total	60	100.0

Table-8: Lying to sitting for FIM scale of the participants during discharge

Discharge Score of Sitting to Lying

Out of 60 participants, 91.7% (n=55) became independent in sitting to lying after completing rehabilitation during discharge and 5% (n=3) needs supervision and 3.3% (n=2) needs minimal assistance. The study shows discharge score of sitting to lying according to FIM (Figure-4).
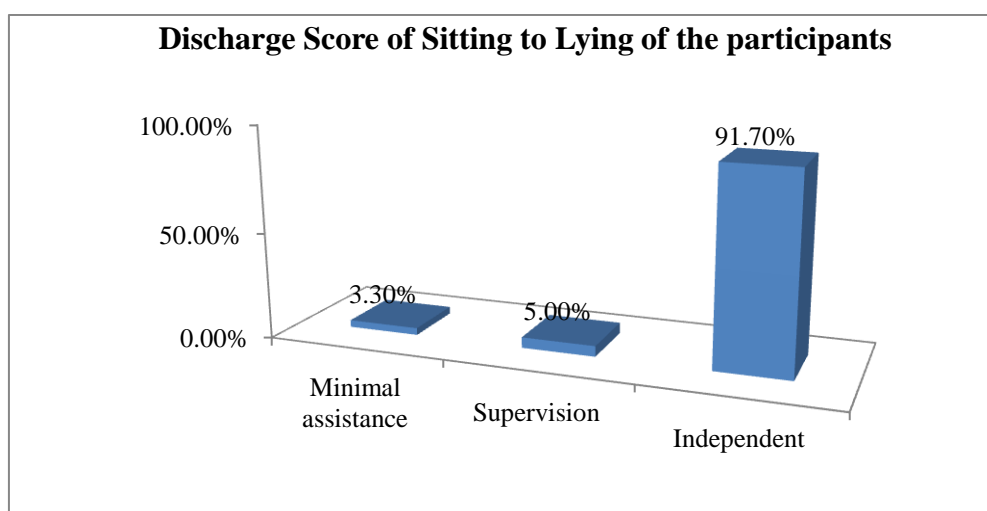
**Figure-4:** Sitting to lying for FIM Scale of the participants during discharge

Discharge Scores of Prone Lying

The study focused on prone lying 83.3% (n=50) of the participant achieved 7 from FIM scale it means 100% functional ability and 11.7% (n=7) of the subject achieved 4 that means minimal assistance (Figure-5).
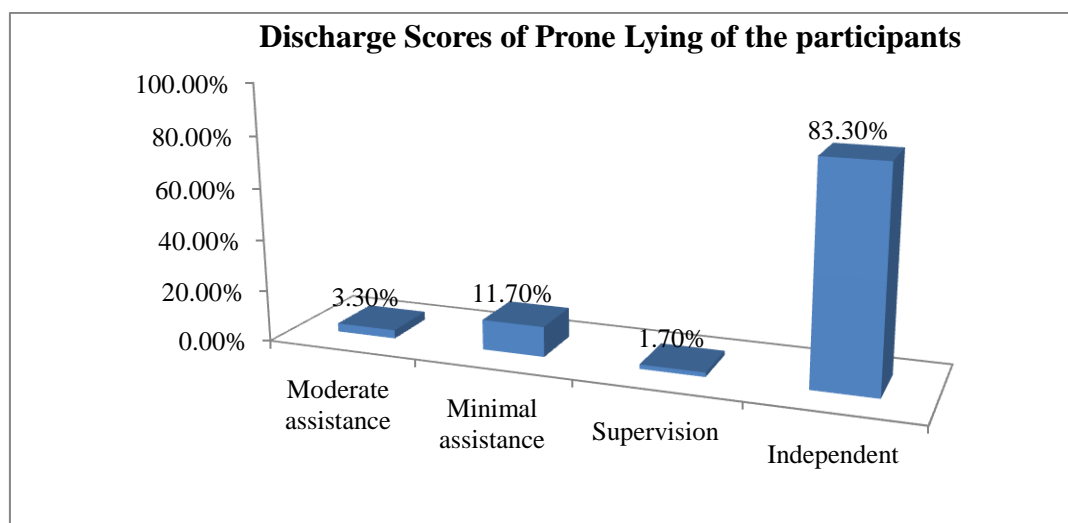
Figure-5: Prone lying for FIM Scale of the participants during discharge

Discharge Scores of Sitting Balance

Out of 60 participants, most of them 98.3% (n=59) became independent in sitting balance after completing rehabilitation and 1.7% (n=1) of the participants needs minimal assistance. The study shows the discharge scores of the sitting balance according to FIM (Figure-6).
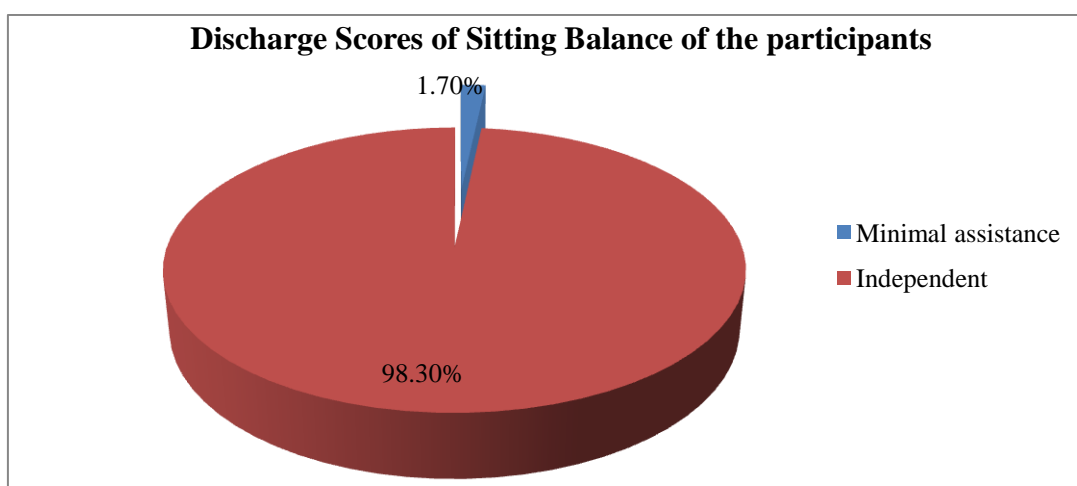
Figure-6: Discharge Scores of Sitting Balance

