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INDIVIDUAL CAPACITY ON DAILY ACTIVITIES OF PEOPLE WITH SPINAL CORD INJURY

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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

INDIVIDUAL CAPACITY ON DAILY ACTIVITIES OF PEOPLE WITH SPINAL CORD INJURY

Submitted by **Zarin Tasnim**, for the partial fulfilment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

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Declaration

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

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Contents

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Acronyms

ADL:	Activity of Daily Living
ASIA:	American Spinal Injury Association
BHPI:	Bangladesh Health Profession's Institute
BMRC:	Bangladesh Medical Research Council
CRP:	Centre for the Rehabilitation of the Paralysed
CSF:	Cerebrospinal Fluid
FIM:	Functional Independence Measurement Scale
IRB:	Institutional Review Board
RTA:	Road Traffic Accident
SCI:	Spinal Cord Injury
SPSS:	Statistical Package for the Social Sciences
T-SCI:	Traumatic Spinal Cord Injury
WHO:	World Health Organization

List of Tables

List of Figures

Abstract

Purpose: To assess the individual capacity on daily activities of people with SCI attending at specialized rehabilitation centre. ***Objectives:*** To find out the socio-demographic characteristics, clinical parameters and individual capacity on daily activities, association among socio-demographic characteristics with clinical parameters and the relationship between clinical parameters and individual capacity on daily activities of paraplegic SCI participants. ***Methodology:*** The study design was cross-sectional. Total 72 samples were selected conveniently for this study from Centre for the rehabilitation of the paralysed (CRP), SCI unit, at Savar. ***Procedure of data collection:*** Data was collected by using of questionnaire and the individual capacity on daily activities was assessed by the FIM scale. ***Data analysis procedure:*** The study was conducted by using quantitative descriptive analysis through using SPSS software 20.0 version. ***Results:*** Among 72 SCI patients evaluation, Out of 72 participants, the majority are male 84.70% (n=61) participants and Female was 15.30% (n=11). Majority 55.60% (n=40) were live in rural area, 26.40% (n=19) were live in urban area and 18.10% (n=13) were live in semi-urban area. In FIM scale, it is found that male participants are more functionally independent in all domains of FIM scale rather than female participants. ***Conclusion:*** Spinal cord injury is a disastrous condition which causes turn over the individual capacity on daily activities**.** The spinal cord injured persons reported low scores on all of the FIM dimensions that characterize poor activity if daily living (ADL) among all. The study demonstrated that spinal cord injury greatly affects daily activities and gives rise to more problems, especially in the transfer, standing and walking. It is necessary to take steps to improve the transfer, standing, walking and able to daily activities of persons with spinal cord injury, as this will eventually lead to improvement in their activity of daily living.

Key words: Individual capacity, Daily Activities, Spinal Cord Injury (SCI)

CHAPTER – I INTRODUCTION

1.1 Background

Spinal Cord Injury is the most complex injury of all catastrophic injuries where patients usually have permanent and devastating neurologic deficits with disability and the injury causes negative effect on the injured person's functional, medical, psychological and economical well-being (Smith et al., 2013). Acute injury of spinal cord are among the most common cause of sever disability & death (Chowdhury et al., 2015). Spinal cord injury can occur in everyone's life and the patient with Spinal cord injury faces lots of challenges in coping with the injury process as well as rehabilitation; Although some patients recover partial to perform the daily living activities through rehabilitation but many activities are permanently altered (Kumar & Gupta, 2016).

The occurrence of traumatic spinal cord injury (T-SCI) may be devastating as it is associate with significant permanent functional disabilities. Prediction of function is important after a T-SCI in order to improve patient's care, plan rehabilitation and better optimize resources utilization. However, reliably predicting functional outcome following acute SCI remains difficult. Failure to consider various clinical factors influencing the acute care hospitalization and to underline the most relevant factors among them may contribute to that issue. Previous studies agree that the severity of the T-SCI at initial presentation is the main factor associated with neurologic and functional outcomes, with complete SCI predicting worse outcome (Abdul-Sattar, 2014).

In recent decades the average life expectancy of the people with spinal cord injury has increased (Jensen et al., 2013). Spinal cord injury (SCI) is unexpected which alters dramatically the course of an individual's life; It causes sudden, often devastating damage to the central nervous system, with potential adverse effects in multiple body systems including musculoskeletal, integumentary , digestive, urinary, cardiovascular, reproductive where many of the secondary complications experienced by individuals with SCI are quite unlike those experienced by persons with general health issues or other neurological disorders (Tulsky et al., 2015).

In a developing country like Bangladesh, life expectancy of spinal cord injured persons is much lower than in a developed country (Razzak et al., 2011). SCI continues to be a major cause of disability throughout Asia as well as in Bangladesh (Islam et al., 2011). Most predictive factors of functional recovery following SCI are non-modifiable, potential modifiable predictors, such as clinical events occurring during the course of the acute care hospitalization may be of importance for the surgical planning and the prevent development of early complication (Bourassa-Moreau et al., 2016).

SCI is a condition with an annual incidence of 12.1–57.8 cases per million worldwide (Munce et al., 2013). According to the Noonan et al. (2012), a number of people living with SCI in the US is approximately 270,000. In Europe, the incidence is from 10.4 per million per year to 29.7 per million per year (Moghimian et al., 2015). Lim et al., (2017) stated that the highest prevalence of SCI is 906 per million in the United States. In Asia, the incidence rates of SCI range from 12.06 - 61.6 per million, while the average age range of affected persons is 26.8 - 56.6 years (Ning et al., 2012). In the United States, the annual incidence of traumatic SCI is 40 cases per million or 12000 new cases each year (Rabadi et al., 2013).The causes of SCI may differ from person to person due to different age, sex, race and socio- cultural activities (Hoque et al., 2012). The most frequent cause of traumatic spinal cord injury is motor vehicle accidents. (Chen et al., 2013).

Spinal cord injury (SCI) is one of the most serious injuries of the musculoskeletal system which most cases brings about permanent disability and the unexpected occurrence of the injury and experiencing a new life situation result in a decrease in the quality of life in individuals with SCI; SCI and its direct consequences entail dramatic changes in the functioning of a person, thus affecting virtually every dimension of life. Disorders of the respiratory, cardiovascular, digestive and urinary systems as well as sexual dysfunctions, spasticity, edema, pain, autonomic dysreflexia, dysfunctions of the endocrine system or disorders of biochemical processes are some of the many severe consequences and complications regarding particular body organs and systems (Pokaczajło et al., 2016).

People with SCI must relearn basic skills such as eating, bathing, dressing, driving and in addition, individuals with SCI must often cope with an increased incidence of many health problems, such as neurogenic bowel and bladder, respiratory symptoms and

complications, cardiovascular complications, pressure ulcers, altered sexual functioning, urinary tract infections, autonomic dysreflexia, neuropathic pain, osteoporosis and fractures and often have to cope with altered social roles and psychiatric comorbidities including reactive depression and anxiety disorders ; These issues represent major challenges to living with SCI all of which greatly affect the daily activities (Tulsky et al., 2015) . As the spinal cord is responsible for conducting afferent and efferent stimuli between the periphery and the brain, when this organ is injured, organic structures and functions are compromised, resulting in limitations to perform Activities of Daily Living (Franca et al., 2011).

Physical deconditioning is a state of diminished strength, stamina, and capacity to perform physical activity. A decline in strength, endurance, and functional capacity are major health concerns for the individual living with SCI. As stated before, sedentary behavior and inactivity are major risk factors for the development of cardiovascular disease and metabolic disorders and have been linked to decreased muscular strength, reduced aerobic capacity, and increased disability (Dunlop et al., 2015).

To fully understand the impact of a disability, it is essential to understand how daily functioning is affected and spinal cord injury (SCI) substantially alters activity patterns for example, men with SCI spend more time partaking in personal care activities and less time engaged in work-related activities than men without an SCI and although it has been established that SCI affects participation in activities of daily living (ADL), it remains to be determined whether there is variation in patterns of ADL within the SCI population (Hetz et al., 2010).

Unfortunately, physicians and researchers have little to scientifically guide their prediction of outcome following SCI. The few existing studies often employ variables collected outside of the initial injury period (more than 3 days post SCI), and are therefore less useful as acute clinical prediction tools (Van Middendorp et al., 2011).

1.2 Rationale

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 noneconomic 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 activities of daily living 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 individual capacity of daily activities of SCI patient at CRP. It will also help to determine the individual capacity of daily activities of paraplegia patient in order to make more successful rehabilitation program. As a physiotherapist, we need to maximize the individual capacity of daily activities 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 individual capacity of daily activities of the people with SCI when performing activities.

1.3 Research Question

What is the individual capacity on daily activities of people with spinal cord injury?

1.4 Study objective

1.4.1 General objective

To assess the individual capacity on daily activities of people with spinal cord injury.

1.4.2 Specific objectives

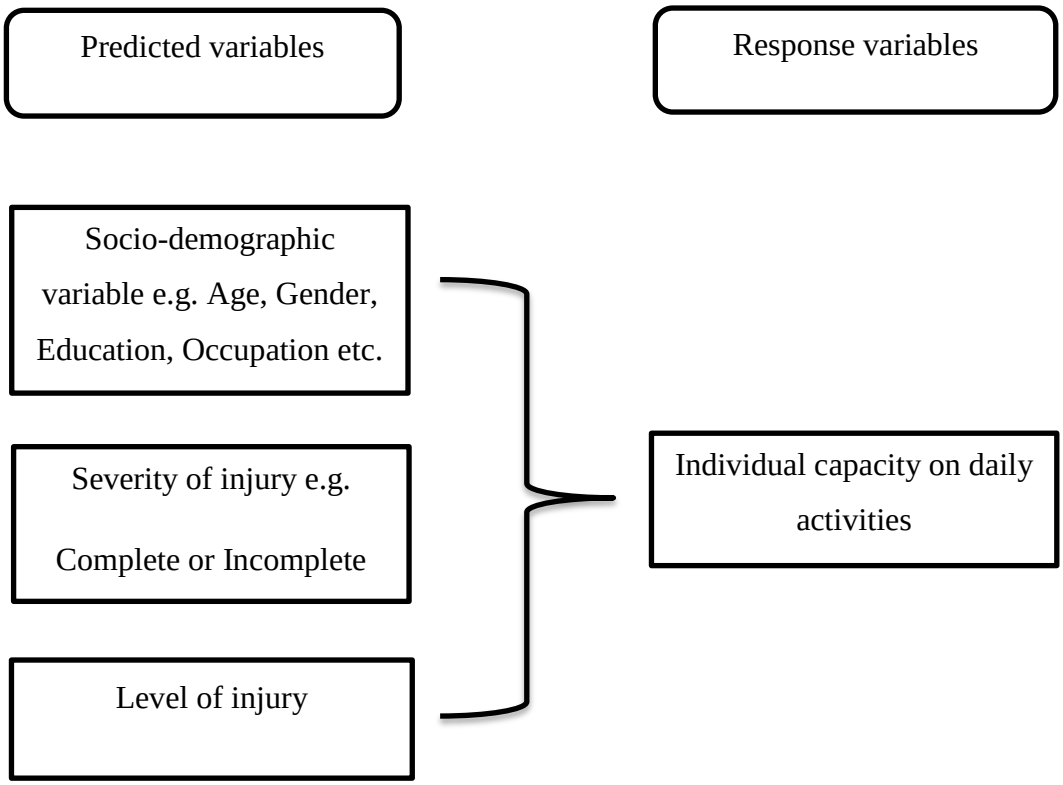
i. To find out the socio-demographic characteristics of paraplegic SCI participants.

ii. To identify the clinical parameters and individual capacity on daily activities of paraplegic SCI participants.

iii. To explore the association among socio-demographic characteristics with clinical parameters.

iv. To find out the relationship between clinical parameters and individual capacity on daily activities.

1.5 Conceptual Framework



1.6 Operational Definitions

Spinal Cord Injury (SCI): A spinal cord injury (SCI) is damage to the spinal cord that causes temporary or permanent changes in its function.

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

Tetraplegia: Tetraplegia (sometimes referred to as quadriplegia) is a term used to describe the inability to voluntarily move the upper and lower parts of the body.

Complete SCI: A complete SCI produces total loss of all motor and sensory function below the level of injury.

Incomplete SCI: An incomplete injury means that the ability of the spinal cord to convey messages to or from the brain is not completely lost.

Functional independence measurement scale (FIM): The FIM instrument refers to a scale that is used to measure one's ability to function with independence. The FIM is used worldwide in medical rehabilitation units.

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.

Individual capacity of daily activities: 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.

CHAPTER – II LITERATURE REVIEW

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. The spinal cord is about 45cm long and 1.25cm wide extending from the base of the brain to the level of the waist (Cho, 2015). The spinal cord has covered three layers- Durra matter, Arachnoid and Pia matter and 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 (Ma et al., 2019).

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). 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 (Tran et al., 2018).

A Spinal Cord Injury (SCI) refers to any injury to the spinal cord that is caused by trauma instead of disease during 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 (Nas et al., 2015). Damage to the spinal cord has profound and global effects. SCI can also affect the functioning of the sensory, respiratory, cardiovascular, gastrointestinal, genitourinary system (Ahuja et al., 2017).

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 (Scivoletto et al., 2013). 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 (Brouwers et al.,2017).

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.

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 (Roberts et al., 2017) and in incomplete lesion there is a partial preservation of sensory and/or motor function below the neurological level and in the lowest sacral segment.

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 (Kirshblum and Waring, 2014):

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.

An individual capacity on daily activities 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 (Faronbi et al., 2019). 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 (Hadley et al., 2013).

Depending on the level of the spinal cord injury, whatever sparing the patient has optimized (Fouad and Tetzlaff, 2012). 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 (Rahimi et al., 2020). ADLs can be difficult for an individual with a spinal cord injury (Simpson et al., 2012). 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 (Barclay et al., 2016).

Further interventions focus on support and education for the individual and caregivers (Wasilewski, 2017). This includes an evaluation of limb function to determine what the patient is capable of doing independently, and teaching the patient self-care skills (Velstra et al., 2014). 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 (Mlinac and Feng, 2016) and reduces the burden on caregivers. Quality of life issues such as sexual health and function are also addressed (Baumann et al., 2014).

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 (Walsh et al., 2015). 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. Rehabilitation techniques can greatly improve patients' health and quality of life by helping them learn to use their remaining abilities (Darmon, 2020). 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 (Rohm et al., 2013). They help the patient with SCI learn new ways to manage his/her daily activities and stay healthy and 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 (Piatt et al., 2016). A spinal cord injury can also affect the nerves and muscles and can cause bowel and bladder problems and skin problems (Wheeler et al., 2018). 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 (Vogel et al., 2012). Having a spinal cord injury does not mean that children have to stop participating in games and enjoyable activities (Chun and Lee, 2010). 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 (Kim and Lehto, 2013).

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 (Hooker & Emery-Tiburcio, 2018).

Physiotherapists also help to remain clear the airway of those who has excess secretion in the chest (Flude et al., 2012). Rehabilitation nurses are concerned with the issues of bowel and bladder dysfunction and the management of pressure ulcers (Woo et al., 2017). 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, 2013).

CHAPTER – III METHODOLOGY

3.1 Study design

A cross sectional study was chosen to conduct the study and as it was found to be an appropriate design to find out the objectives. Cross-sectional studies measure simultaneously the exposure and health outcome in a given population and in a given geographical area at a certain time.

This study included the maximum proportion of SCI participants who came for receiving treatment from May 2021 to September 2021 at the CRP. Moreover this design was cost and time effective for the researcher compare to an experimental study.

3.2 Study site

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

3.3 Study population

The target population was the people with Spinal Cord Injury during rehabilitation & reintegration stage at CRP spinal cord injury unit, Savar, Dhaka.

3.4 Sampling technique

Convenient sampling method was used. The samples were collected on the basis of some inclusion and exclusion criteria. It is the one of the easiest, cheapest and quicker method of sample selection. Convenience sampling is a type of nonprobability sampling in which people are sampled simply because they are “convenient” sources of data for researches. Non probability sampling is does not involve known non-zero probabilities of selection.

It is a type of nonprobability or nonrandom sampling where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included for the purpose of the study (Etikan et al., 2016).

3.5 Sample size calculation

Sampling procedure for cross sectional study done by following equation-

$$n = \frac{Z^2 Pq}{d^2}$$

Where

d is the desired level of precision (i.e. the margin of error).

p is the (estimated) proportion of population which has the attribute in question.

If p = 0.5 now let`s say we want 95% confidence, and at least 5% plus or minus precision.

A 95% confidence level gives us Z values of 1.96, per the normal tables, so we get,

Sample size:

$$n = \frac{Z^2 Pq}{d^2}$$

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

=384.16

=384

According to this equation sample size was 384. Due to the COVID-19 pandemic, the academic activities were closed and interrupted which influenced the data collection procedure therefore only 72 sample was taken.

3.5.1 Inclusion criteria

- All patients with paraplegic spinal cord injury.
- Both male and female patients was selected.
- Subject who were willing to participate in the study

3.5.2 Exclusion criteria

- SCI patient including cord contusion.
- Patients with head injury.
- Non co-operative /non interested participants.

3.5.3 Data collection tools

A consent form and questionnaire (English) was used.

3.5.4 Measurement tool

Functional Independent Measure (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.

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.

3.5.5 Procedure of data collection

Before data collection, researcher was first introduced himself to the participants & took verbal consent. Then provide written consent form to the participant, and after signed the consent form, data was collected through a questionnaire from the participants by face to face conversation. In that way questionnaire was present and data was completed. In the questionnaire, there was participant's demographic information including Demographic information included age, sex, educational level, marital status, previous occupation, along with questionnaire of Functional Independence Measure (FIM) scale.

3.6 Data analysis procedure

After complete the initial data collection, every answer was cross checked to find out mistakes or unclear information. Then data was analyzed through Statistical package of social science (SPSS) Version 20. Microsoft Excel worksheet 16 was used to create the most of the graphs and charts. Then data was analyzed through descriptive and interferential statistics. The categorical data was presented as frequency and percentage of proportion through different visualization tool such as pie chart, bar graph. To find out the relationship between sociodemographic characteristics, clinical parameters and

individual capacity on daily activities, Chi-square test for independence and Linear Regression test was applied.

3.7 Ethical consideration:

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines, Institution Review Board (IRB) and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology was approved by Institutional Review Board and obtained permission from the concerned authority of ethical committee of Bangladesh Health Professions Institute (BHPI). Informed consent was used to take permission from all participants. Participants' rights and privileges were ensured. All the participants were aware about the aim and objectives of the study. Findings of the study were disseminated with the approval of regarding authority. The researcher strictly maintained the confidentiality regarding participant's condition and treatment.

CHAPTER – IV RESULTS

Sociodemographic characteristics

4.1 Age of participants

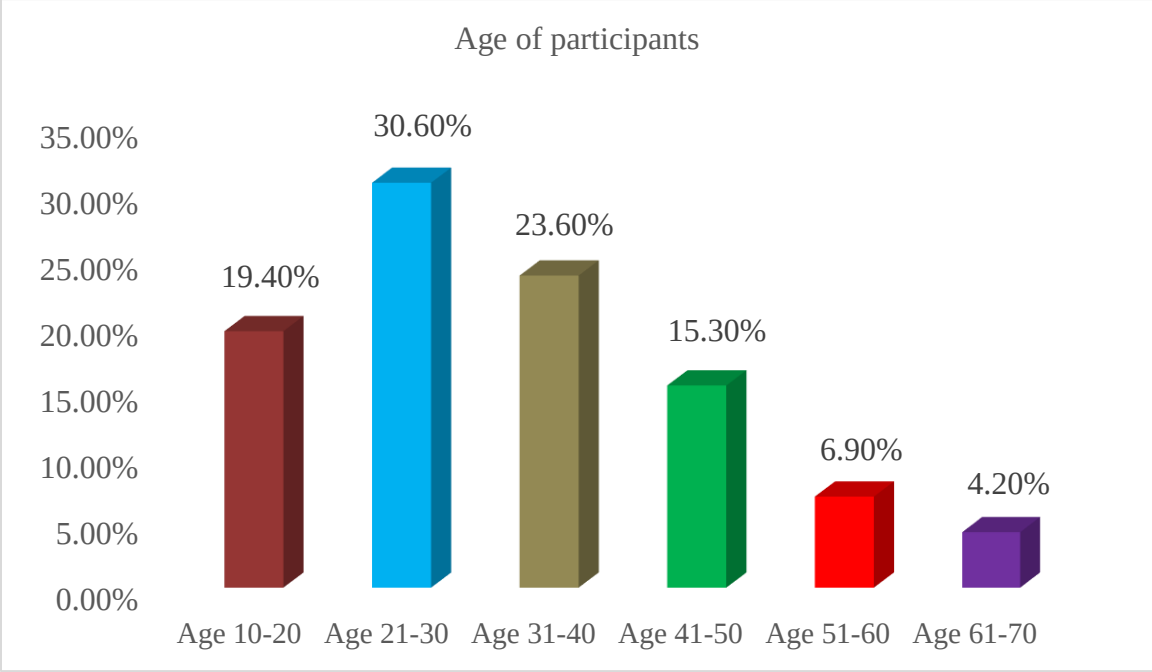


Figure-01: Age of participants

Among the 72 participants, where 19.40% (n=14) were age range 10-20 years, 30.60% (n=22) were age range 21-30 years, 23.60% (n=17) were age range 31-40 years, 15.30% (n=11) were age range 41-50 years, 6.90% (n=5) were age range 51-60 years, 4.20% (n=3) were age range 61-70 years.

4.2 Gender of participants

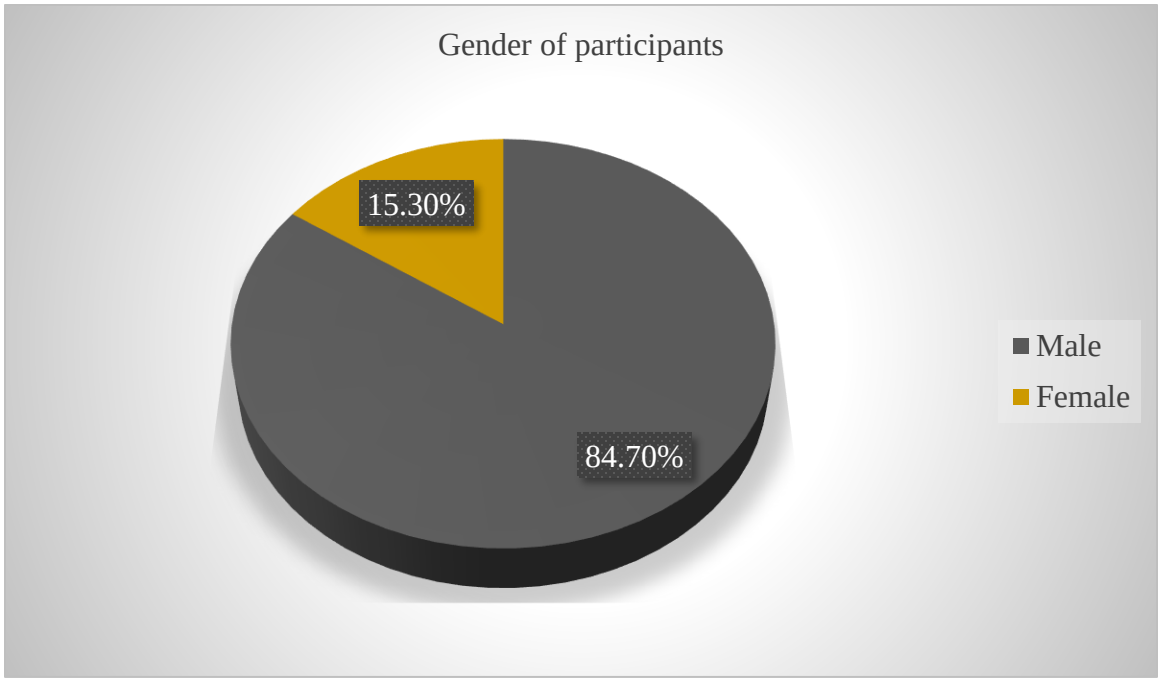


Figure-02: Gender of participants

Out of 72 participants, the majority was male 84.70% (n=61) and Female was 15.30% (n=11).

4.3 Educational status

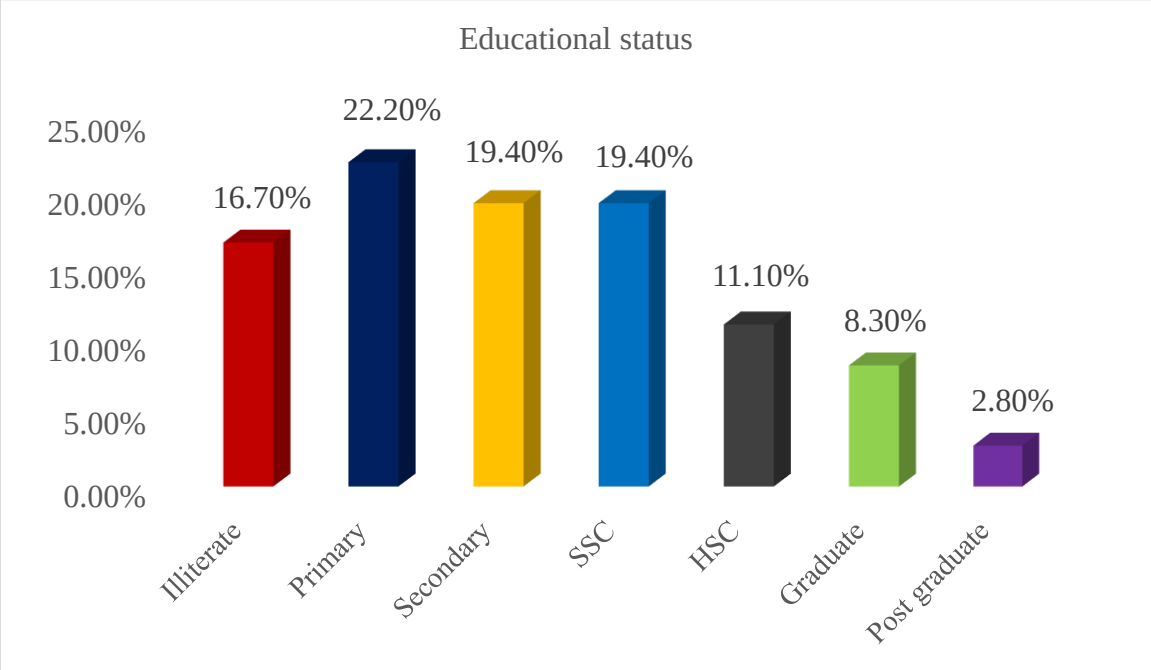


Figure-03: Educational status

Out of 72 participants, where 16.70% (n=12) were illiterate, 22.20% (n=16) were primary, 19.40% (n=14) were secondary, 19.40% (n=14) were SSC, 11.10% (n=8) were HSC, 8.30% (n=6) were graduate and 2.80% (n=2) were post graduate.

4.4 Living area

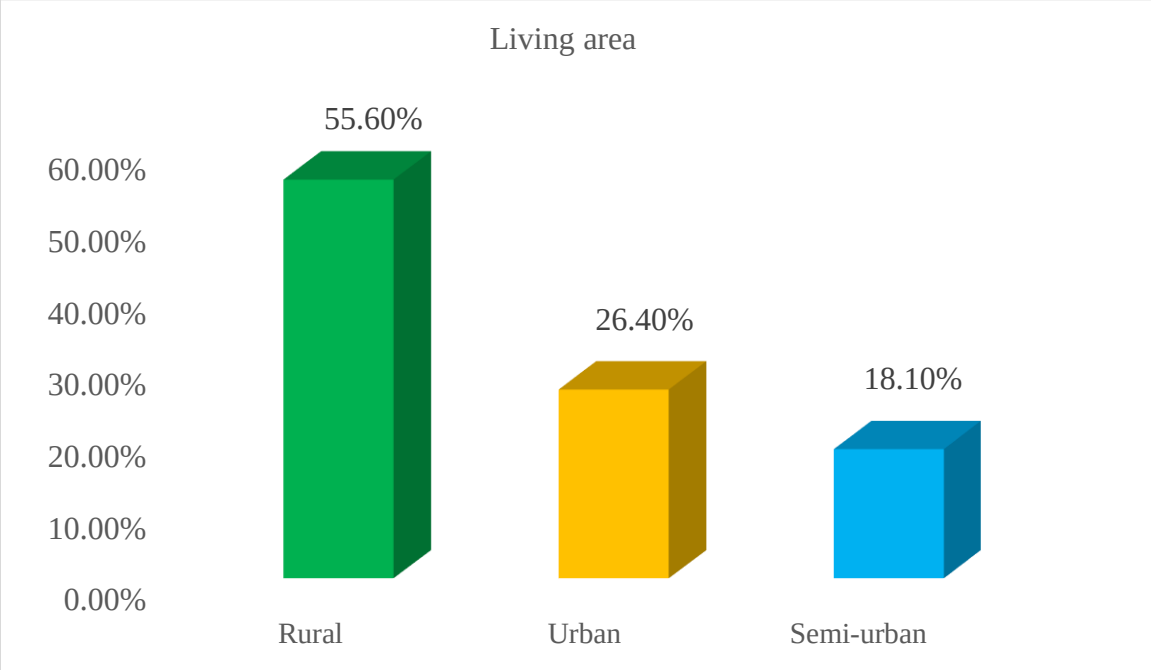


Figure-04: Living area

Among the 72 participants, where majority 55.60% (n=40) were live in rural area, 26.40% (n=19) were live in urban area and 18.10% (n=13) were live in semi-urban area.

4.5 Occupation

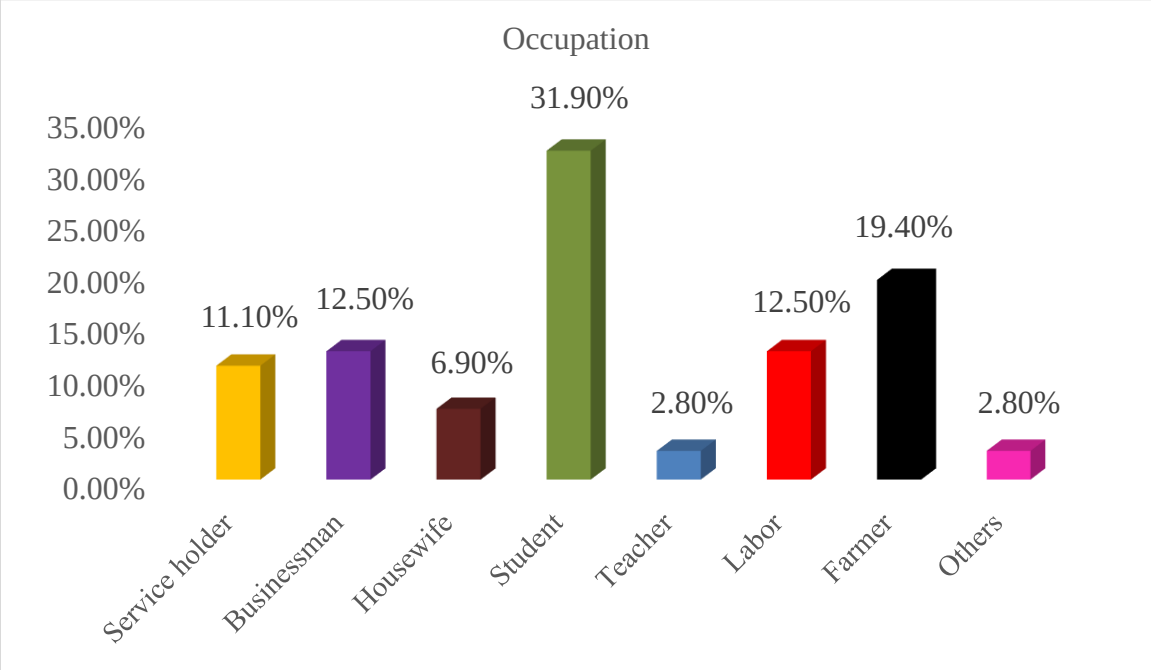


Figure-05: Occupation

Among the 72 participants, where 11.10% (n=8) were service holder, 12.50% (n=9) were businessman, 6.90% (n=5) were housewife, 31.90% (n=23) were student, 2.80% (n=2) were teacher, 12.50% (n=9) were labor, 19.40% (n=14) were farmer and 2.80% (n=2) were others.

4.6 Marital status

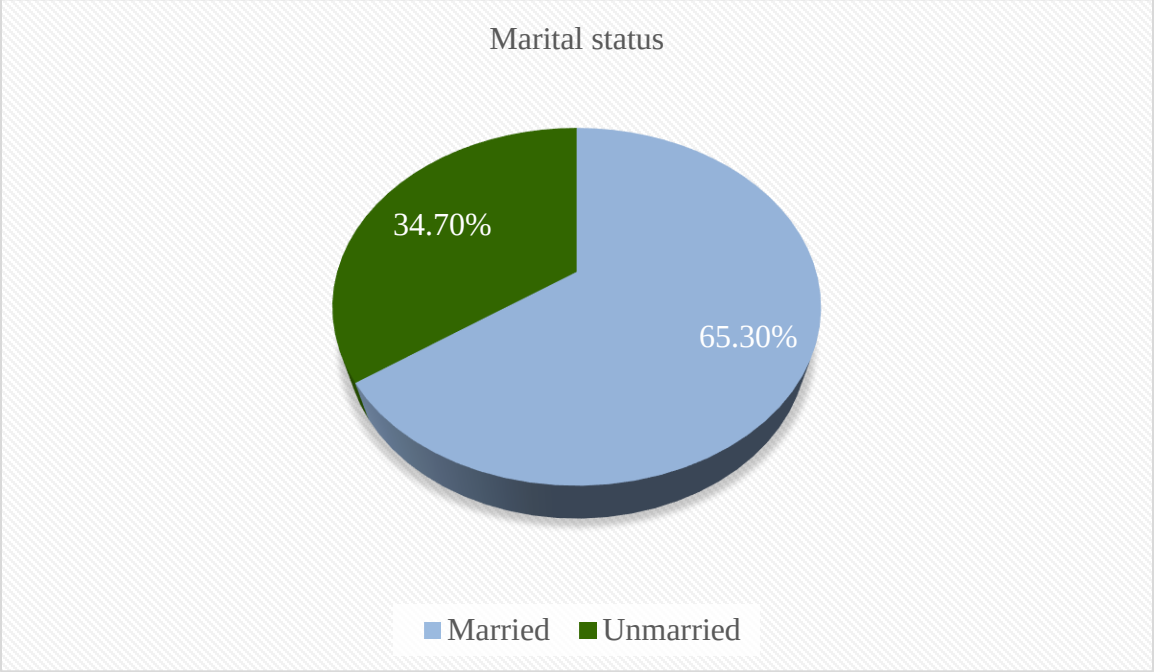


Figure-06: Marital status

Out of 72 participants, the majority was married 65.30% (n=47) and unmarried 34.70% (n=25).

4.7 Family type

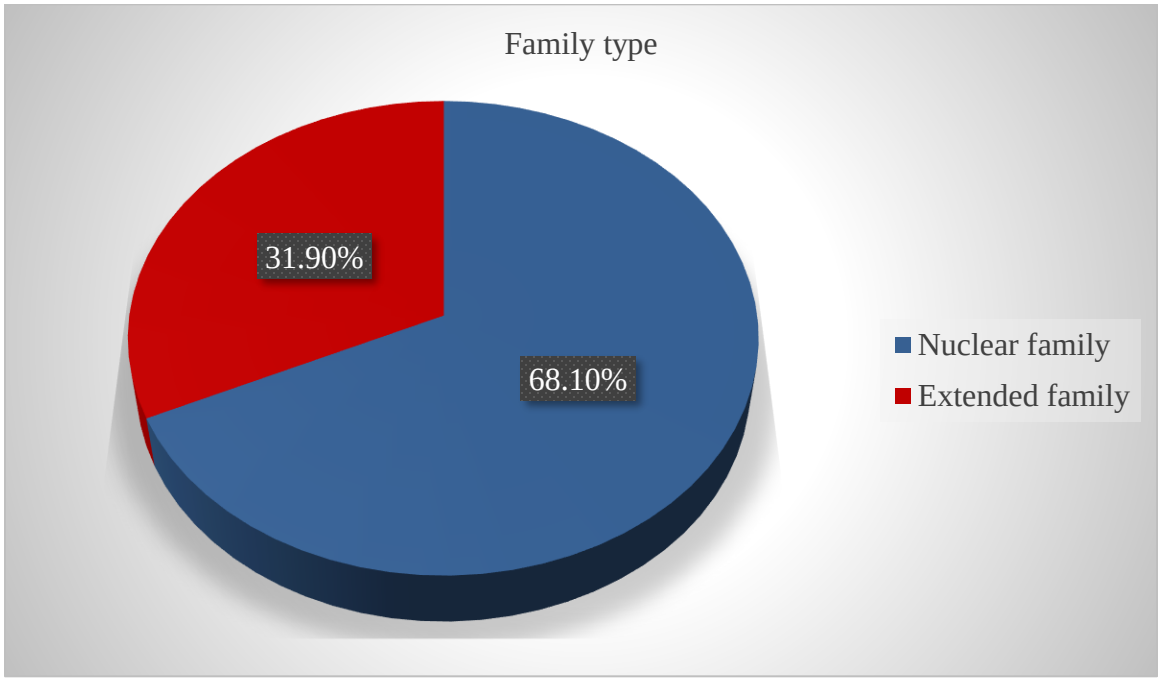


Figure-07: Family type

Out of 72 participants, the majority were nuclear family 68.10% (n=49) and extended family 31.90% (n=23).

Clinical parameters

4.8 Causes of Spinal Cord Injury

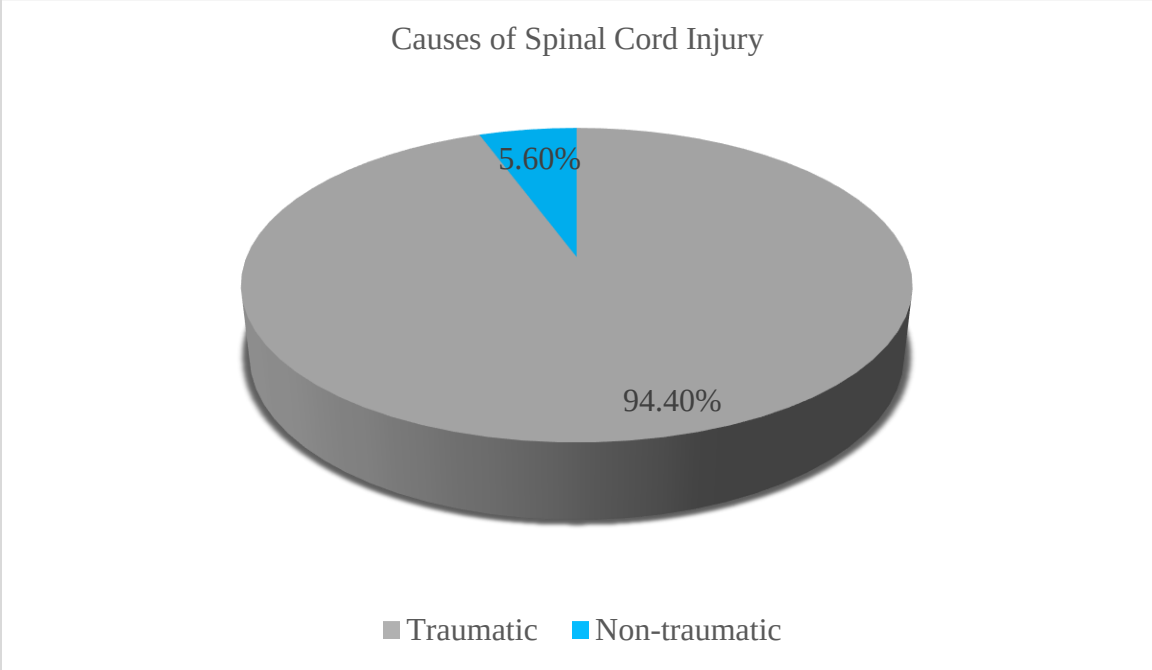


Figure-08: Causes of Spinal Cord Injury

Among 72 participants, 94.40% (n=68) participants had experienced with spinal cord injury due to Traumatic cause such as Fall from height, RTA, Falling of heavy object overhead etc. and 5.60% (n=4) participants got SCI due to Non-traumatic cause such as TB Spine, Multiple sclerosis, Transverse myelitis etc.