Lifting in Wheelchair

Among 60 participants, most of them 96.7% (n=58) became independent in lifting in wheelchair during discharge. The study shows the discharge score of lifting in wheelchair according to FIM (Figure-7).
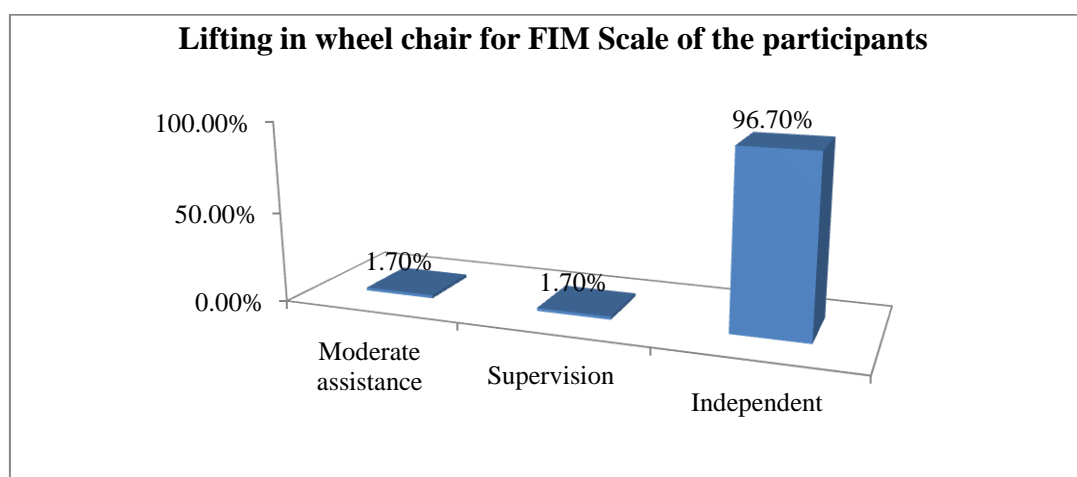
Figure-7: Lifting in wheel chair for FIM Scale of the participants during discharge

Lifting on Bed

The study focused that most of the participants 91.7% (n=55) became independent in lifting on bed after completing their rehabilitation during discharge among 60 participants. The following figure shows the discharge score of lifting on bed according to FIM (Figure-8).
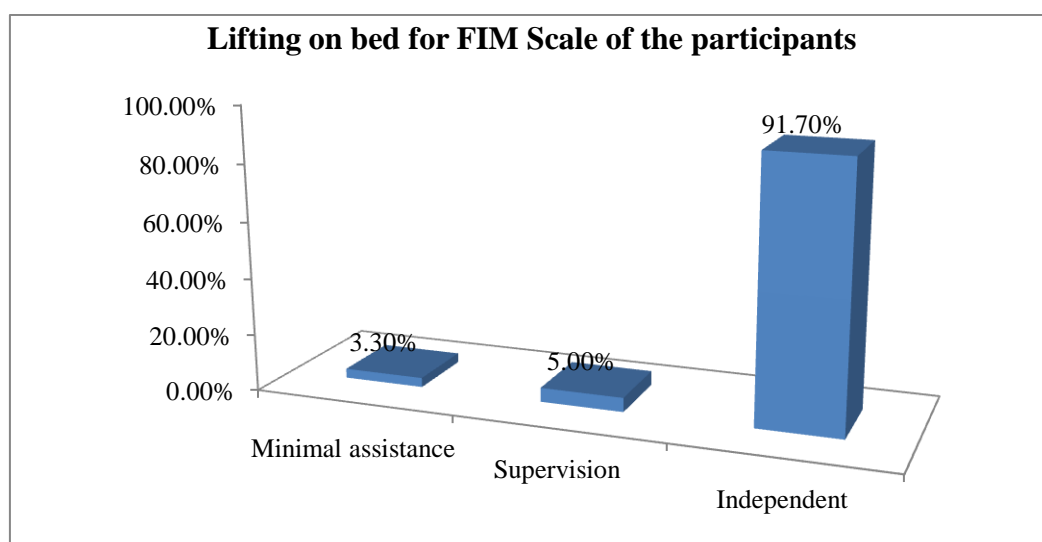

Figure-8: Lifting on bed for FIM Scale of the participants during discharge

Lifting Forwards

Among 60 participants, majority of them 86.7% (n=52) became independent in lifting to forward after completing rehabilitation during discharge. The study shows the discharge score of lifting in forwards according to FIM (Table-9).

Lifting forward	Frequency	Percent
Moderate assistance	1	1.7
Minimal assistance	3	5.0
Supervision	4	6.7
Independent	52	86.7
Total	60	100.0

Table-9: Lifting forwards for FIM scale of the participants during discharge

Lifting Sideways

The study showed that majority of the participants 86.7% (n=52) became independent in lifting to sideways during discharge and 10% (n=6) of the participant needs supervision among 60 participants (Figure-9).

Lifting sideways for FIM Scale of the participants
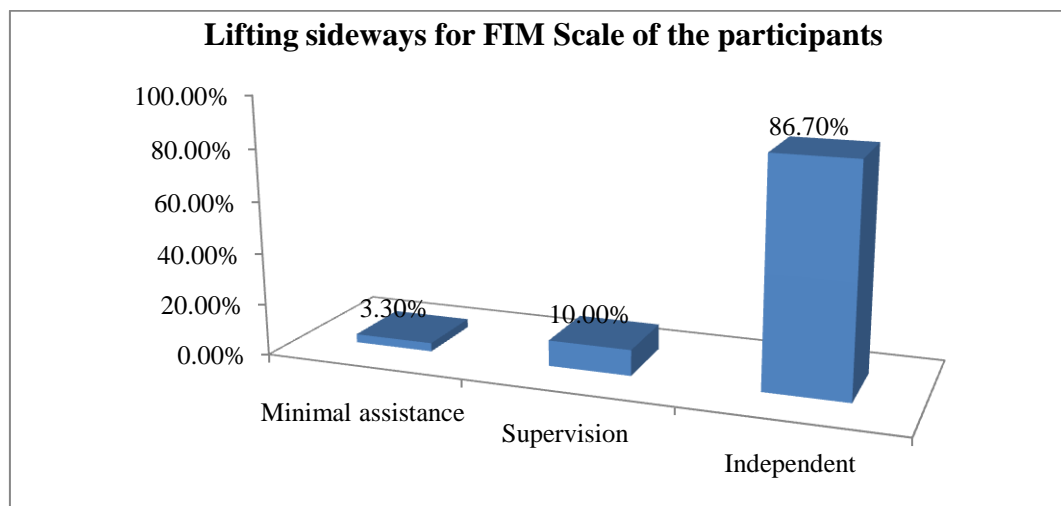
Figure-9: Lifting sideways for FIM Scale of the participants during discharge