4.9 Skeletal level

Among 72 participants, the skeletal level of thoracic were 44.40% (n=32), lumber were 50.00% (n=36) and 5.60% (n=4) had no skeletal level due to Non-traumatic cause such as TB Spine, Multiple sclerosis, Transverse myelitis etc. In thoracic level, thoracic 11 and 12 were most common and in lumber level, lumber 1 was most common. The study shows the details about the skeletal level of the participants (Table-01).

Skeletal level	Frequency (n)	Percentage (%)
No	4	5.60
T8	6	8.30
T9	2	2.80
T10	5	6.90
T11	9	12.50
T12	9	12.50
L1	17	23.60
L2	5	6.90
L3	8	11.10
L4	7	9.70

Table-01: Skeletal level of the participants

4.10 Neurological level

Among 72 participants, the neurological level of thoracic were 37.50% (n=27) and lumber 62.50% (n=45). Lumber level were most common than thoracic level. In lumber level, lumber 2 were most common and in thoracic level, thoracic 12 were most common. The study shows the details about neurological level of the participants (Table-02).

Neurological level	Frequency (n)	Percentage (%)
T8	5	6.90
T10	4	5.60
T11	5	6.90
T12	13	18.10
L1	10	13.90
L2	18	25.00
L3	7	9.70
L4	4	5.60
L5	6	8.30

Table-02: Neurological level of the participants

4.11 Severity of injury of the participants

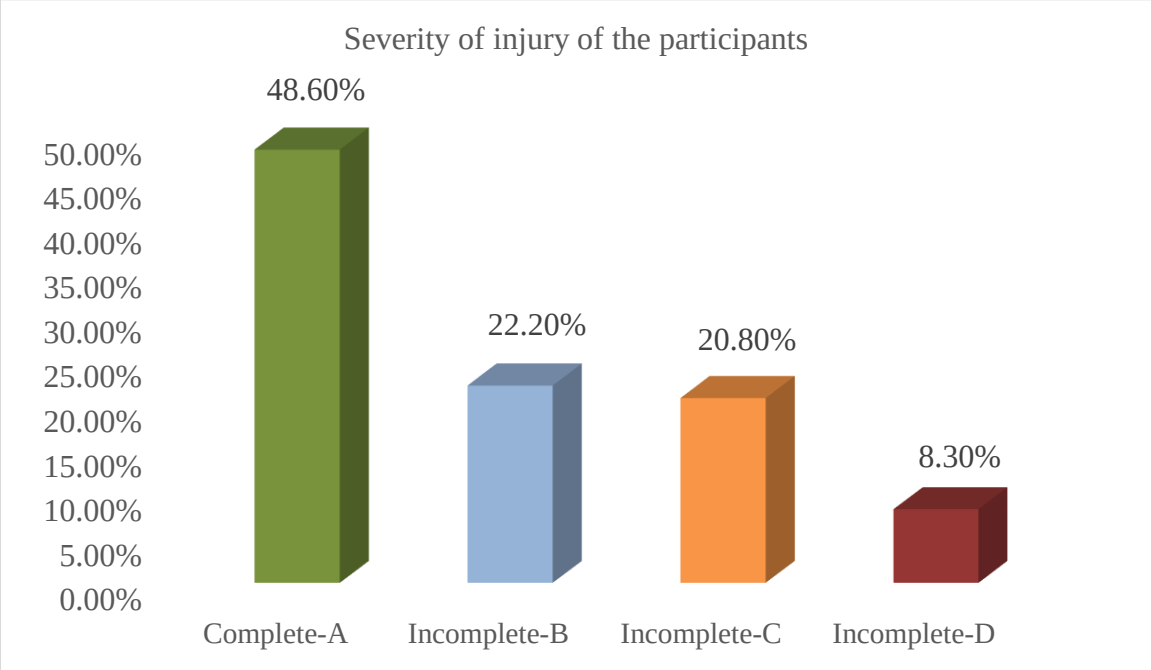


Figure-09: Severity of injury of the participants

Among 72 participants, Complete A in ASIA Scale were 48.60% (n=35), Incomplete B in ASIA Scale were 22.20% (n=16), Incomplete C in ASIA scale were 20.80% (n=15) and Incomplete D in ASIA scale were 8.30% (n=6).

Individual capacity on daily activities measure

4.12 Rolling

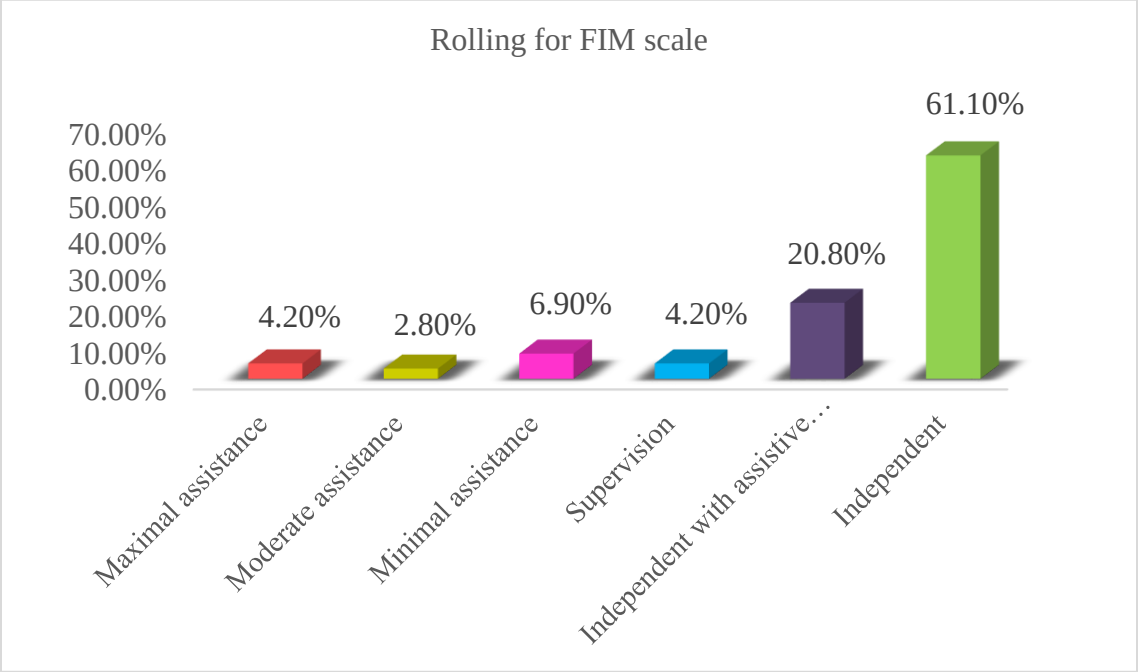


Figure-10: Rolling for FIM scale

Among 72 participants, 4.20% (n=3) of the participants needs maximal assistance, 2.80% (n=2) of the participants needs moderate assistance, 6.90% (n=5) of the participants needs minimal assistance, 4.20% (n=3) of the participants needs supervision, 20.80% (n=15) of the participants became independent with assistive device and majority 61.10% (n=44) of the participants became independent.

4.13 Lying to sitting

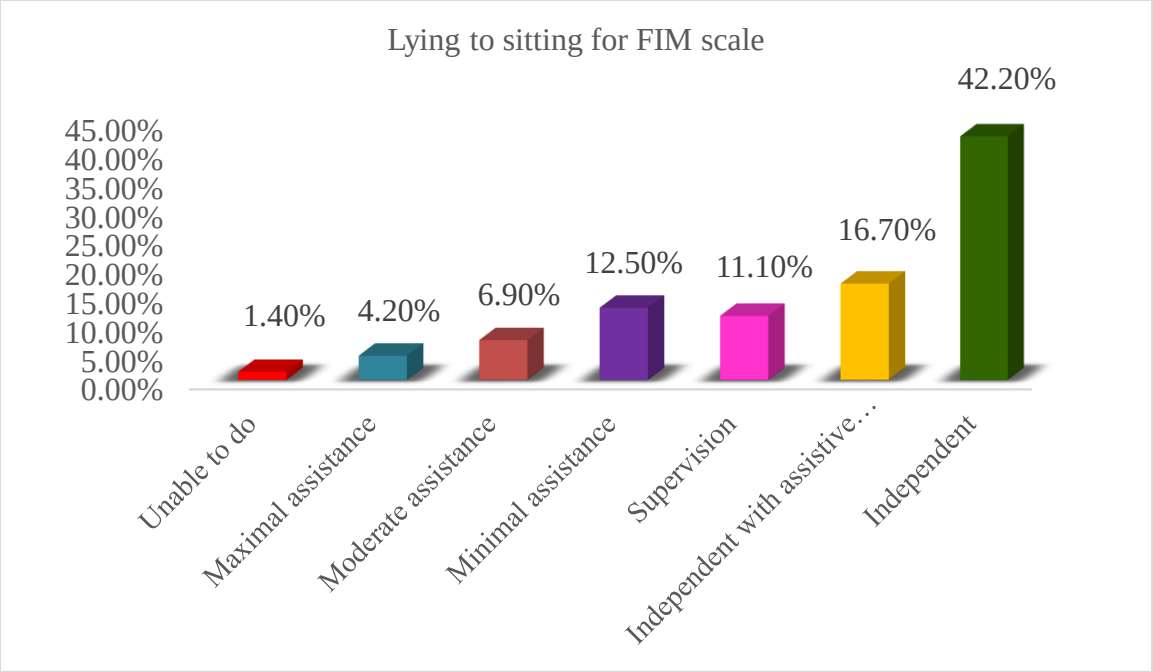


Figure-11: Lying to sitting for FIM scale

Among 72 participants, 1.40% (n=1) of the participants became unable to do, 4.20% (n=3) of the participants needs maximal assistance, 6.90% (n=5) of the participants needs moderate assistance, 12.50% (n=9) of the participants needs minimal assistance, 11.10% (n=8) of the participants needs supervision, 16.70% (n=12) of the participants became independent with assistive device and majority 42.20% (n=34) of the participants became independent.

4.14 Sitting to lying

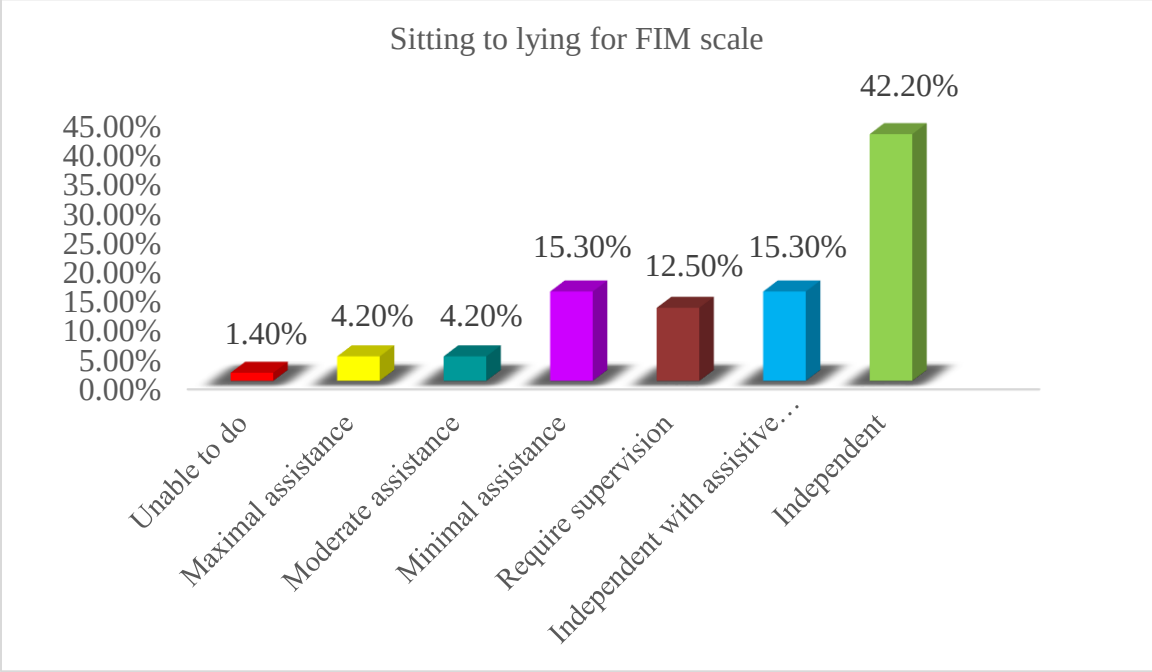


Figure-12: Sitting to lying for FIM scale

Among 72 participants, 1.40% (n=1) of the participants became unable to do, 4.20% (n=3) of the participants needs maximal assistance, 6.90% (n=5) of the participants needs moderate assistance, 12.50% (n=9) of the participants needs minimal assistance, 11.10% (n=8) of the participants needs supervision, 16.70% (n=12) of the participants became independent with assistive device and majority 42.20% (n=34) of the participants became independent.

4.15 Supine lying ↔ prone lying

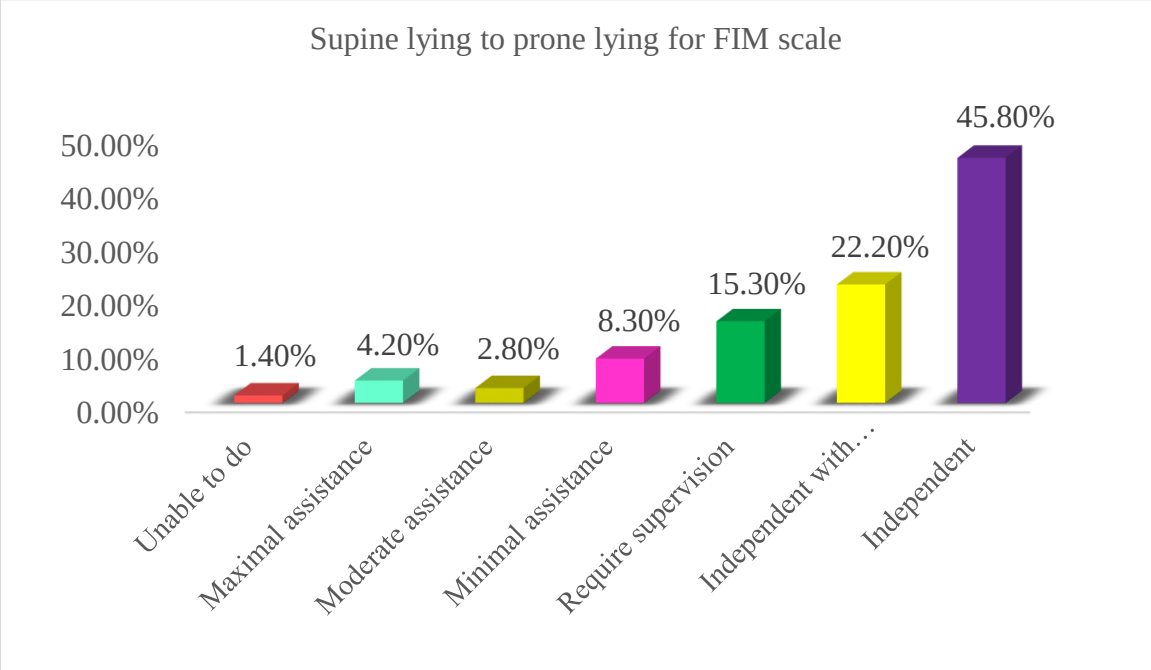


Figure-13: Supine lying ↔ prone lying for FIM scale

Among 72 participants, 1.40% (n=1) of the participants became unable to do, 4.20% (n=3) of the participants needs maximal assistance, 2.80% (n=2) of the participants needs moderate assistance, 8.30% (n=6) of the participants needs minimal assistance, 15.30% (n=11) of the participants needs supervision, 22.20% (n=16) of the participants became independent with assistive device and majority 45.80% (n=33) of the participants became independent.

4.16 Sitting balance

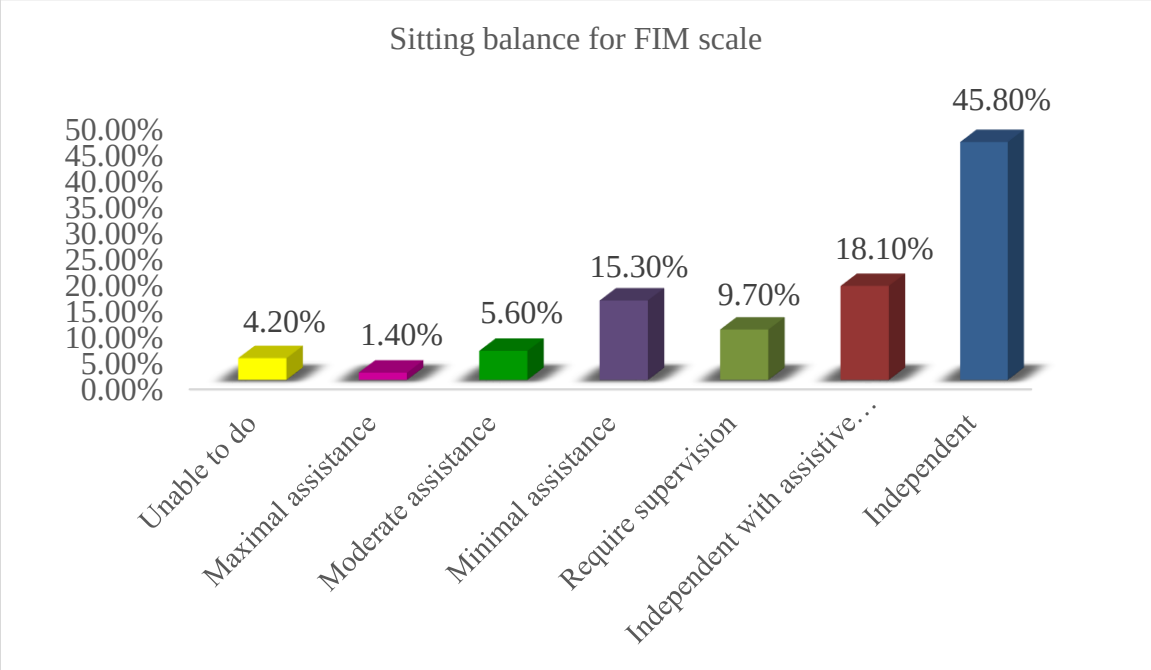


Figure-14: Sitting balance for FIM scale

Among 72 participants, 4.20% (n=3) of the participants became unable to do, 1.40% (n=1) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 15.30% (n=11) of the participants needs minimal assistance, 9.70% (n=7) of the participants needs supervision, 18.10% (n=13) of the participants became independent with assistive device and majority 45.80% (n=33) of the participants became independent.