Lifting Backwards

Out of the 60 participants, most of the participants 85% (n=51) achieved 7 from FIM scale that means they became independent in lifting to backward. The following study shows details information about the discharge score of lifting backwards according to FIM (Figure-10).

Lifting backwards for FIM Scale of the participants
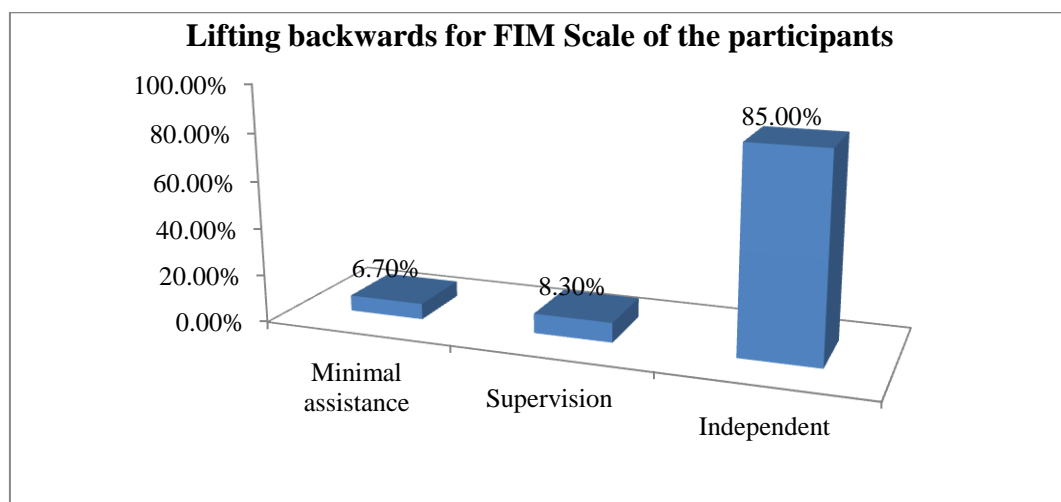
Figure-10: Lifting backwards for FIM Scale of the participants during discharge

Wheelchair to Bed, Bed to Wheelchair

Among 60 participants, majority of them 86.7% (n=52) achieved 7 from FIM scale that means they become independent in wheelchair to bed, bed to wheelchair after completing their rehabilitation during discharge and 8.3% (n=5) of the participants needs supervision. The study shows the discharge score of wheelchair to bed and bed to wheelchair according to FIM (Table-10).

Wheelchair to bed, bed to wheelchair	Frequency	Percent
Moderate assistance	1	1.7
Minimal assistance	1	1.7
Supervision	5	8.3
Independent with assisted device	1	1.7
Independent	52	86.7
Total	60	100.0

Table-10: Wheelchair to bed, bed to wheelchair for FIM scale of the participants during discharge

High and Low Transfers

The study showed that 31.7% (n=19) of the participants among 60 participants became independent in high and low transfers after completing rehabilitation. Most of the participants 33.3% (n=20) needs supervision and 26.7% (n=16) of them needs minimal assistance (Figure-11).
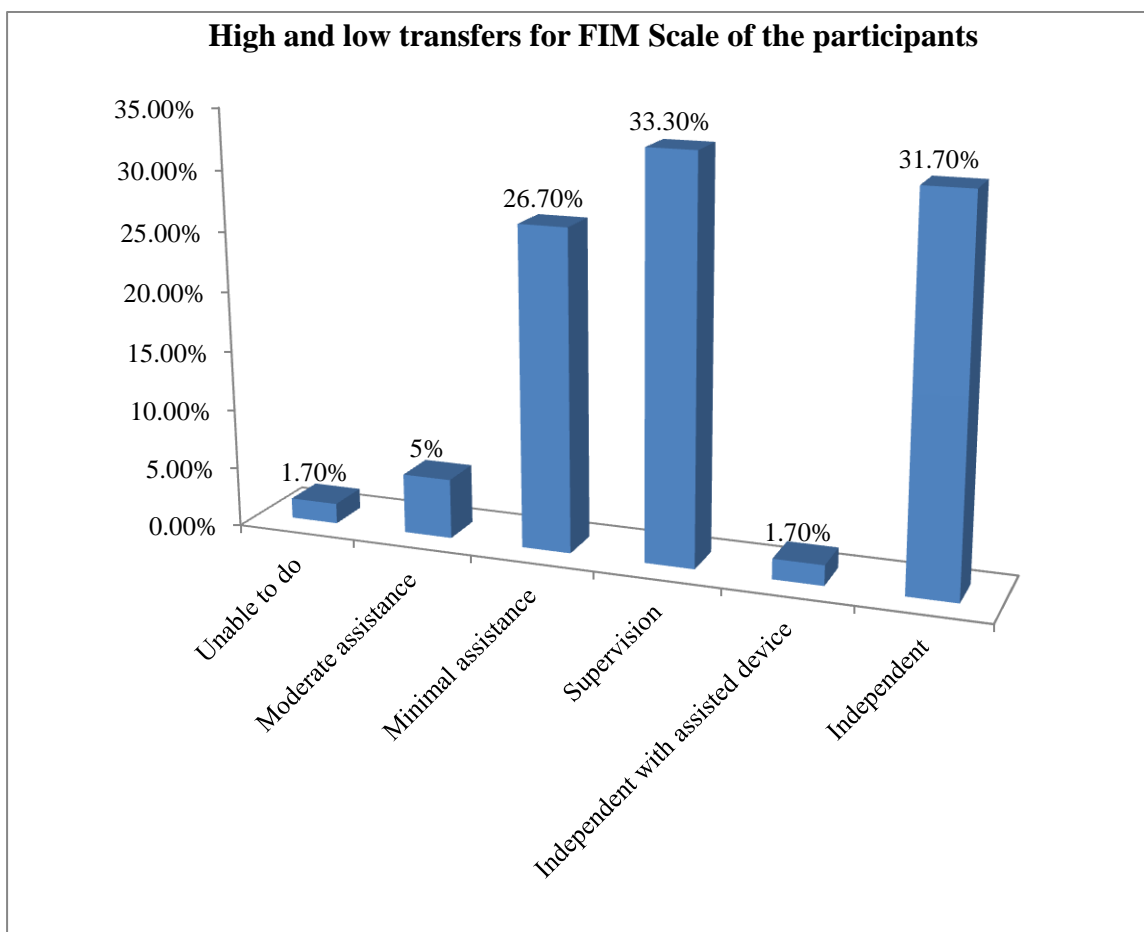
Figure-11: High and low transfers for FIM Scale of the participants during discharge