4.17 Lifting in wheelchair

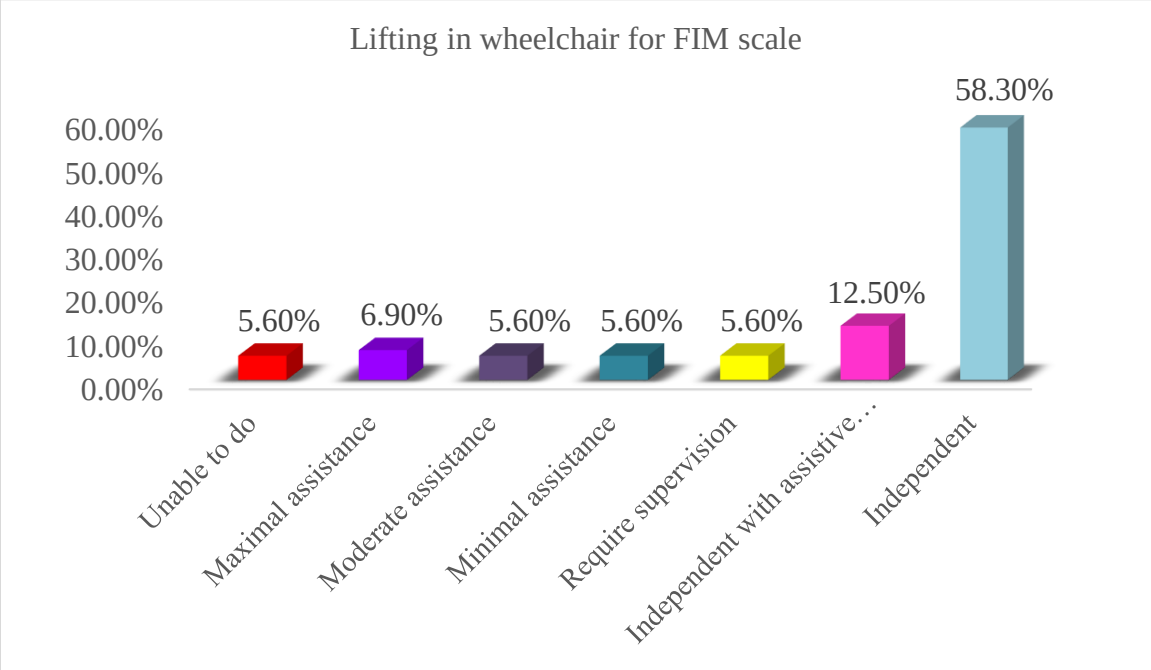


Figure-15: Lifting in wheelchair for FIM scale

Among 72 participants, 5.60% (n=4) of the participants became unable to do, 6.90% (n=5) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 5.60% (n=4) of the participants needs minimal assistance, 5.60% (n=4) of the participants needs supervision, 12.50% (n=9) of the participants became independent with assistive device and majority 58.30% (n=42) of the participants became independent.

4.18 Lifting on bed

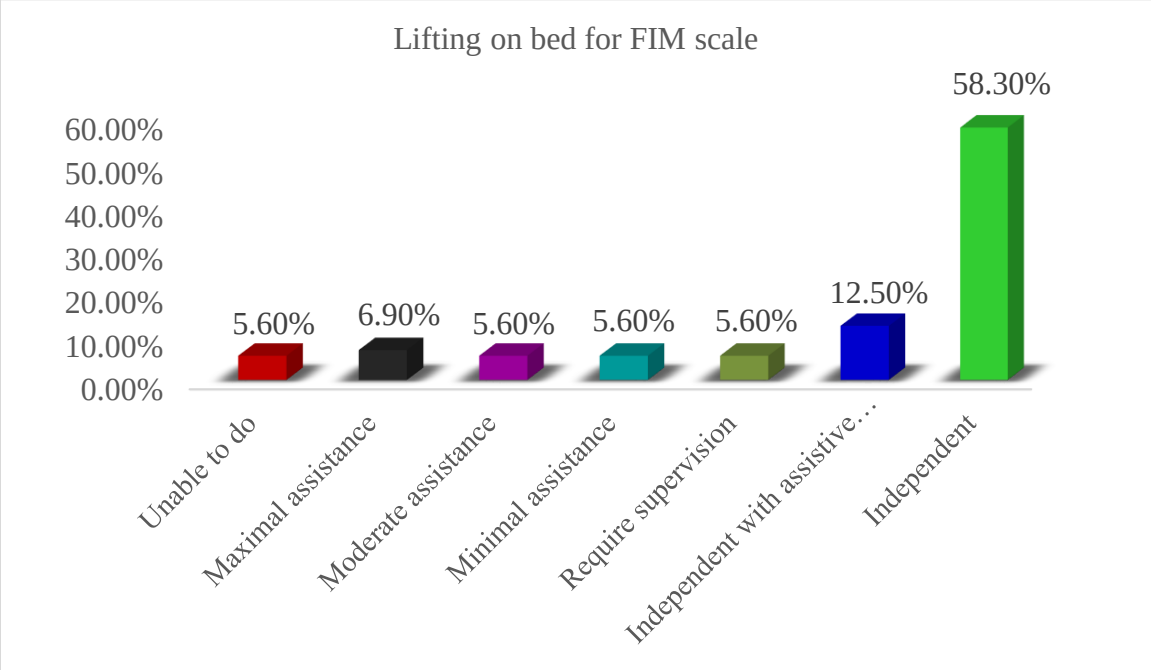


Figure-16: Lifting on bed for FIM scale

Among 72 participants, 5.60% (n=4) of the participants became unable to do, 6.90% (n=5) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 5.60% (n=4) of the participants needs minimal assistance, 5.60% (n=4) of the participants needs supervision, 12.50% (n=9) of the participants became independent with assistive device and majority 58.30% (n=42) of the participants became independent.

4.19 Lifting to forward

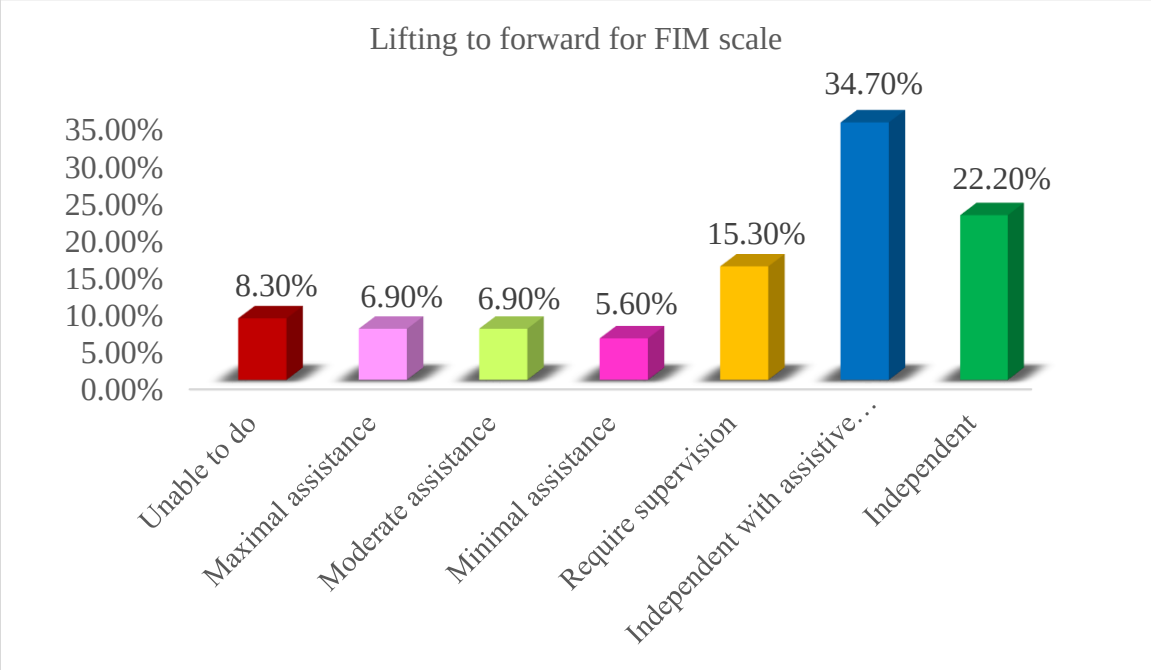


Figure-17: Lifting to forward for FIM scale

Among 72 participants, 8.30% (n=6) of the participants became unable to do, 6.90% (n=5) of the participants needs maximal assistance, 6.90% (n=5) of the participants needs moderate assistance, 5.60% (n=4) of the participants needs minimal assistance, 15.30% (n=11) of the participants needs supervision, 34.70% (n=25) of the participants became independent with assistive device and 22.20% (n=16) of the participants became independent.

4.20 Lifting sideways

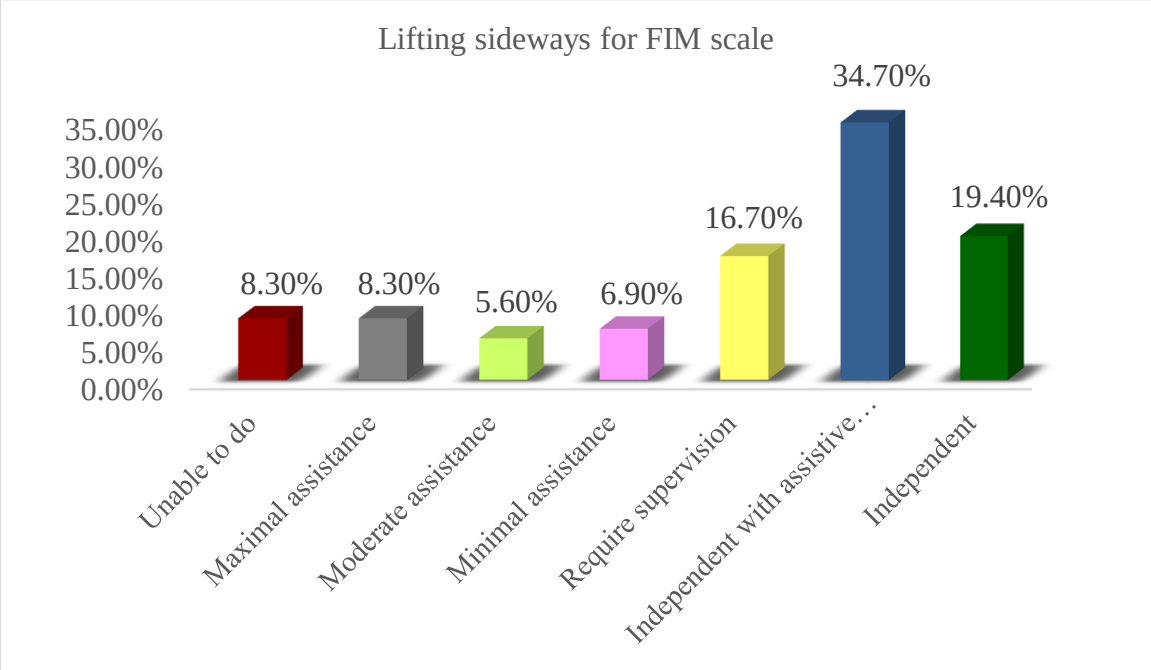


Figure-18: Lifting sideways for FIM scale

Among 72 participants, 8.30% (n=6) of the participants became unable to do, 8.30% (n=6) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 6.90% (n=5) of the participants needs minimal assistance, 16.70% (n=12) of the participants needs supervision, 34.70% (n=25) of the participants became independent with assistive device and 19.40% (n=14) of the participants became independent.

4.21 Lifting backwards

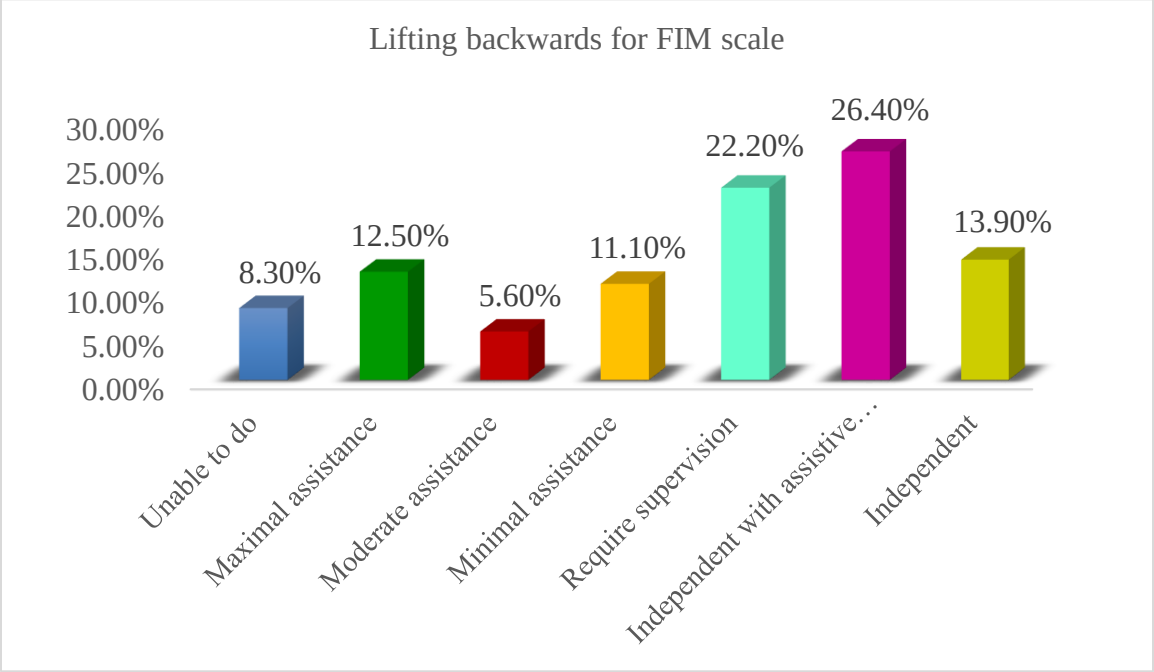


Figure-19: Lifting backwards for FIM scale

Among 72 participants, 8.30% (n=6) of the participants became unable to do, 12.50% (n=9) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 11.10% (n=8) of the participants needs minimal assistance, 22.20% (n=16) of the participants needs supervision, 26.40% (n=19) of the participants became independent with assistive device and 13.90% (n=10) of the participants became independent.

4.22 Wheelchair to bed

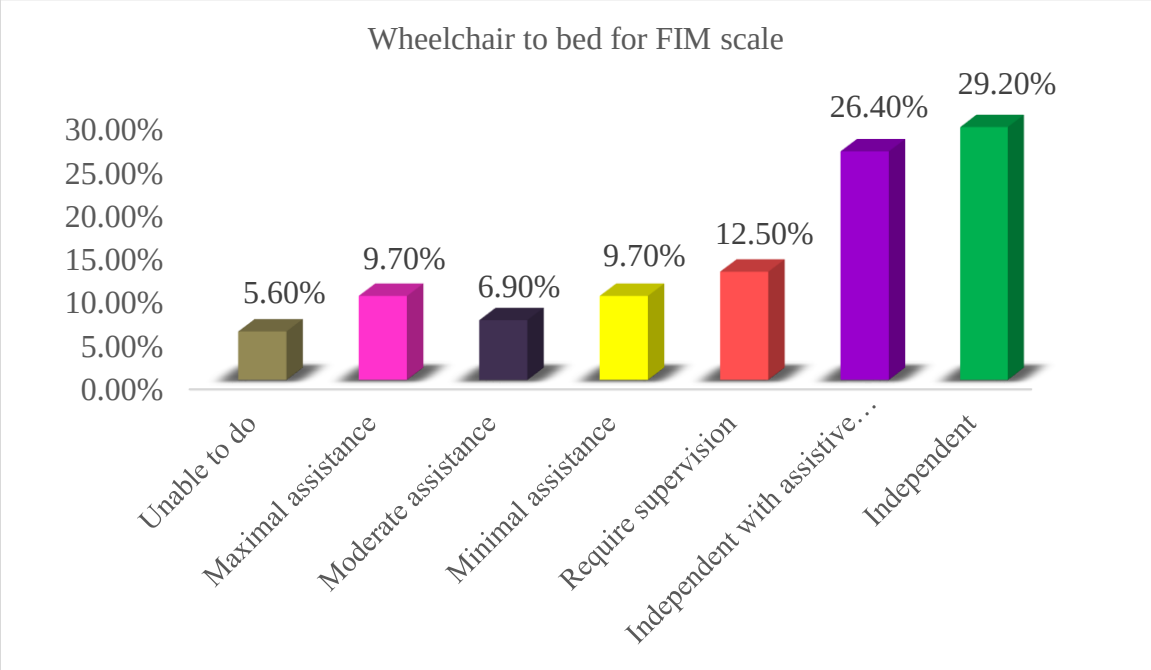


Figure-20: Wheelchair to bed for FIM scale

Among 72 participants, 5.60% (n=4) of the participants became unable to do, 9.70% (n=7) of the participants needs maximal assistance, 6.90% (n=5) of the participants needs moderate assistance, 9.70% (n=7) of the participants needs minimal assistance, 12.50% (n=9) of the participants needs supervision, 26.40% (n=19) of the participants became independent with assistive device and 29.20% (n=21) of the participants became independent.

4.23 Wheelchair to toilet

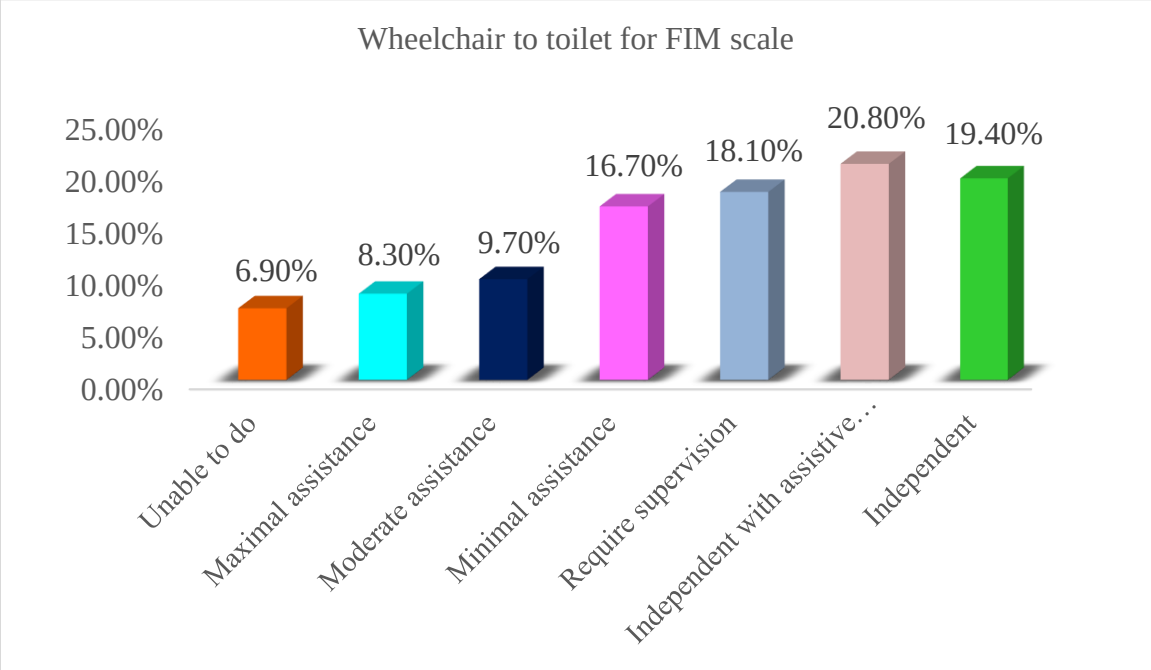


Figure-21: Wheelchair to toilet for FIM scale

Among 72 participants, 6.90% (n=5) of the participants became unable to do, 8.30% (n=6) of the participants needs maximal assistance, 9.70% (n=7) of the participants needs moderate assistance, 16.70% (n=12) of the participants needs minimal assistance, 18.10% (n=13) of the participants needs supervision, 20.80% (n=15) of the participants became independent with assistive device and 19.40% (n=14) of the participants became independent.

4.24 High and Low transfers

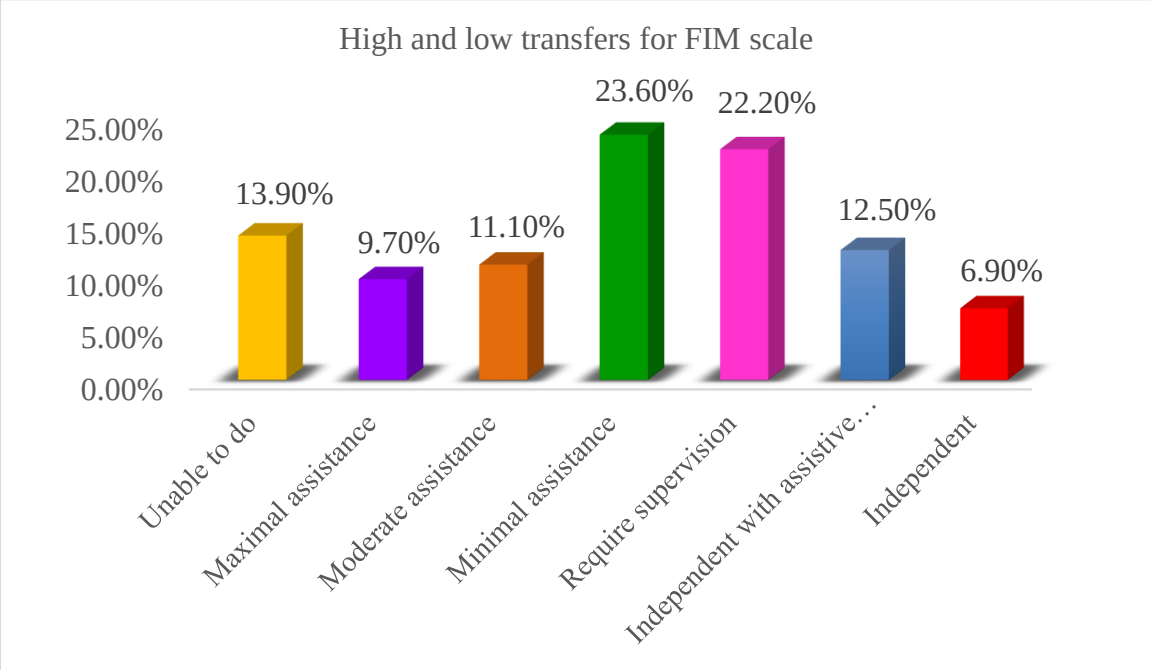


Figure-22: High and low transfers for FIM scale

Among 72 participants, 13.90% (n=10) of the participants became unable to do, 9.70% (n=7) of the participants needs maximal assistance, 11.10% (n=8) of the participants needs moderate assistance, 23.60% (n=17) of the participants needs minimal assistance, 22.20% (n=16) of the participants needs supervision, 12.50% (n=9) of the participants became independent with assistive device and 6.90% (n=5) of the participants became independent.

4.25 Wheelie

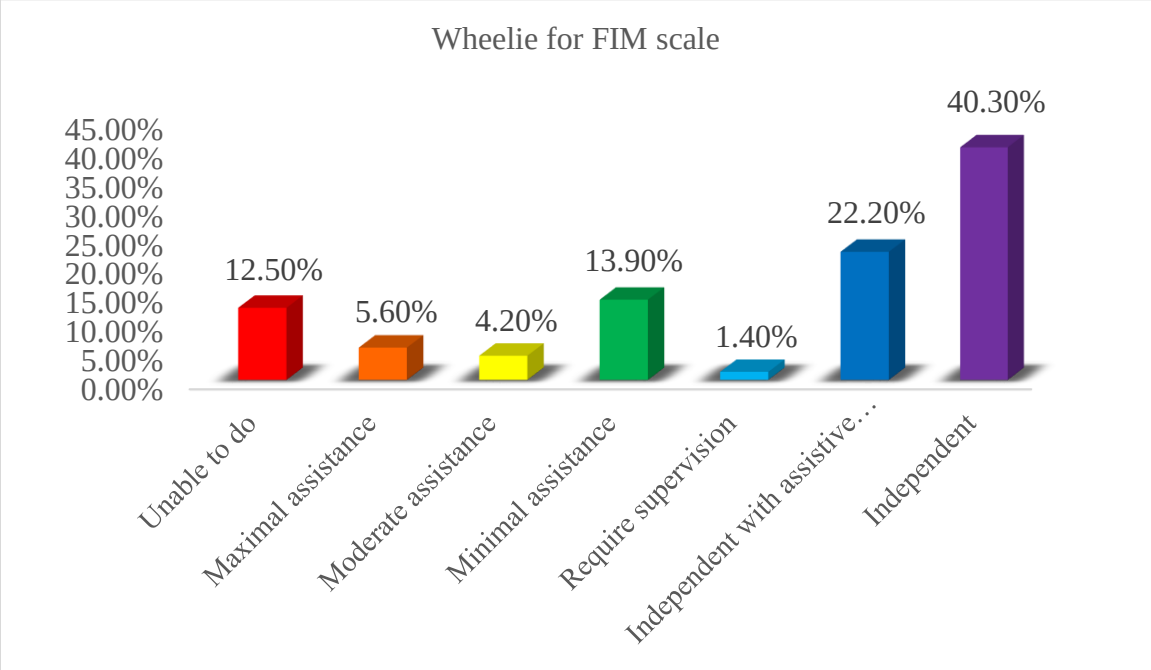


Figure-23: Wheelie for FIM scale

Among 72 participants, 12.50% (n=9) of the participants became unable to do, 5.60% (n=4) of the participants needs maximal assistance, 4.20% (n=3) of the participants needs moderate assistance, 13.90% (n=10) of the participants needs minimal assistance, 1.40% (n=1) of the participants needs supervision, 22.20% (n=16) of the participants became independent with assistive device and majority 40.30% (n=29) of the participants became independent.

4.26 Up and down slops

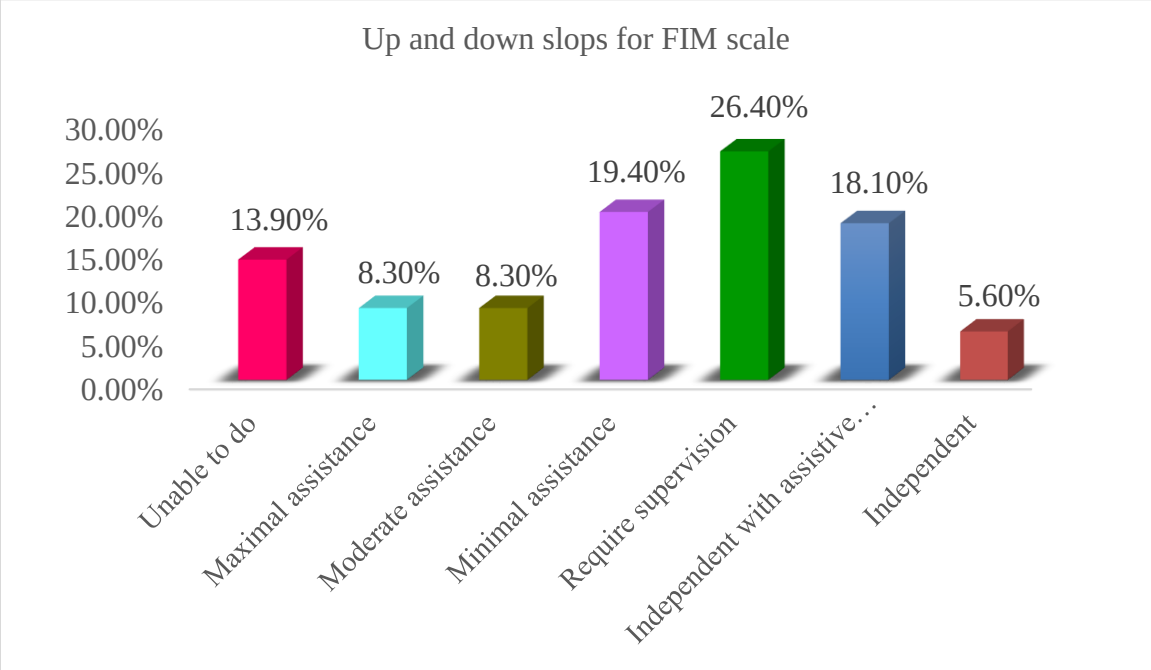


Figure-24: Up and down slops for FIM scale

Among 72 participants, 13.90% (n=10) of the participants became unable to do, 8.30% (n=6) of the participants needs maximal assistance, 8.30% (n=6) of the participants needs moderate assistance, 19.40% (n=14) of the participants needs minimal assistance, 26.40% (n=19) of the participants needs supervision, 18.10% (n=13) of the participants became independent with assistive device and 5.60% (n=4) of the participants became independent.

4.27 Rough ground

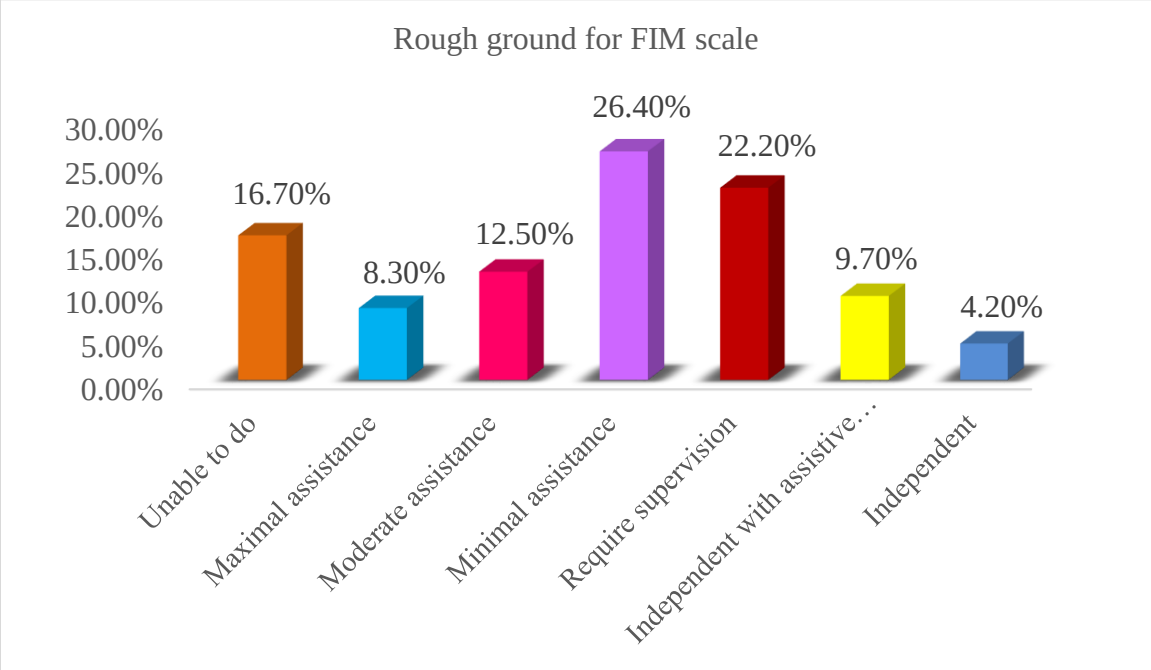


Figure-25: Rough ground for FIM scale

Among 72 participants, 16.70% (n=12) of the participants became unable to do, 8.30% (n=6) of the participants needs maximal assistance, 12.50% (n=9) of the participants needs moderate assistance, 26.40% (n=19) of the participants needs minimal assistance, 22.20% (n=16) of the participants needs supervision, 9.70% (n=7) of the participants became independent with assistive device and 4.20% (n=3) of the participants became independent.

4.28 Small steps

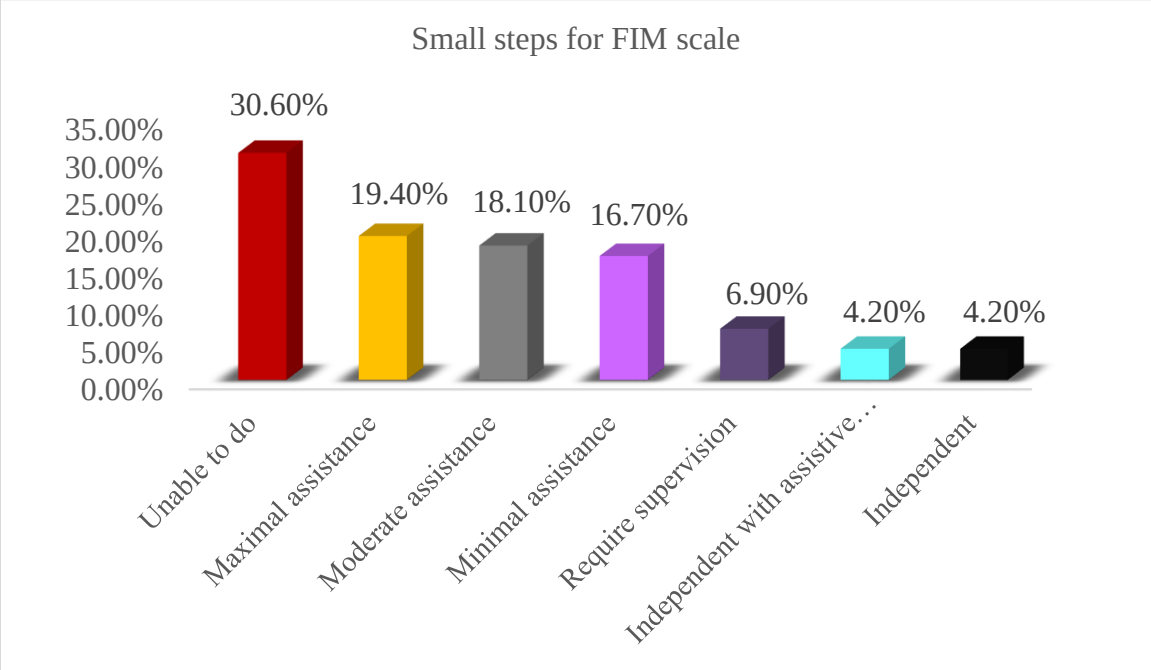


Figure-26: Small steps for FIM scale

Among 72 participants, 30.60% (n=22) of the participants became unable to do, 19.40% (n=14) of the participants needs maximal assistance, 18.10% (n=13) of the participants needs moderate assistance, 16.70% (n=12) of the participants needs minimal assistance, 6.90% (n=5) of the participants needs supervision, 4.20% (n=3) of the participants became independent with assistive device and 4.20% (n=3) of the participants became independent.

4.29 Sit to stand

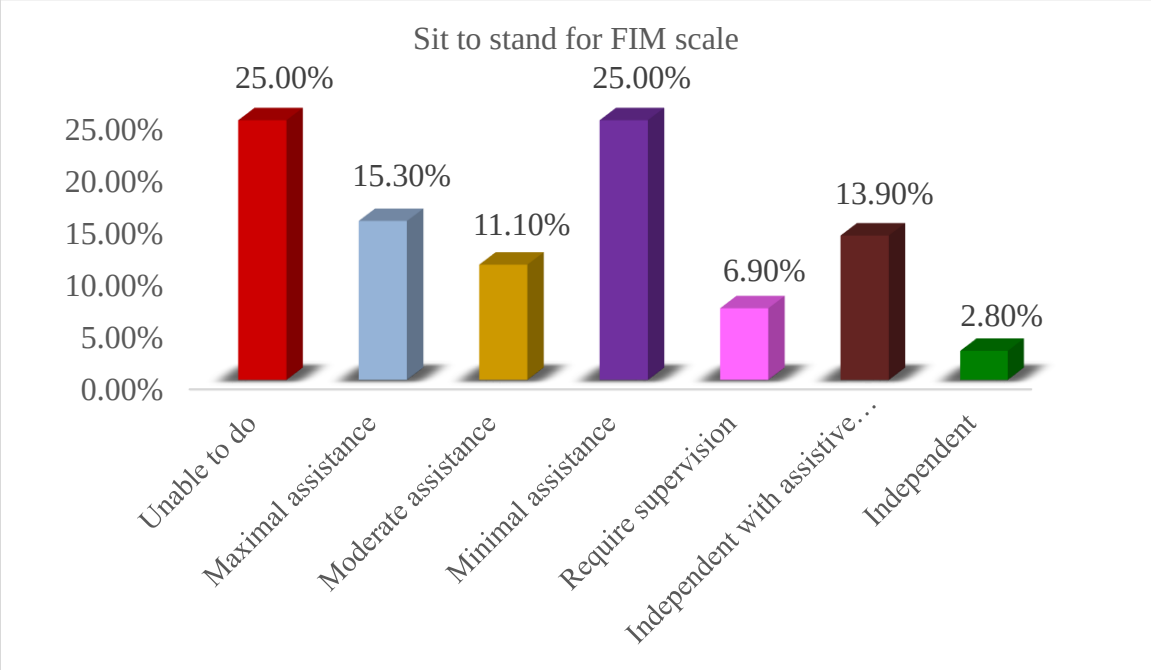


Figure-27: Sit to stand for FIM scale

Among 72 participants, 25.00% (n=18) of the participants became unable to do, 15.30% (n=11) of the participants needs maximal assistance, 11.10% (n=8) of the participants needs moderate assistance, 25.00% (n=18) of the participants needs minimal assistance, 6.90% (n=5) of the participants needs supervision, 13.90% (n=10) of the participants became independent with assistive device and 2.80% (n=2) of the participants became independent.

4.30 Standing balance

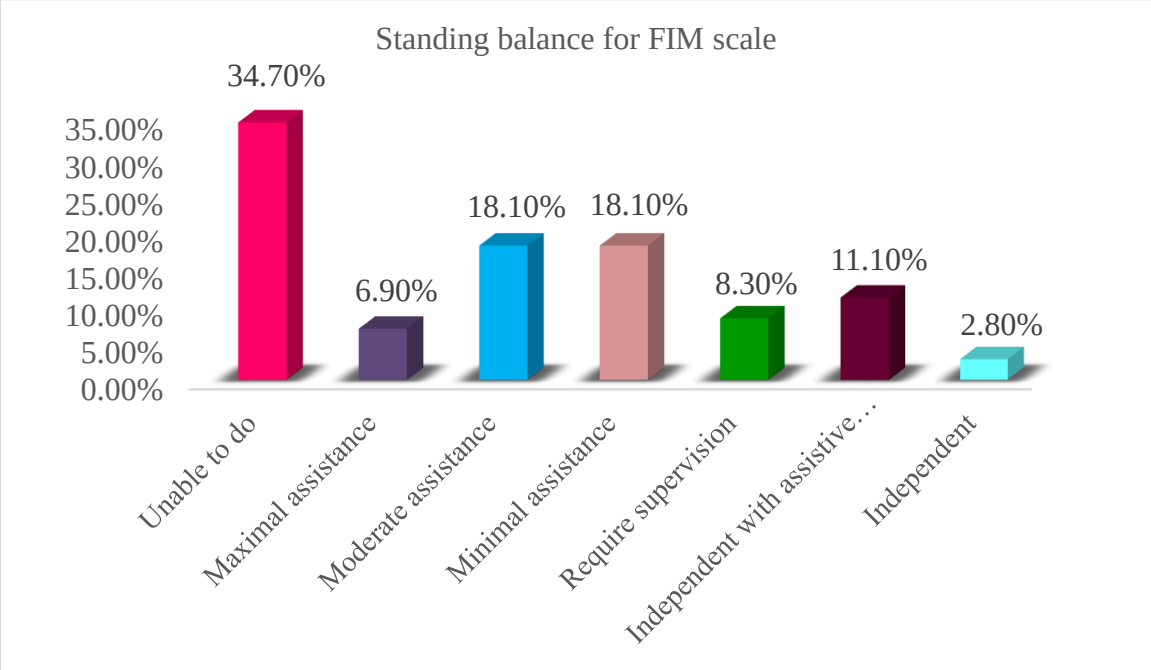


Figure-28: Standing balance for FIM scale

Among 72 participants, majority 34.70% (n=25) of the participants became unable to do, 6.90% (n=5) of the participants needs maximal assistance, 18.10% (n=13) of the participants needs moderate assistance, 18.10% (n=13) of the participants needs minimal assistance, 8.30% (n=6) of the participants needs supervision, 11.10% (n=8) of the participants became independent with assistive device and 2.80% (n=2) of the participants became independent.