Discharge Score of Wheelie

The study focused on wheelie 96.7% (n=58) of the participants achieved 7 from FIM scale that mean they became independent in wheelie after completing their rehab during discharge among 60 participants. And 3.3% (n=2) needs minimal assistance (Figure-12).
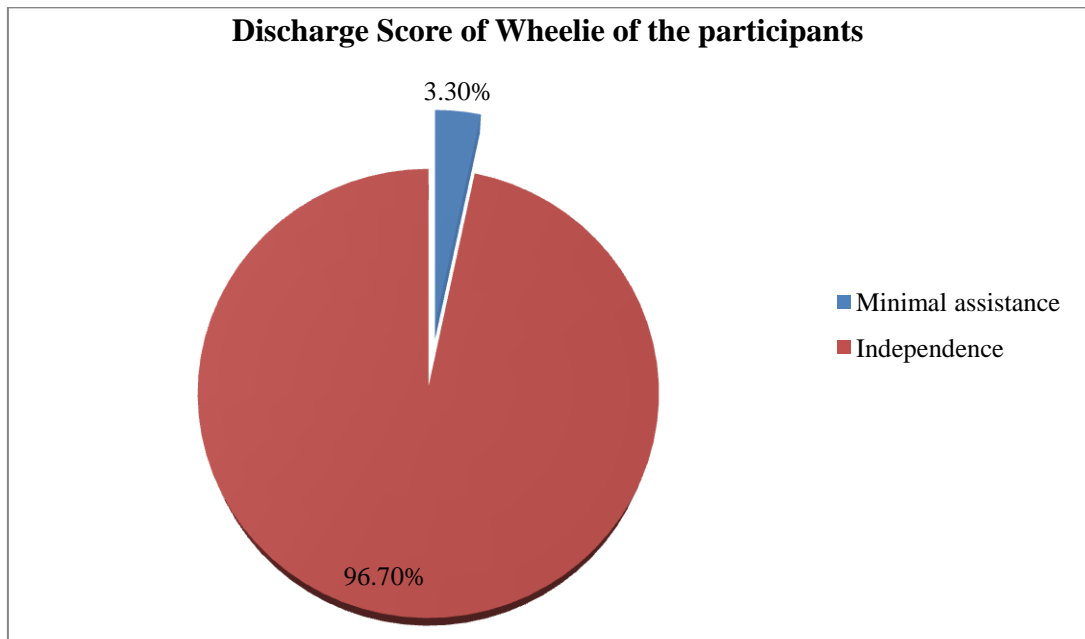
Figure-12: Discharge Score of Wheelie

Up and Down Slop

Out of 60 participants, 41.7% (n=25) of them became independent in up and down slops during discharge and 45% (n=27) of them needs supervision. The study shows the score of the up and down slops according to the FIM during discharge (Figure-13).
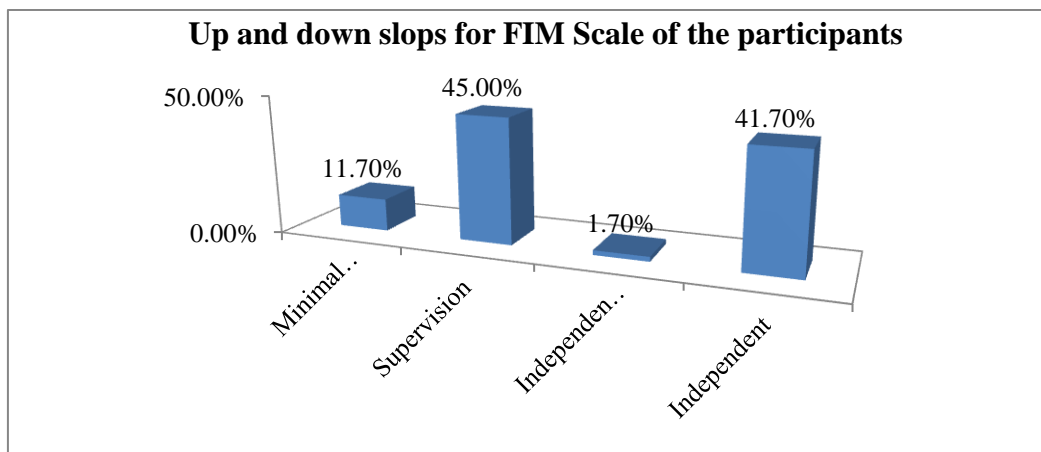
Figure-13: Up and down slops for FIM Scale of the participants during discharge