4.31 Standing table

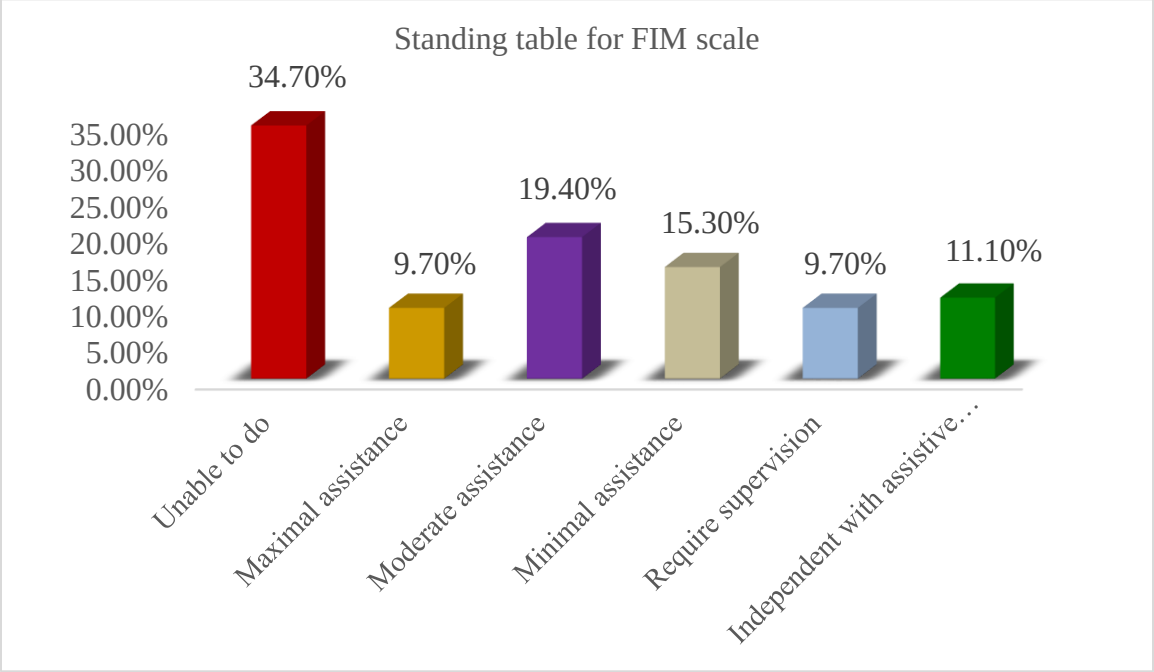


Figure-29: Standing table for FIM scale

Among 72 participants, majority 34.70% (n=25) of the participants became unable to do, 9.70% (n=7) of the participants needs maximal assistance, 19.40% (n=14) of the participants needs moderate assistance, 15.30% (n=11) of the participants needs minimal assistance, 9.70% (n=7) of the participants needs supervision and 11.10% (n=8) of the participants became independent with assistive device.

4.32 Tilt table

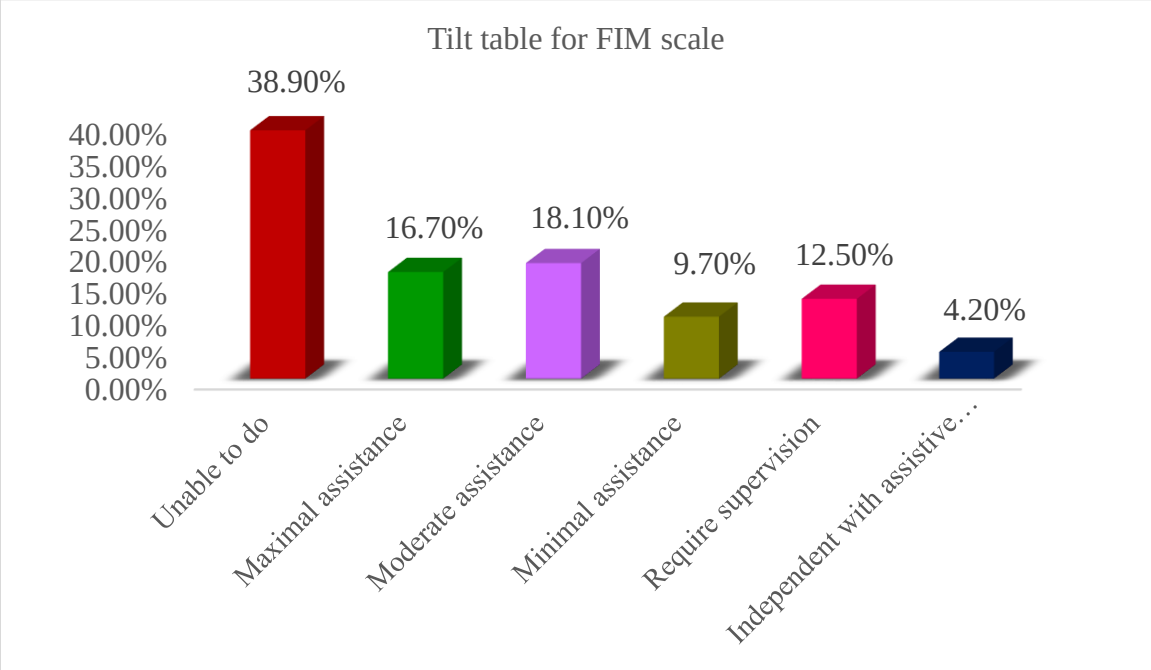


Figure-30: Tilt table for FIM scale

Among 72 participants, majority 38.90% (n=28) of the participants became unable to do, 16.70% (n=12) of the participants needs maximal assistance, 18.10% (n=13) of the participants needs moderate assistance, 9.70% (n=7) of the participants needs minimal assistance, 12.50% (n=9) of the participants needs supervision and 4.20% (n=3) of the participants became independent with assistive device.

4.33 Flat surface

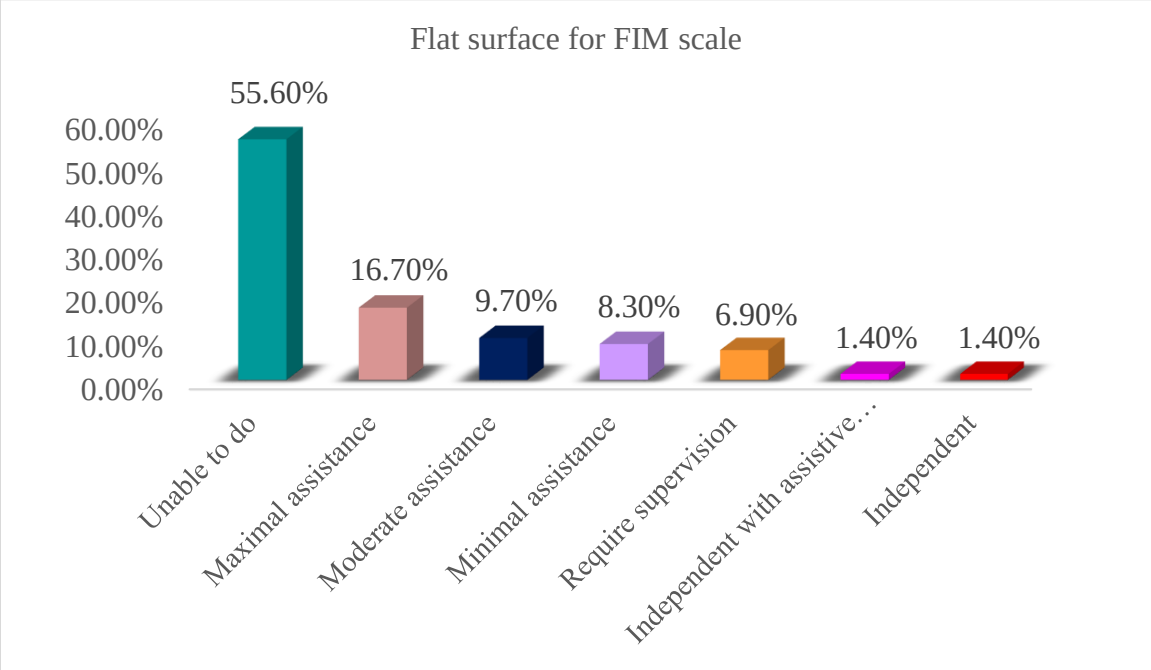


Figure-31: Flat surface for FIM scale

Among 72 participants, majority 55.60% (n=40) of the participants became unable to do, 16.70% (n=12) of the participants needs maximal assistance, 9.70% (n=7) of the participants needs moderate assistance, 8.30% (n=6) of the participants needs minimal assistance, 6.90% (n=5) of the participants needs supervision, 1.40% (n=1) of the participants became independent with assistive device and 1.40% (n=1) of the participants became independent.

4.34 Rough surface

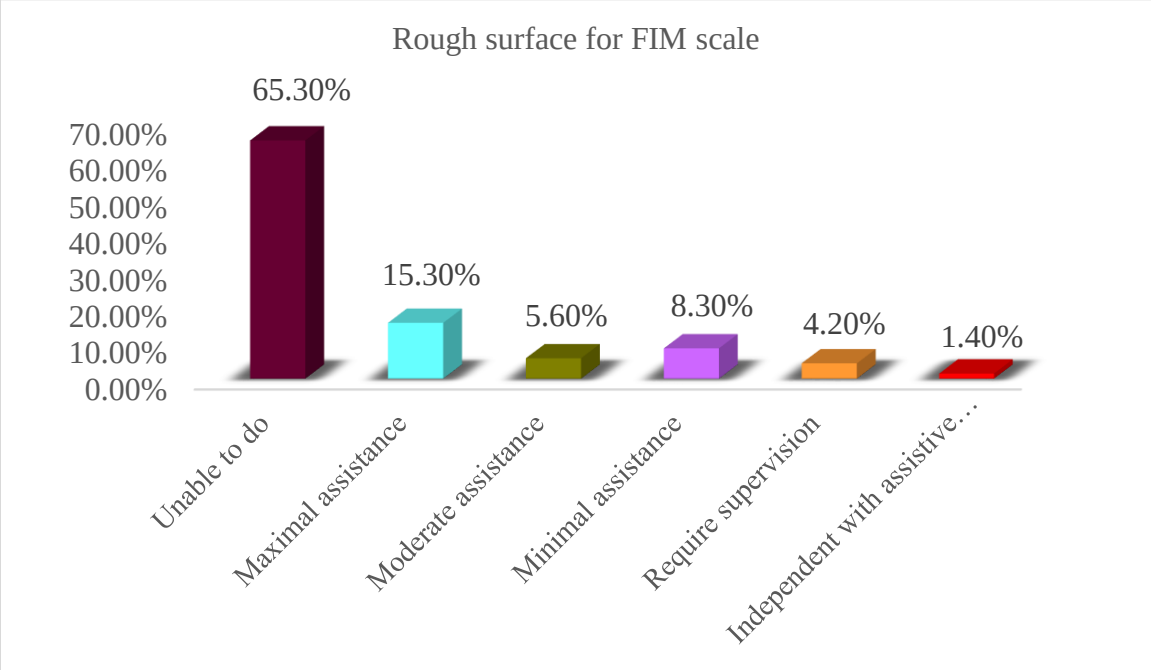


Figure-32: Rough surface for FIM scale

Among 72 participants, majority 65.30% (n=47) of the participants became unable to do, 15.30% (n=11) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 8.30% (n=6) of the participants needs minimal assistance, 4.20% (n=3) of the participants needs supervision and 1.40% (n=1) of the participants became independent with assistive device.

4.35 Steps or slops

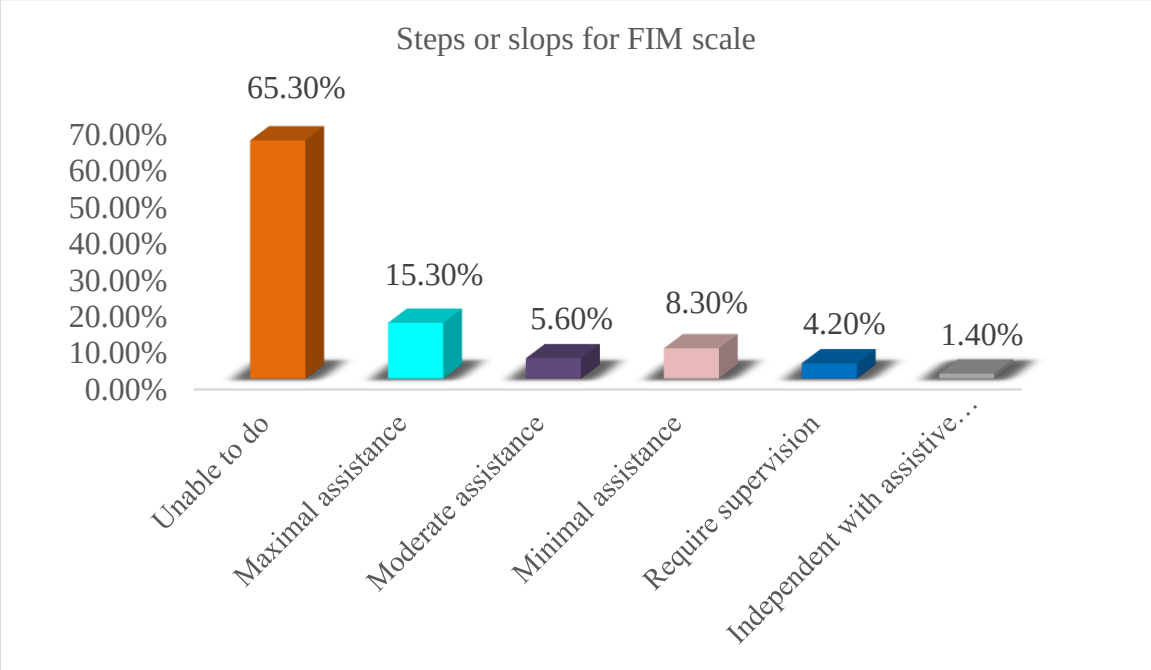


Figure-33: Steps or slops for FIM scale

Among 72 participants, majority 65.30% (n=47) of the participants became unable to do, 15.30% (n=11) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 8.30% (n=6) of the participants needs minimal assistance, 4.20% (n=3) of the participants needs supervision and 1.40% (n=1) of the participants became independent with assistive device.

4.36 Fitting brace

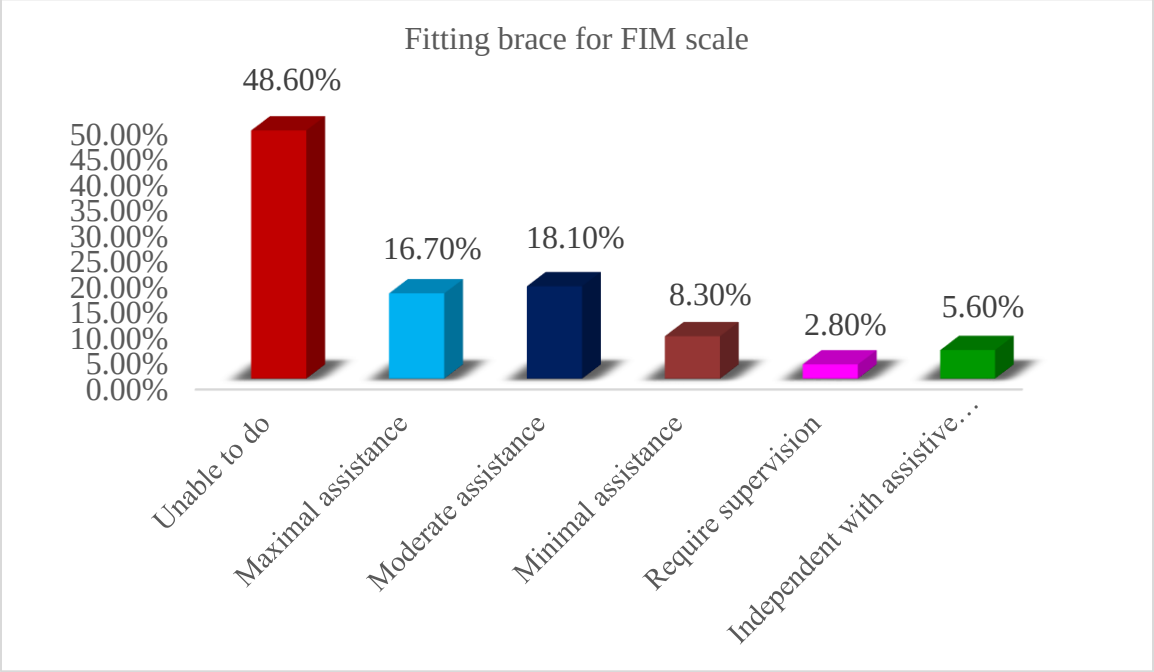


Figure-34: Fitting brace for FIM scale

Among 72 participants, majority 48.60% (n=35) of the participants became unable to do, 16.70% (n=12) of the participants needs maximal assistance, 18.10% (n=13) of the participants needs moderate assistance, 8.30% (n=6) of the participants needs minimal assistance, 2.80% (n=2) of the participants needs supervision and 5.60% (n=4) of the participants became independent with assistive device.

Inferential statistical analysis

4.37 Distribution of the respondents of association between age of the participants and causes of injury

Table 03 showed among the 72 participants, where 19.40% (n=14) were age range 10-20 years, 30.60% (n=22) were age range 21-30 years, 23.60% (n=17) were age range 31-40 years, 15.30% (n=11) were age range 41-50 years, 6.90% (n=5) were age range 51-60 years, 4.20% (n=3) were age range 61-70 years.

No association found between age of the participants and causes of injury which was statistically not significant (P < 0.654).

Age of the participants	Causes of injury	Chi-square value ($\chi 2$)	P-value	Significance
10-20 years (n=14) 21-30 years (n=22) 31-40 years (n=17) 41-50 years (n=11) 51-60 years (n=5) 61-70 years (n=3)	Traumatic Non-traumatic	3.297	0.654	Not Significant

Table-03: Distribution of the respondents of association between age of the participants and causes of injury

4.38 Distribution of the respondents of association between age of the participants and severity of injury

Table 04 showed among 72 participants, Complete A in ASIA Scale were 48.60% (n=35), Incomplete B in ASIA Scale were 22.20% (n=16), Incomplete C in ASIA scale were 20.80% (n=15) and Incomplete D in ASIA scale were 8.30% (n=6).

No association found between gender of the participants and severity of injury which was statistically not significant (P < 0.499).

Age of the participants	Severity of injury	Chi-square value ($\chi 2$)	P-value	Significance
10-20 years (n=14) 21-30 years (n=22) 31-40 years (n=17) 41-50 years (n=11) 51-60 years (n=5) 61-70 years (n=3)	Complete-A Incomplete-B Incomplete-C Incomplete-D	14.356	0.499	Not Significant

Table-04: Distribution of the respondents of association between age of the participants and severity of injury

4.39 Distribution of the respondents of association between gender of the participants and causes of injury

Table 05 showed among 72 participants, 94.40% (n=68) participants had experienced with spinal cord injury due to Traumatic cause such as Fall from height, RTA, Falling of heavy object overhead etc. and 5.60% (n=4) participants got SCI due to Non-traumatic cause such as TB Spine, Multiple sclerosis, Transverse myelitis etc.

Association found between gender of the participants and causes of injury which was statistically significant (P > 0.001).

Gender of the participants	Causes of injury	Chi-square value ($\chi 2$)	P-value	Significance
Male Female	Traumatic Non-traumatic	11.671	0.001	Significant

Table-05: Distribution of the respondents of association between gender of the participants and causes of injury

4.40 Distribution of the respondents of association between gender of the participants and severity of injury

Table 06 showed among 72 participants, Complete A in ASIA Scale were 48.60% (n=35), Incomplete B in ASIA Scale were 22.20% (n=16), Incomplete C in ASIA scale were 20.80% (n=15) and Incomplete D in ASIA scale were 8.30% (n=6).

Association found between gender of the participants and severity of injury which was statistically significant (P > 0.019).

Gender of the participants	Severity of injury	Chi-square value ($\chi 2$)	P-value	Significance
Male Female	Complete-A Incomplete-B Incomplete-C Incomplete-D	9.936	0.019	Significant

Table-06: Distribution of the respondents of association between gender of the participants and severity of injury

4.41 Relation between ASIA scale and total FIM score

Table 07 showed that there was a significant relation between ASIA scale and total score of individual capacity of daily activities of the participants.

ASIA scale vs total FIM score	Unstandardized Coefficients		Standardized Coefficients	Sig.
R^2	B	Std. Error	Beta	
0.241	71.463	7.716	.491	0.000**

(*<0.05, **<0.01)

Table-07: Relation between ASIA scale and total FIM score

4.42 Relation between skeletal level and total FIM score

Table 08 showed that there was a significant relation between skeletal level and total score of individual capacity of daily activities of the participants.