Discharge score of Rough Ground

Out of 60 participants, most of them 90% (n=54) achieved 7 from FIM scale that means they became independent in rough ground after completing their rehab and 10% (n=6) of them needs minimal assistance. The study shows the score of the rough ground according to FIM during discharge (Figure-14).
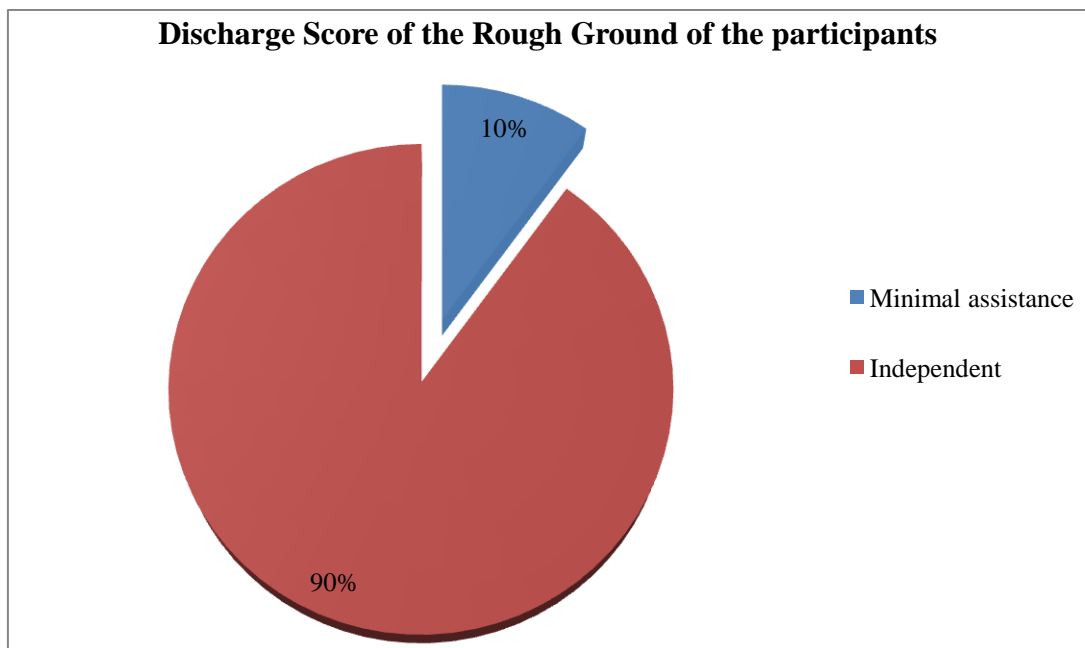
Figure 14: Discharge Score of the Rough Ground

Discharge Score of Small Step

Out of 60 participants, 65% (n=39) of them needs minimal assistance in small steps and 20% (n=12) of them became independent after completing their rehabilitation during discharge. The study shows the discharge score of small steps according to FIM (Table-11).

Small Steps	Frequency	Percent
Maximal assistance	2	3.3
Moderate assistance	5	8.3
Minimal assistance	39	65.0
Supervision	1	1.7
Independent with assisted device	1	1.7
Independent	12	20.0
Total	60	100.0

Table-11: Small step for FIM scale of the participants during discharge

Sit to Stand

Out of 60 participants, most of them 60% (n=30) unable to do sit to stand after completing their rehab during discharge. 16.7% (n=10) of them became independent in sit to stand and 15% (n=9) of the participants became independent with assisted device. The study shows the score of sit to stand according to FIM during discharge (Figure-15).
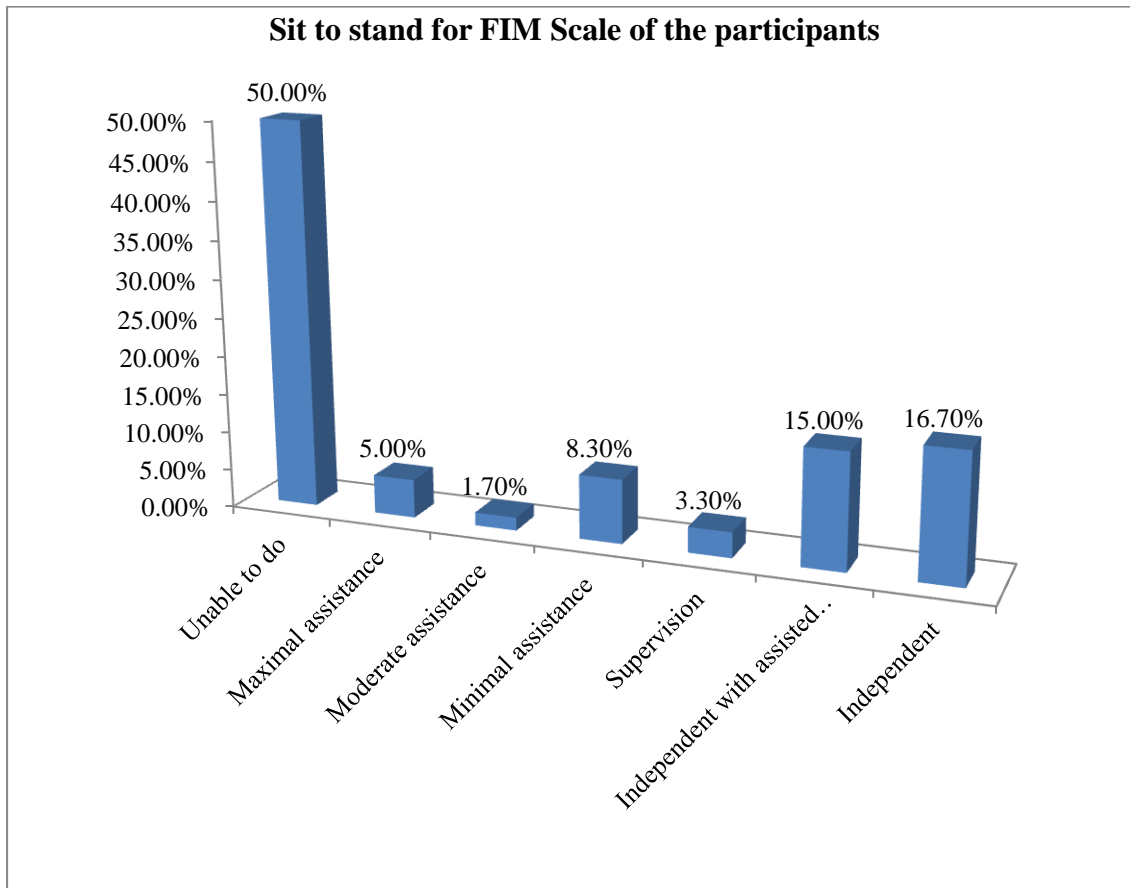
Figure-15: Sit to stand for FIM Scale of the participants during discharge

Discharge Score of Standing Balance

Among 60 participants, 46.7% (n=28) of them unable to do perform standing balance after completing their rehabilitation during discharge. 20% (n=12) of them became independent and 15% (n=9) of them became independent with assisted device. The study shows the score of standing balance according to FIM during discharge (Figure-16).
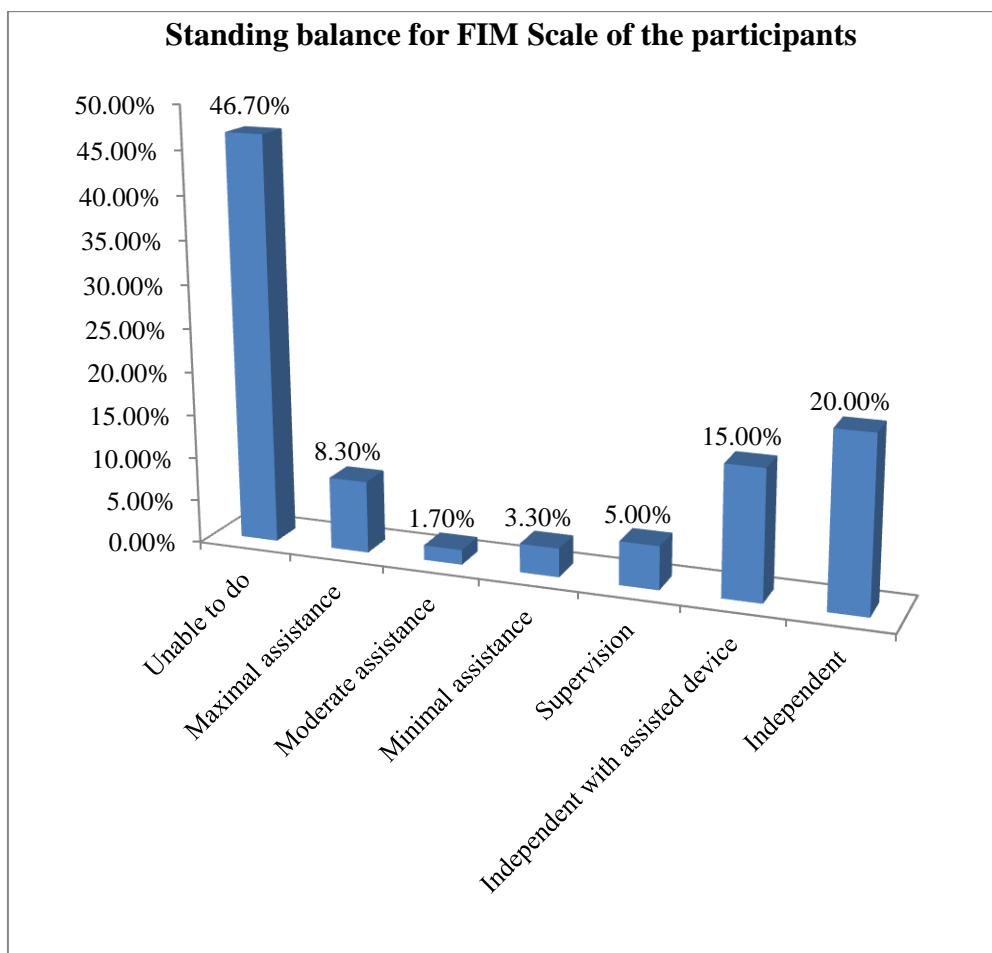

Figure-16: Standing balance for FIM Scale of the participants during discharge

Discharge Score of Standing Table

Among 60 participants, 56.7% (n=34) of them needs minimal assistance to standing on standing table during discharge. 18.3% (n=11) of them needs moderate assistance in standing table. The study shows the details information about discharge score of standing table according to FIM scale (Table-12).

Standing table	Frequency	Percent
Unable to do	3	5.0
Maximal assistance	3	5.0
Moderate assistance	11	18.3
Minimal assistance	34	56.7
Independent with assisted device	4	6.7
Independent	5	8.3
Total	60	100.0

Table-12: Standing table for FIM scale of the participants during discharge

Discharge Score of Flat Surface

Out of 60 participants, majority of them 55% (n=33) unable to do walking in flat surface after completing rehabilitation. 20% (n=12) of them became independent and 16.7% (n=10) of them became independent with assisted device. The study shows discharge score of walking in flat surface according to FIM scale (Figure-17).
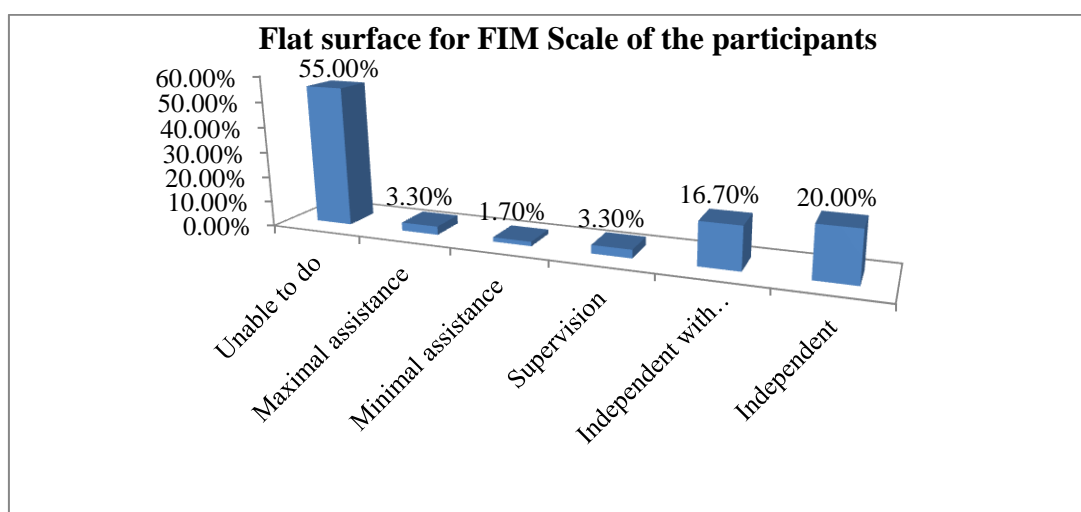

Figure-17: Flat surface for FIM Scale of the participants during discharge

Discharge Score of Rough Surface

Among 60 participants, 56.7% (n=34) of them unable to do walking in rough surface after completing their rehabilitation during discharge. 20% (n=12) of the participants became independent. The study shows the detail information about discharge score of rough surface according to FIM (Table-13).