Skeletal level vs total FIM score	Unstandardized Coefficients		Standardized Coefficients	Sig.
R^2	B	Std. Error	Beta	
0.002	109.354	13.652	-0.047	.000**

(*<0.05, **<0.01)

Table-08: Relation between skeletal level and total FIM score

4.43 Relation between neurological level and total FIM score

Table 09 showed that there was a significant relation between neurological level and total score of individual capacity of daily activities of the participants.

Neurological level vs total FIM score	Unstandardized Coefficients		Standardized Coefficients	Sig.
R^2	B	Std. Error	Beta	
0.013	90.007	14.506	0.116	.000**

(*<0.05, **<0.01)

Table-09: Relation between neurological level and total FIM score

CHAPTER – V DISCUSSION

Now-a-days the individual capacity on daily activities has become a major topic of research in the area of health and the findings contribute to the definition and approval of treatments and evaluation of cost benefits of the Spinal cord injury patients. The individual capacity on daily activities of patient with SCI was measured by the FIM and results showed a greater impact on the FIM component. A cross sectional study was used to assess the individual capacity on daily activities of people with spinal cord injury. As this was a cross-sectional study, we consider this research as a preliminary study that can yield valuable information that may clarify many important questions related to spinal cord injury and their individual capacity on daily activities of people with SCI. The obtained results may lead to the elaboration of strategies to reduce the impact caused by the disease in the life and health of the persons with spinal cord injury. Measurement of individual capacity is an integral part of any goal-orientated, multidisciplinary rehabilitation program and requires suitable assessment tools.

The study population consisted 72 participants, the majority was male 84.70% (n=61) and Female was 15.30% (n=11). Their age range 10-70 years. The majority of the participants were aged between 21-30 years. Most of the patients were young age. Among 72 participants, 94.40% (n=68) participants had experienced with spinal cord injury due to Traumatic cause such as Fall from height, RTA, Falling of heavy object overhead etc. and 5.60% (n=4) participants got SCI due to Non-traumatic cause. In association found between age and causes of injury. Scivoletto et al. (2013) 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. Chowdhury et al., (2015) showed that mean age of study population of present series was 32.7 years with a standard deviation of ± 10.51 years. All patients were between 18 to 55 years age range.

Male was predominantly higher than female. Majority of the patient were lives in rural area same situation also seen in India (Singh et al., 2013).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.

Among the 72 participants, where 11.10% (n=8) were service holder, 12.50% (n=9) were businessman, 6.90% (n=5) were housewife, 31.90% (n=23) were student, 2.80% (n=2) were teacher, 12.50% (n=9) were labor, 19.40% (n=14) were farmer and 2.80% (n=2) were others. Chowdhury et al., (2015) showed that maximum respondents, 18 (36.0%), of the study group were day laborer followed by 17 (34.0%) 'Others' different types of occupation, 5 (10.0%) business man, 4 (8.0%) service holder, 4 (8.0%) housewife and 2 (4.0%) student.

Among 72 participants, 94.40% (n=68) participants had experienced with spinal cord injury due to Traumatic cause such as Fall from height, RTA, Falling of heavy object overhead etc. and 5.60% (n=4) participants got SCI due to Non-traumatic cause such as TB Spine, Multiple sclerosis, Transverse myelitis etc**.** In the USA DeVivo eta al (2012) showed the most common factors responsible for SCI are motor vehicle accidents in 45%, falls in 22%, flights in 16% and sports accidents in 13%. The skeletal level of thoracic were 44.40% (n=32), lumber were 50.00% (n=36) and 5.60% (n=4) had no skeletal level due to Non-traumatic cause such as TB Spine, Multiple sclerosis, Transverse myelitis etc. In thoracic level, thoracic 11 and 12 were most common and in lumber level, lumber 1 was most common. Relation found between skeletal level of injury and FIM total score. The neurological level of thoracic were 37.50% (n=27) and lumber 62.50% (n=45). Lumber level were most common than thoracic level. In lumber level, lumber 2 were most common and in thoracic level, thoracic 12 were most common. Relation found between neurological level and total FIM score.

Severity of injury out of 72 participants, Complete A in ASIA Scale were 48.60% (n=35), Incomplete B in ASIA Scale were 22.20% (n=16), Incomplete C in ASIA scale were 20.80% (n=15) and Incomplete D in ASIA scale were 8.30% (n=6). Most of the participants were complete A 48.60% Incomplete B in ASIA Scale were 22.20% Incomplete C in ASIA scale were 20.80% and Incomplete D in ASIA scale were 8.30%. 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 (Zaveri & Das, 2017).

Among 72 participants, 4.20% (n=3) of the participants needs maximal assistance, 2.80% (n=2) of the participants needs moderate assistance, 6.90% (n=5) of the participants needs minimal assistance, 4.20% (n=3) of the participants needs supervision, 20.80% (n=15) of the participants became independent with assistive device and majority 61.10% (n=44) of the participants became independent in rolling. 1.40% (n=1) of the participants became unable to do, 4.20% (n=3) of the participants needs maximal assistance, 6.90% (n=5) of the participants needs moderate assistance, 12.50% (n=9) of the participants needs minimal assistance, 11.10% (n=8) of the participants needs supervision, 16.70% (n=12) of the participants became independent with assistive device and majority 42.20% (n=34) of the participants became independent in lying to sitting. 1.40% (n=1) of the participants became unable to do, 4.20% (n=3) of the participants needs maximal assistance, 6.90% (n=5) of the participants needs moderate assistance, 12.50% (n=9) of the participants needs minimal assistance, 11.10% (n=8) of the participants needs supervision, 16.70% (n=12) of the participants became independent with assistive device and majority 42.20% (n=34) of the participants became independent in sitting to lying. 1.40% (n=1) of the participants became unable to do, 4.20% (n=3) of the participants needs maximal assistance, 2.80% (n=2) of the participants needs moderate assistance, 8.30% (n=6) of the participants needs minimal assistance, 15.30% (n=11) of the participants needs supervision, 22.20% (n=16) of the participants became independent with assistive device and majority 45.80% (n=33) of the participants became independent performed supine to prone lying. 4.20% (n=3) of the participants became unable to do, 1.40% (n=1) of the participants needs maximal assistance, 5.60% (n=4) of the participants needs moderate assistance, 15.30% (n=11) of the participants needs minimal assistance, 9.70% (n=7) of the participants needs supervision, 18.10% (n=13) of the participants became independent with assistive device and majority 45.80% (n=33) of the participants became independently performed sitting balance.

Among 72 participants, 5.60% (n=4) of the participants became unable to do, 6.90% (n=5) of the participants needs maximal assistance, 5.60% (n=4) moderate assistance,

5.60% (n=4) minimal assistance, 5.60% (n=4) require supervision, 12.50% (n=9) independent with assistive device and majority 58.30% (n=42) became independent lifting in wheelchair. 5.60% (n=4) unable to do, 6.90% (n=5) maximal assistance, 5.60% (n=4) moderate assistance, 5.60% (n=4) minimal assistance, 5.60% (n=4) require supervision, 12.50% (n=9) independent with assistive device and majority 58.30% (n=42) independent in lifting on bed.

Among 72 participants, 8.30% (n=6) of the participants became unable to do, 6.90% (n=5) of the participants needs maximal assistance, 6.90% (n=5) of the participants needs moderate assistance, 5.60% (n=4) of the participants needs minimal assistance, 15.30% (n=11) of the participants needs supervision, 34.70% (n=25) of the participants became independent with assistive device and 22.20% (n=16) of the participants became independent.

Among 72 participants, 5.60% (n=4) of the participants became unable to do, 9.70% (n=7) maximal assistance, 6.90% (n=5) moderate assistance, 9.70% (n=7) minimal assistance, 12.50% (n=9) supervision, 26.40% (n=19) independent with assistive device and 29.20% (n=21) independently transfer wheelchair to bed.6.90% (n=5) unable to do, 8.30% (n=6) maximal assistance, 9.70% (n=7) moderate assistance, 16.70% (n=12) minimal assistance, 18.10% (n=13) needs supervision, 20.80% (n=15) independent with assistive device and 19.40% (n=14) independently transfer wheelchair to toilet. 13.90% (n=10) unable to do, 9.70% (n=7) maximal assistance, 11.10% (n=8 moderate assistance, 23.60% (n=17) minimal assistance, 22.20% (n=16) supervision, 12.50% (n=9) independent with assistive device and 6.90% (n=5) independently perform high and low transfer. Jongjit et al., (2014) found that the study group became significantly more independent in self-care activities, sphincter control, mobility, and locomotion.

Among 72 participants, 12.50% (n=9) unable to do, 5.60% (n=4) maximal assistance, 4.20% (n=3) moderate assistance, 13.90% (n=10) minimal assistance, 1.40% (n=1) supervision, 22.20% (n=16) independent with assistive device and majority 40.30% (n=29) independent in wheelie. 13.90% (n=10) unable to do, 8.30% (n=6) maximal assistance, 8.30% (n=6) moderate assistance, 19.40% (n=14) minimal assistance, 26.40% (n=19) require supervision, 18.10% (n=13) independent with assistive device and 5.60%

(n=4) independently up and down slops.16.70% (n=12) unable to do, 8.30% (n=6) of the participants needs maximal assistance, 12.50% (n=9) moderate assistance, 26.40% (n=19) minimal assistance, 22.20% (n=16) supervision, 9.70% (n=7) independent with assistive device and 4.20% (n=3) independent in rough ground. 30.60% (n=22) unable to do, 19.40% (n=14) maximal assistance, 18.10% (n=13) moderate assistance, 16.70% (n=12) minimal assistance, 6.90% (n=5) needs supervision, 4.20% (n=3) independent with assistive device and 4.20% (n=3) independent in small steps.

Among 72 participants, 25.00% (n=18) unable to do, 15.30% (n=11) maximal assistance, 11.10% (n=8) moderate assistance, 25.00% (n=18) minimal assistance, 6.90% (n=5) require supervision, 13.90% (n=10 independent with assistive device and 2.80% (n=2) independent in sit to stand. 34.70% (n=25) unable to do, 6.90% (n=5) maximal assistance, 18.10% (n=13) moderate assistance, 18.10% (n=13) minimal assistance, 8.30% (n=6) require supervision, 11.10% (n=8) independent with assistive device and 2.80% (n=2) independent in standing balance. The majority of 34.70% (n=25) unable to do, 9.70% (n=7) maximal assistance, 19.40% (n=14) moderate assistance, 15.30% (n=11) minimal assistance, 9.70% (n=7) require supervision and 11.10% (n=8) became independent with assistive device in standing balance. The majority of 38.90% (n=28) unable to do, 16.70% (n=12) maximal assistance, 18.10% (n=13) moderate assistance, 9.70% (n=7) minimal assistance, 12.50% (n=9) needs supervision and 4.20% (n=3) independent with assistive device tilt on table.

Among 72 participants, majority 55.60% (n=40) unable to do, 16.70% (n=12) maximal assistance, 9.70% (n=7) moderate assistance, 8.30% (n=6) minimal assistance, 6.90% (n=5) needs supervision, 1.40% (n=1) independent with assistive device and 1.40% (n=1) independent walking in flat surface. The majority 65.30% (n=47) unable to do, 15.30% (n=11) maximal assistance, 5.60% (n=4) moderate assistance, 8.30% (n=6) minimal assistance, 4.20% (n=3) require supervision and 1.40% (n=1) independent with assistive device. The majority 65.30% (n=47) unable to do, 15.30% (n=11) maximal assistance, 5.60% (n=4) moderate assistance, 8.30% (n=6) minimal assistance, 4.20% (n=3) supervision and 1.40% (n=1) independent with assistive device small steps or slops. 48.60% (n=35) unable to do, 16.70% (n=12) maximal assistance, 18.10% (n=13)

moderate assistance, 8.30% (n=6) minimal assistance, 2.80% (n=2) supervision and 5.60% (n=4) modified independent in fitting brace. FIM total score of 72 participants minimum score 31, maximum 167, mean and standard deviation 103.60± 35.133. At pretreatment stage of present series mean (±SD) FIM score of the patients was 92.5 (±21.66). After one week of treatment mean FIM score was reached 99.24 (±16.85) and after six weeks of treatment mean FIM score was reached 107.32 (±18.37) (Chowdhury et al., 2015). Another study showed that the FIM admission score was 28.56 ±12.10 and after 8-week rehabilitation 75.06± 25.55 and FIM gain 47.12± 19.03 (Post et al., 2015).

Limitation of the Study:

There were a number of limitations and barriers in this research project which had affect the accuracy of the study, these are as follow: The samples were collected only from the CRP at Savar and the sample size was small, so the result of the study could not be generalized to the whole population of Spinal Cord Injury in Bangladesh.

This study has provided for the first time data on the individual capacity on daily activities of people with spinal cord injury 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. A convenience sampling was used that was not reflecting the wider population under study. The research project was done by an undergraduate student and it was first research project for her. So the researcher had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first survey of the researcher so might be there were some mistakes that overlooked by the supervisor and the honorable teacher.

CHAPTER – VI CONCLUSION AND RECOMMENDATION

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. Some people are who working on the community they are now still suffering post-traumatic stress.

Recommendation

The aim of the study was to assess individual capacity on daily activities of people with spinal cord injury. Though the study had some limitations but investigator identified some further step that might be taken for the better accomplishment of further research. The main recommendations would be as follow: The random sampling technique rather than the convenience sampling technique would be chosen in further in order to enabling the power of generalization the results. The duration of the study was relatively short, so in future wider time would be taken for conducting the study. Investigator used 72 participants as the sample of this study, in future the sample size would be more. In this study, the investigator took the participants only from the one selected hospital of Savar as a sample for the study. So for further study investigator strongly recommended to include the SCI patients from all over the Bangladesh to ensure the generalize ability of this study.

REFERENCES

Abdul-Sattar, A.B., (2014). Predictors of functional outcome in patients with traumatic spinal cord injury after inpatient rehabilitation: in Saudi Arabia. Neuro Rehabilitation, 35(2):341-347.

Ahuja, C.S., Wilson, J.R., Nori, S., Kotter, M.R., Druschel, C., Curt, A. and Fehlings, M.G., (2017). Traumatic spinal cord injury. Nature reviews Disease primers, 3(1):1-21.

Barclay, L., McDonald, R., Lentin, P. and Bourke-Taylor, H., (2016). Facilitators and barriers to social and community participation following spinal cord injury. Australian occupational therapy journal, 63(1):19-28.

Baumann, M., Le Bihan, E., Chau, K. and Chau, N., (2014). Associations between quality of life and socioeconomic factors, functional impairments and dissatisfaction with received information and home-care services among survivors living at home two years after stroke onset. BMC neurology, 14(1):1-12.

Bourassa-Moreau, E., Mac-Thiong, J.M., Li, A., Ehrmann Feldman, D., Gagnon, D.H., Thompson, C. and Parent, S., (2016). Do patients with complete spinal cord injury benefit from early surgical decompression? Analysis of neurological improvement in a prospective cohort study. Journal of neurotrauma, 33(3):301-306.

Brouwers, E., van de Meent, H., Curt, A., Starremans, B., Hosman, A. and Bartels, R.H.M.A., (2017). Definitions of traumatic conus medullaris and cauda equina syndrome: a systematic literature review. Spinal Cord, 55(10):886-890.

Chen Y, Tang Y, Vogel LC, Devivo MJ (2013). Causes of spinal cord injury. Topics in Spinal Cord Injury Rehabilitation; 19(1):1-8.

Chin, L.S., (2015). Spinal Cord Injuries Clinical Presentation [Online]. New York: Medscape. Available: http://emedicine.medscape.com/article/793582-clinical [accessed on 20 August, 2021].

Cho, T.A., (2015). Spinal cord functional anatomy. Lifelong Learning in Neurology, 21(1):13-35.

Chowdhury, Z.A., Barua, S., Uddin, M.G., Khatun, U.H.R. and Biswas, R.S.R., (2015). Functional Outcome in Paraplegic Patients from Spinal Cord Injury. Chattagram Maa-O-Shishu Hospital Medical College Journal, 14(2):52-56.

Chun, S. and Lee, Y., (2010). The role of leisure in the experience of posttraumatic growth for people with spinal cord injury. Journal of Leisure Research, 42(3):393-415.

Darmon, M., (2020). The School Form of the Hospital: How Does Social Class Affect Post-Stroke Patients in Rehabilitation Units? Qualitative Sociology, 43(2):235-254.

DeVivo, M.J., Rutt, R.D., Black, K.J., Go, B.K. and Stover, S.L., (2012). Trends in spinal cord injury demographics and treatment outcomes between 2003 and 2009. Archives of physical medicine and rehabilitation, 73(5):424-430.

Dunlop, D.D., Song, J., Arntson, E.K., Semanik, P.A., Lee, J., Chang, R.W. and Hootman, J.M., (2015). Sedentary time in US older adults associated with disability in activities of daily living independent of physical activity. Journal of Physical activity and Health, 12(1):93-101.

Etikan, I., Musa, S.A. and Alkassim, R.S., (2016). Comparison of convenience sampling and purposive sampling. American journal of theoretical and applied statistics, 5(1):1-4.

Faronbi, J.O., Faronbi, G.O., Ayamolowo, S.J. and Olaogun, A.A., (2019). Caring for the seniors with chronic illness: The lived experience of caregivers of older adults. Archives of gerontology and geriatrics, 82(6):8-14.

Fernandez, M.I., Berg, M.E.L., Castellote, J.M., and Cuesta, P.J., (2010). Survival after spinal cord injury: a systematic review. Journal of Neurotrauma, 27 (8):1517–28.

Flude, L.J., Agent, P. and Bilton, D., (2012). Chest physiotherapy techniques in bronchiectasis. Clinics in chest medicine, 33(2):351-361.

Fouad, K. and Tetzlaff, W., (2012). Rehabilitative training and plasticity following spinal cord injury. Experimental neurology, 235(1):91-99.

Franca, L., Vall, J., Costa, C. M. D. C., Pereira, L. F., & Friesen, T. T. (2011). Application of International Classification of Functioning, Disability and Health (ICF) in individuals with spinal cord injury. Arquivos de neuro-psiquiatria, 69(3):513-518.

Hadley, M.N., Walters, B.C., Aarabi, B., Dhall, S.S., Gelb, D.E., Hurlbert, R.J., Rozzelle, C.J., Ryken, T.C. and Theodore, N., (2013). Clinical assessment following acute cervical spinal cord injury. Neurosurgery, 72(suppl_3):40-53.

Hetz, S.P., Latimer, A.E. and Ginis, K.M., (2010). Activities of daily living performed by individuals with SCI: relationships with physical fitness and leisure time physical activity. Spinal Cord, 47(7):550-554.

Hooker, S., and Emery-Tiburcio E.E., (2018). Interdisciplinary Team Rehabilitation. Encyclopedia of Clinical Neuropsychology, doi.org/10.1007/978-3-319-57111-9_404.

Hoque, M.F., Hasan, Z., Razzak, A.T.M.A. and Helal, S.U., (2012). Cervical spinal cord injury due to fall while carrying heavy load on head: a problem in Bangladesh. Spinal Cord, 50(4):275-277.

Islam, M. S., Hafez, M. A., and Akter, M. (2011). Characterization of spinal cord lesion in patients attending a specialized rehabilitation center in Bangladesh. Spinal cord, 49(7):783-786.

Jensen, M. P., Truitt, A. R., Schomer, K. G., Yorkston, K. M., Baylor, C., & Molton, I. R. (2013). Frequency and age effects of secondary health conditions in individuals with spinal cord injury: a scoping review. Spinal Cord, 51(12):882-892.

Jongjit, J., Sutharom, W., Komsopapong, L., Numpechitra, N. and Songjakkaew, P., (2014). Functional independence and rehabilitation outcome in traumatic spinal cord injury. Southeast Asian J Trop Med Public Health, 35(4):980-5.

Kim, S. and Lehto, X.Y., (2013). Travel by families with children possessing disabilities: Motives and activities. Tourism Management, 37(8):13-24.

Kirshblum, S. and Waring, W., (2014). Updates for the international standards for neurological classification of spinal cord injury. Physical Medicine and Rehabilitation Clinics, 25(3):505-517.

Kumar, N., & Gupta, B. (2016). Effect of Spinal Cord Injury on Quality of Life of Affected Soldiers in India: A Cross-Sectional Study. Asian spine journal, 10(2):267-275.

Lim, S. W., Shiue, Y. L., Ho, C. H., Yu, S. C., Kao, P. H., Wang, J. J., & Kuo, J. R. (2017). Anxiety and Depression in Patients with Traumatic Spinal Cord Injury: A Nationwide Population-Based Cohort Study. PLOS ONE, 12(1):112-119.

Ma, Q., Decker, Y., Müller, A., Ineichen, B.V. and Proulx, S.T., (2019). Clearance of cerebrospinal fluid from the sacral spine through lymphatic vessels. Journal of experimental medicine, 216(11):2492-2502.

Mlinac, M.E. and Feng, M.C., (2016). Assessment of activities of daily living, self-care, and independence. Archives of Clinical Neuropsychology, 31(6):506-516.

Moghimian, M., Kashani, F., Cheraghi, M. A., & Mohammadnejad, E. (2015). Quality of life and related factors among people with spinal cord injuries in Tehran, Iran. Archives of trauma research, 4(3):51-58.

Munce, S.E., Perrier, L., Tricco, A.C., Straus, S.E., Fehlings, M.G., Kastner, M., Jang, E., Webster, F. and Jaglal, S.B., (2013). Impact of quality improvement strategies on the quality of life and well-being of individuals with spinal cord injury: a systematic review protocol. Systematic reviews, 2(1):1-5.

Nas, K., Yazmalar, L., Sah, V., Aydın, A. and Ones, K., (2015). Rehabilitation of spinal cord injuries. World journal of orthopedics, 6(1):8-16.

Ning, G.Z., Wu, Q., Li, Y.L. and Feng, S.Q., (2012). Epidemiology of traumatic spinal cord injury in Asia: a systematic review. The journal of spinal cord medicine, 35(4):229-239.

Noonan, V. K., Fingas, M., Farry, A., Baxter, D., Singh, A., Fehlings, M. G., & Dvorak, M. F. (2012). Incidence and prevalence of spinal cord injury in Canada: a national perspective. Neuroepidemiology, 38(4):219-226.

Piatt, J.A., Nagata, S., Zahl, M., Li, J. and Rosenbluth, J.P., (2016). Problematic secondary health conditions among adults with spinal cord injury and its impact on social participation and daily life. The journal of spinal cord medicine, 39(6):693-698.

Pokaczajlo, J., Tasiemski, T., & Urbanski, P. (2016). Relationship between spinal cord injury-related knowledge and health-related quality of life in persons with spinal cord injury. Advances in Rehabilitation, 30(2):27-38.

Post, M.W., Dallmeijer, A.J., Angenot, E.L., van Asbeck, F.W. and van der Woude, L.H., (2015). Duration and functional outcome of spinal cord injury rehabilitation in the Netherlands. Journal of rehabilitation research and development, 42(3):75-86.

Rabadi, M.H., Mayanna, S.K. and Vincent, A.S., (2013). Predictors of mortality in veterans with traumatic spinal cord injury. Spinal cord, 51(10):784-788.

Rahimi, M., Torkaman, G., Ghabaee, M. and Ghasem-Zadeh, A., (2020). Advanced weight-bearing mat exercises combined with functional electrical stimulation to improve the ability of wheelchair-dependent people with spinal cord injury to transfer and attain independence in activities of daily living: a randomized controlled trial. Spinal cord, 58(1):78-85.

Razzak A, Helal SU, Nuri RP (2011). Life expectancy after spinal cord injury in a developing country-a retrospective study at CRP, Bangladesh. Asia Pacific Disability Rehabilitation Journal; 22(2):114-123.

Roberts, T.T., Leonard, G.R. and Cepela, D.J., (2017). Classifications in brief: American spinal injury association (ASIA) impairment scale. Clinical orthopaedics and related research, 475(5):1499-1504.

Rohm, M., Schneiders, M., Müller, C., Kreilinger, A., Kaiser, V., Müller-Putz, G.R. and Rupp, R., (2013). Hybrid brain–computer interfaces and hybrid neuroprostheses for restoration of upper limb functions in individuals with high-level spinal cord injury. Artificial intelligence in medicine, 59(2):133-142.

Saulino, M.F., (2013). Rehabilitation of Person with Spinal Cord Injuries [Online]. New York: Medscape. Available: http://emedicine.medscape.com/article [accessed on 16 July, 2021].

Scivoletto, G., Morganti, B., Ditunno, P., and Molinari, M., (2013). Effect of Age on Spinal Cord Lesion Patients Rehabilitation. Spinal Cord, 41 (7-12):457-564.

Simpson, L.A., Eng, J.J., Hsieh, J.T. and Wolfe and the Spinal Cord Injury Rehabilitation Evidence (SCIRE) Research Team, D.L., (2012). The health and life priorities of individuals with spinal cord injury: a systematic review. Journal of neurotrauma, 29(8):1548-1555.

Singh, R., Sharma, S.C., Mittal, R. and Sharma, A., (2013). Traumatic spinal cord injuries in Haryana: an epidemiological study. Indian journal of community medicine, 28(4):10-14.

Smith, T.F., Russell, H.F., Kelly, E.H., Mulcahey, M.J., Betz, R.R. and Vogel, L.C., (2013). Examination and measurement of coping among adolescents with spinal cord injury. Spinal cord, 51(9):710-714.

Tran, A.P., Warren, P.M. and Silver, J., (2018). The biology of regeneration failure and success after spinal cord injury. Physiological reviews, 98(2):881-917.

Tulsky, D. S., Kisala, P. A., Victorson, D., Tate, D. G., Heinemann, A. W., Charlifue, S., and Bombardier, C. H. (2015). Overview of the Spinal Cord Injury–Quality of Life (SCI-QOL) measurement system. The journal of spinal cord medicine, 38(3):257-269.

Van Middendorp, J.J., Hosman, A.J., Donders, A.R.T., Pouw, M.H., Ditunno Jr, J.F., Curt, A., Geurts, A.C., Van de Meent, H. and Em-SCI Study Group, (2011). A clinical

prediction rule for ambulation outcomes after traumatic spinal cord injury: a longitudinal cohort study. The Lancet, 377(9770):1004-1010.

Velstra, I.M., Bolliger, M., Tanadini, L.G., Baumberger, M., Abel, R., Rietman, J.S. and Curt, A., (2014). Prediction and stratification of upper limb function and self-care in acute cervical spinal cord injury with the graded redefined assessment of strength, sensibility, and prehension (GRASSP). Neurorehabilitation and neural repair, 28(7):632-642.

Vogel, L.C., Betz, R.R. and Mulcahey, M.J., (2012). Spinal cord injuries in children and adolescents. Clinical neurology, 109(5):131-148.

Walsh, T.S., Salisbury, L.G., Merriweather, J.L., Boyd, J.A., Griffith, D.M., Huby, G., Kean, S., Mackenzie, S.J., Krishan, A., Lewis, S.C. and Murray, G.D., (2015). Increased hospital-based physical rehabilitation and information provision after intensive care unit discharge: the recover randomized clinical trial. JAMA internal medicine, 175(6):901-910.

Wasilewski, M.B., Stinson, J.N. and Cameron, J.I., (2017). Web-based health interventions for family caregivers of elderly individuals: a scoping review. International Journal of Medical Informatics, 103(7):109-138.

Wheeler, T.L., de Groat, W., Eisner, K., Emmanuel, A., French, J., Grill, W., Kennelly, M.J., Krassioukov, A., Santacruz, B.G., Biering-Sorensen, F. and Kleitman, N., (2018). Translating promising strategies for bowel and bladder management in spinal cord injury. Experimental neurology, 306(8):169-176.

Woo, K.Y., Sears, K., Almost, J., Wilson, R., Whitehead, M. and VanDenKerkhof, E.G., (2017). Exploration of pressure ulcer and related skin problems across the spectrum of health care settings in Ontario using administrative data. International wound journal, 14(1):24-30.

Zaveri, G. and Das, G., (2017). Management of sub-axial cervical spine injuries. Indian journal of orthopaedics, 51(6):633-652.

Appendix-I:

বাংলা মৌখিক সম্মতি পত্র

আসসালামু আলাইকুম,
আমি জারিন তাসনিম, ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপির ছাত্রী। আমি ফিজিওথেরাপির ব্যাচেলর ডিগ্রির আংশিক পরিপূর্ণতার জন্য এই গবেষণাটি পরিচালনা করছি । আমি **"স্পাইনাল কর্ডে আঘাতপ্রাপ্ত ব্যক্তির প্রতিদিনের ক্রিয়াকলাপের ক্ষমতা"** এর উপর গবেষণা করছি ।
এই গবেষণার উদ্দেশ্য হলো **"স্পাইনাল কর্ডে আঘাতপ্রাপ্ত ব্যক্তির প্রতিদিনের ক্রিয়াকলাপের ক্ষমতা"।** আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তিগত , রোগের বৈশিষ্ট্য এবং সংশ্লিষ্ট নিয়ামকের আনুসাঙ্গিক কিছু প্রশ্ন করতে চাচ্ছি। এতে আনুমানিক ১৫-২০ মিনিট সময় লাগবে।
আমি আপনাকে অবগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্য কোনো উদ্দেশ্যে ব্যবহৃত হবে না । এই গবেষণায় আপনার অংশগ্রহণ বর্তমান ও ভবিষ্যৎ চিকিৎসায় কোনো প্রকার প্রভাব ফেলবে না। আপনি যেসব তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে।
এ অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছা প্রণোদিত এবং আপনি যেকোনো সময় এই অধ্যয়ন থেকে কোনো নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়া এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার ও আপনার আছে।
আপনার অংশগ্রহণের জন্য পারিশ্রমিক প্রদান করা হবে না।
এই অধ্যয়ন সম্পর্কে আপনার কোন প্রশ্ন থাকলে আপনি আমার সাথে / আমার সুপারভাইজার প্রফেসর মোঃ ওবায়দুল হক, ভাইস প্রিন্সিপাল, বিএইচপিআই এর সাথে যোগাযোগ করতে পারেন ।

মোবাইল নংঃ ০১৭১১-৫৭৯২৬৪

সুপারভাইজারের মোবাইল নংঃ ০১৭৩০০৫৯৬৪০

আমি কি আপনার অনুমতি নিয়ে সাক্ষাৎকার শুরু করতে পারি?

হ্যাঁ / না

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ.....

উপাত্ত সংগ্রহ কারীর স্বাক্ষর ও তারিখ.....

স্বাক্ষীর স্বাক্ষর ও তারিখ.....

English Verbal Consent Form

Assalamu Alaikum,

I am ZARIN TASNIM, 4th year BSc in physiotherapy student. I am conducting this research for the partial fulfillment of the bachelor of physiotherapy degree. The research titled is **"Individual Capacity on Daily Activities of People with Spinal Cord Injury".**

The study aim is to find out the Individual capacity on daily activities of people with spinal cord injury. To find out that I need to ask several questions to you. The entire session will take approximately 15-20 minutes.

I would like to also inform you that this is a purely academic study and will not be used for any other purpose. Your participation in the research will have no impact on your present or future treatment. All information provided by you will be kept confidential and in the event of any report or publication, it will be ensured that the source of information remains secret.

Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative questions. You also have the right not to answer a particular question that you don't like or do not want to answer during interview.

Remuneration will not be provided for your participation.

If you have any queries about the study you may contact with me / my supervisor Professor Md. Obaidul Haque, Vice Principal, BHPI.

Contact no: 01711-579264

Supervisor contact no: 01730059640

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

Yes / No

Signature and date of the Participant …….

Signature and date of the Interviewer ……

Signature and date of the Witness ……..

Appendix-II

Questionnaire- বাংলা

পর্ব ১: ব্যক্তিগত বিবরণ

নামঃ	
ঠিকানাঃ	
যোগাযোগের নাম্বারঃ	
রোগীর আইডিঃ	
সাক্ষাতকারের তারিখঃ	

পর্ব-২: জনসংখ্যাতাত্ত্বিক তথ্যাবলী

এই প্রশ্নপত্রটি স্পাইনাল কর্ডে আঘাতপ্রাপ্ত ব্যক্তির প্রতিদিনের ক্রিয়াকলাপের ক্ষমতার মান নির্ণয় করার জন্য তৈরি করা হয়েছে এবং এই পর্বটি ফিজিওথেরাপিস্ট বলপেন ব্যবহার করে পূরণ করবেন।

অনুগ্রহপূর্বক নিচের প্রশ্নগুলির মধ্যে সঠিক উত্তরের বাম পাশে টিক (√) চিহ্ন দিন।

ক্রমিক নং	প্রশ্নসমূহ	অংশগ্রহণকারীর মতামত
১.১	বয়স (বছর):	……..বছর
১.২	লিঙ্গ	**১** .পুরুষ **২** .মহিলা
১.৩	শিক্ষাগত যোগ্যতা	১. নিরক্ষর ২. প্রাইমারি ৩. মাধ্যমিক ৪. এস এস সি ৫. এইস এস সি ৬. স্নাতক পাশ ৭. স্নাতকোত্তর ৮. অন্যান্য
১.৪	বসবাসের স্থান	১.গ্রাম ২.শহর ৩.উপ শহর
১.৫	পেশা	১.চাকুরীজীবী ২.ব্যবসায়ী ৩.গৃহিণী ৪.ছাত্র/ছাত্রী ৫.শিক্ষক ৬.শ্রমিক ৭.কৃষক ৮.অন্যান্য.....

১.৬	বৈবাহিক অবস্থা	১. বিবাহিত ২.অবিবাহিত ৩.বিধবা ৪.বিবাহবিচ্ছেদ ৫.একক
১.৭	পরিবারের ধরণ	১.ছোট পরিবার ২.যৌথ পরিবার

পর্ব ৩: অংশগ্রহণকারী সম্পর্কিত তথ্যাবলী

রোগের ধরণঃ	
আঘাত প্রাপ্তের তারিখঃ	
মেরুদন্ডের আঘাত প্রাপ্ত অংশঃ	
ভর্তির তারিখঃ	
স্নায়ুতন্ত্রের আঘাত প্রাপ্ত অংশঃ	
পরিবারের মাসিক আয়ঃ	

অ্যামেরিকান স্পাইনাল অ্যাসোসিয়েশন স্কেলঃ	
সম্পূর্ণ এ	০১
অসম্পূর্ণ বি	০২
অসম্পূর্ণ সি	০৩
অসম্পূর্ণ ডি	০৪
নরমাল ই	০৫

ফাংশন্যাল প্রগ্রেস রেটিং স্কেলঃ	
স্বয়ংসম্পূর্ণ	৭
সাহায্যকারী ডিভাইস/ সহায়ক	৬
তত্ত্বাবধান	৫
অল্প সাহায্য	৪
বেশী সাহায্য	৩
খুব বেশী সাহায্য	২
অক্ষম	১

পর্ব ৪: দৈনন্দিন কার্যকলাপে ব্যক্তিগত ক্ষমতা

কর্মশীলতা/ (অ্যাকটিভিটিস)	স্কোর/ সাফল্যাংক

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	
দুই পাশে উত্তোলন	
পিছনের দিকে উত্তোলন	
স্থানান্তর	
হুইলচেয়ার ↔ বিছানা	
হুইলচেয়ার ↔ টয়লেট	
উপরে এবং নিচে স্থানান্তর	
হুইলচেয়ারের দক্ষতা	
হুইলচেয়ার চালানোর ক্ষমতা	
উচু এবং নিচু ঢাল	
অমসৃণ ভুমি/ তল	
ছোট ধাপ	
দাঁড়ানো	
বসা থেকে দাঁড়ানো	
দাঁড়ানোর ভারসাম্য	
দাঁড়ানোর টেবিল	
টিলট টেবিল	
হাটা	
মসৃণ তল	
অমসৃণ তল/ অসমতল	
ধাপ/ ঢাল	
উপযুক্ত ব্রেস/ ফিটিং ব্রেস	
মোট	

Questionnaire- English

SECTION-1: Personal Details

Name:	
Address:	
Contact number:	
Patient ID:	
Date of interview:	

SECTION-2: Socio Demographic Information

This questionnaire is developed to measure the individual capacity on daily activities of people with spinal cord injury and this section will be filled by physiotherapist using a pen.

Please give tick (√) mark at the left side box of the best correct answer

Question Number	**Questions/ Information**	**Response of the participant**
1.1	Age (in year):	……..years
1.2	Gender	1. Male 2. Female
1.3	Educational status	1. Illiterate 2. Primary

		3. Secondary 4. S.S.C 5. H.S.C 6. Graduate 7. Post Graduate
1.4	Living area	1. Rural 2. Urban 3. Semi-urban
1.5	Occupation	1. Service holder 2. Businessman 3. Housewife 4. Student 5. Teacher 6. Labor 7. Farmer 8. Other.....
1.6	Marital status	1. Married 2. Unmarried 3. Widow 4. Divorce 5. Single
1.7	Family type	1. Nuclear family 2. Extended family

SECTION-3: Participant related information

Diagnosis:	
Date of injury:	
Skeletal Level:	
Date of Admission to CRP:	
Neurological Level:	
Monthly family income:	

ASIA scale (Impairment Grading)	
Complete A	01
Incomplete B	02
Incomplete C	03
Incomplete D	04
Normal E	05

Functional Progress Rating Scale	
Independent	7
Independent with assisted device	6
Supervision	5
Minimal assistance	4
Moderate assistance	3
Maximal assistance	2
Unable to do	1

SECTION4: Individual Capacity on Daily Activities

Activities	***Scores***
Bed Mobility	
Rolling	
Lying to sitting	
Sitting to lying	
Supine lying ↔ Prone lying	
Sitting balance	
Lifting	
Lifting in Wheelchair	
Lifting on bed	

Lifting to forward	
Lifting sideways	
Lifting backwards	
Transfers	
Wheelchair ↔ Bed	
Wheelchair ↔ Toilet	
High & 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/Slops	
Fitting Brace	
Total	

Appendix-III: IRB Permission Letter

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

Ref:

Date: 16th June 2021

CRP/BHPI/IRB/06/2021/462

To
Zarin Tasnim
B.Sc. in Physiotherapy
Session: 2015-16, Student ID: 112150306
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "**Individual capacity on daily activities of people with spinal cord injury**" by ethics committee.

Dear Zarin Tasnim,

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

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

The purpose of the study is to find out the nature of practice of Physiotherapy in Bangladesh. The study involves use of a questionnaire to explore that may take 15 to 20 minutes to answer the specimen and there is no likelihood of any harm to the participants. Data collectors will receive informed consents from all participants. Any data collected will be kept confidential. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at **8:30am on 1st March, 2020 at BHPI (23 IRB Meeting).**

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

Best regards,

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

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

Data collection Permission Letter

Permission Latter

Date: June 16, 2021

Head

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain,Savar,Dhaka-1343

Through: Head, Department of Physiotherapy, BHPI.

Subject: Prayer for seeking permission to collect data for conducting research project.

Sir,

With due to respect and humble submission to state that I am ZarinTasnim, a student of 4th year B.Sc. in physiotherapy at Bangladesh Health Professions Institute (BHPI).The Ethical committee has approved my research project entitled: **"Individual capacity on daily activities of people with spinal cord injury"** under the supervision of Professor Md. Obaidul Haque, Vice-Principal, BHPI,CRP. I want to collect data for my research project from the Department of Physiotherapy at CRP. So, I need permission for data collection from the SCI Unit of Physiotherapy Department at CRP-Savar, Dhaka-1343. I would like to assure that anything of the study will not be harmful for the participants.

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

Yours faithfully,

Zarin Tasnim

ZarinTasnim

4th Year

B.Sc. in Physiotherapy

Class Roll: 35; Session: 2015-16

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

CRP-Chapain, Savar, Dhaka-1343.

Recommended
16.06.21
Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Recommended & forwarded
16.06.21
Prof. Md. Obaidul Haque
Vice-Principal
BHPI, CRP, Savar, Dhaka

Allow for Collect data from SCI Unit. MHosen 29.6.21
MUZAFFOR HOSSAIN
Junior Consultant & Incharge,SCI Unit
Physiotherapy Department
CRP, Savar, Dhaka

Appoved
MOHAMMAD ANWAR HOSSAIN
Senior Consultant &
Head of Physiotherapy Dept
Associate Professor, BHPI
CRP, Savar, Dhaka-1343