Rough surface	Frequency	Percent
Unable to do	34	56.7
Maximal assistance	1	1.7
Moderate assistance	2	3.3
Minimal assistance	2	3.3
Supervision	2	3.3
Independent with assisted device	7	11.7
Independent	12	20.0
Total	60	100.0

Table-13: Rough surface for FIM scale of the participants during discharge

Discharge Score of Step or Slope

Out of 60 participants, most of them 58.3% (n=35) unable to do walking steps or slopes during discharge. 16.7% (n=10) of the patients became independent. The study shows the discharge outcome of walking steps or slopes according to FIM scale (Figure-18).
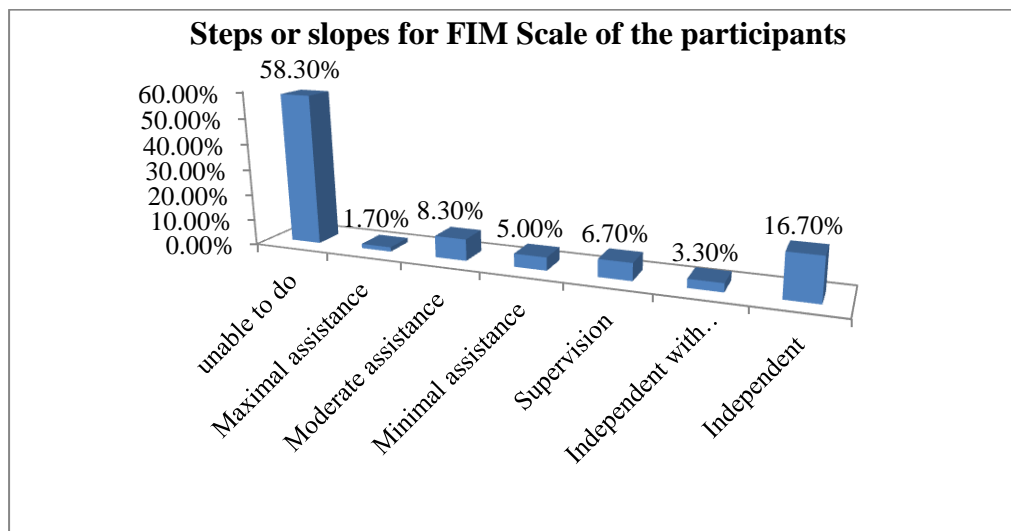
Figure-18: Steps or slopes for FIM Scale of the participants during discharge

Discharge Score of Fitting Brace

Among 60 participants, majority of them60% (n=36) became independent to fitting brace during discharge. 21.7% (n=13) of the participants needs minimal assistance. The study shows the discharge score of fitting brace according to FIM scale (Table-14).

Fitting brace	Frequency	Percent
Unable to do	1	1.7
Moderate assistance	8	13.3
Minimal assistance	13	21.7
Supervision	1	1.7
Independent with assisted device	1	1.7
Independent	36	60.0
Total	60	100.0

Table-14: Fitting brace for FIM scale of the participants during discharge

The aim of this study was to assess the functional outcomes of patients with traumatic spinal cord lesions of paraplegic patients who 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 in our country. Total 60 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 52 males (86.7%) and 8 (13.3%) females. Their age ranged from 10 to 70 years with a mean age of the patients were 30.48 years with standard deviation (±17.439). The majority of the patient's were aged between 21-30 years. Most of the patients were young age. All 60 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).The people of rural area are mostly poor and they are engage in risky work that may causing SCI. Farmer was the higher for traumatic spinal cord injury. Daily labor was the second most common occupation where spinal cord injury was seen. More than 80% of the population lives in villages and 65% of the total labor forces are employed in agriculture (Hossain, 2001). The skeletal level of thoracic was most common than lumber level. The skeletal level of thoracic were 63.4% (n=38) and lumber 36.6% (n=22). In thoracic level, thoracic 12 were most common and in lumber level, lumber 1 most common and the neurological level during discharge were thoracic level 41.7% (n=25) and lumber 58.3% (n=35). Lumber level were most common than thoracic level. In lumber level, lumber 1 were most common and in thoracic level, thoracic 10 were most common of traumatic paraplegia. The most common58.3% (n=35) impairment grading in ASIA scale was complete-A.

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). Majority of the patients admitted at CRP were either uneducated/illiterate (16) or were minimally educated/primary level (21).

Among 60 participants, FIM rating scale show 56 patient became independent in rolling. In lying to sitting and sitting to lying most of them 56 and 55 patients became independent. 83.3% of participants show independent in prone lying. Most of them 98.3% (n=59) achieved 7 from FIM rating scale in sitting balance. Somers (1992) suggest that in the section of rolling, prone lying and sitting balance the goal is to become total independent. Significant improvement also show in lifting in wheelchair, most of them (n=58) achieved 7 from FIM rating scale in lifting in wheelchair. 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 60 participants, 86.7% (n=52) 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). 96.7% (n=58) of the participants became independent in wheelie. In wheelchair skills in rough ground 90% (n=54) participants gain 7 from FIM rating scale. Somers (1992) and Atrice et al. (2001) claim in the section of wheelchair propelling in rough surfaces the goal is to gain total independence. In case of walking in flat surface most of the patient 55% and rough surface most of the patient 56.7% unable to do. It means they needs total assistance in gait. Majority of the patient 60% became independent to fitting brace and 21.7% of them need minimal assistance after completing their rehabilitation during discharge.

CHAPTER – VI: CONCLUSION AND RECOMMENDATION

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 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. More research is needed to evaluate the rehabilitation program for these patients.

6.2 Recommendation

A recommendation evolves out of the context in which the study was conducted. It is recommended that if possible someone would overcome the existing limitation for further study. If it is possible than conducted further studies in this area. Though the research has some limitations but it identified some further step that might be taken for the better accomplishment of further research. For ensuring of the generalizability of the research it is recommended that a larger sample should be chosen randomly for the cross sectional study. The sample should be representative from the whole population. In this study, researcher only took paraplegia patient to find out general functional independence and no comparison was done with standard functional expectation guideline. So for further study researcher strongly recommended to include both paraplegia and tetraplegia patients and to find out and compare the functional outcome of each level of injury with the standard functional expectation guideline. Further comparative study could include t- test to find out the effectiveness of functional independence measure (FIM) which may test before starting rehabilitation and after rehabilitation. A quota of the sample by age can get a different result for different age groups, which will help the therapists to make a target of functional outcome. This study should survey the functional ability of male and females for this above reason. If the researcher will take long term study, the result will be more significant. Last of all entire researcher recommended to take setting in whole Bangladesh to generalize this study.

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APPENDIX

PERMISSION LETTER

To

The Head of the Department

Department of the Physiotherapy

Center for the Rehabilitation of the Paralyzed.

Savar, Dhaka-1343

Subject: Application for getting permission for conducting research project.

Sir,

I beg most respectfully to state that, I am a student of 4th year, B.sc in Physiotherapy in Bangladesh Health Professions Institute (BHPI). As a part of my study I need to conduct a research project. Because of this, I need your kind permission to conduct the research. My research Topic is "Functional outcomes of traumatic paraplegic Spinal Cord Injury (SCI) patients at the time of discharge at CRP"

And in this research my participants are those who are clinically diagnosed as incomplete paraplegia patient of SCI. Here I want to assure you that my interview will not do harm to the patient. From this research, we will be able to know the functional outcome of traumatic paraplegic SCI patient. For this reason, I need to collect data for my research project. And my selected place is Spinal Cord Injury Unit of CRP.

I therefore, pray and hope that, you would be kind enough to give me permission to do this Research successfully in your Department and oblige thereby.

Date: 18.06.2011

I remain

Sir

Your most obedient pupil

Kanika Roy

Kanika Roy

B. Sc. in Physiotherapy

BHPI, Savar, Dhaka

49

মৌখিক অনুমতি পত্র / সম্মতি পত্র

(অংশগ্রহনকারীকে পড়ে শোনাতে হবে)

আসসালামুআলাইকুম/নমস্কার,

আমার নাম কনিকা রায়, 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-"ডিসচার্জের সময়/চলে যাওয়া কালান সময়ে সিআরপিতে মেরুরজ্জুতে আঘাত প্রাপ্ত রোগীদের ফাংশনাল ফলাফল"। আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তিগত এবং আনুষঙ্গিক প্রশ্ন মেরুরজ্জু ক্ষতিগ্রস্ত সম্পর্কে করতে চাচ্ছি। এতে আনুমানিক ৩০-৪০ 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 অন্তর্ভূক্ত নয়। তাই এই গবেষনায় 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 স্বেচ্ছাপ্রণোদীত এবং আপনি যে কোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকারও আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং মোঃ ওবায়দুল হক, সহকারী অধ্যাপক এবং কোর্স সমন্বয়কারী, ফিজিওথেরাপী বিভাগ, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-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...........................

VERBAL CONSENT STATEMENT
(Please read out to the participant)

Assalamualaikum/Namasker, my name is Kanika Roy. I am conducting this study for a B.sc in Physiotherapy project study dissertation titled "Functional outcomes of traumatic paraplegic SCI patient at the time of discharge at 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 (SCI) rehabilitation program. 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 area (spinal cord injury), so your participation in the research will have no impact on your present or future treatment in this area (spinal cord injury unit). All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous.

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 Md. Obaidul Haque, Assistant Professor and Course coordinator, Physiotherapy Department, BHPI, CRP, Savar, Dhaka-1343.

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 _____

<h1 align="center">তথ্য সংগ্রহের ফরম</h1>

রোগীর নামঃ

বয়ষঃ

লিঙ্গঃ

ঠিকানাঃ

আবাসস্থল/আবাসি এলাকাঃ   শহরঃ ☐   গ্রামঃ ☐

রোগ নির্ণয়/ রোগের ধরনঃ

আঘাত প্রাপ্তের তারিখঃ

মেরুদন্ডের আঘাত প্রাপ্ত অংশঃ

সিআরপিতে ভর্তির তারিখঃ

শিক্ষাগত যোগ্যতাঃ

পেশাঃ

চলে যাওয়া কালীন/ডিস্চার্জের সময় স্নায়ুতন্ত্রের অবস্থাঃ

চলে যাওয়া কালীন/ডিস্চার্জের সময় অ্যামেরিকান স্পাইনাল ইঞ্জুরী অ্যাসোসিয়েশন স্কেলঃ

ফাংশন্যাল প্রগ্রেস রেটিং স্কেলঃ

৭= স্বয়ংসম্পূর্ণ

৬= সাহায্যকারী ডিভাইস/ সহায়ক

৫= তত্ত্বাবধান

৪= অল্প সাহায্য

৩= বেশী সাহায্য

২= খুব বেশী সাহায্য

১= অক্ষম

ফাংশন্যাল ইমপ্রুভমেন্ট/উন্নতি

কর্মশীলতা (অ্যকটিভিটিজ)	স্কোর/ সাফল্যাঙ্ক
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 ↔ বিছানা	
উপরে এবং নিচে স্থানান্তর	
হুইলচেয়ারের দড়়তা	
হুইলচেয়ার চালানোর ক্ষামতা	
উঁচু এবং নিচু ঢাল	
অমসৃণ ভূমি/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	

Data Collection Form

Patient's Name:

Age:

Sex:

Address:

Living Area: Urban: Rural:

Diagnosis:

Date of injury:

Skeletal Level:

Date of Admission to CRP:

Educational Status:

Occupation:

Neurological Level during discharge:

ASIA scale during discharge (Impairment Grading):

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