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SELF-EFFICACY OF PEOPLE WITH SPINAL CORD INJURY AFTER REHABILITATION

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Bachelor of Science in Physiotherapy (B.Sc. PT)

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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

SELF-EFFICACY OF PEOPLE WITH SPINAL CORD INJURY AFTER REHABILITATION

Submitted by **MD. AHADUL MANNA**, for the partial fulfillment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

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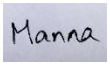
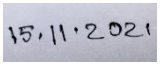
DECLARATION

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 decline that same any publication, presentation, or dissemination of information of the study. I would bind to take consent from the Department of Physiotherapy of Bangladesh Health Profession Institute (BHPI).

Signature:  **Date:** 

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Contents

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Acronyms

AIS – American Spinal Injury Association Impairment Scale

ASIA – American Spinal Injury Association

BHPI – Bangladesh Health Professions Institute

BMRC – Bangladesh Medical Research Council

CRP – Centre for the Rehabilitation of the Paralysed

FIM - Functional Independence Measure

ICF – International Classification of Functioning, Disability and Health

LTPA – Leisure-Time Physical Activity

PTSD – Post-Traumatic Stress Disorder

QOL – Quality of Life

RTA – Road Traffic Accident

SCI – Spinal Cord Injury

SCIAM – Spinal Cord Injury Adjustment Model

SHCs – Secondary Health Conditions

SPSS – Statistical Package for Social Science

TSCI – Traumatic Spinal Cord Injury

UTI – Urinary Tract Infection

WHO – World Health Organization

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Abstract

Purpose: The purpose of this study was to evaluate the level of self-efficacy of people with spinal cord injury after rehabilitation. ***Objectives:*** The objectives of this study were to find out the health and wellbeing condition, identify the personal function status, ascertain the social function state, determine the general activity properties, discover the limitation in everyday activities among the SCI patients. ***Methodology:*** The cross-sectional study was chosen to carry out this study among 45 participants who were selected according to inclusion criteria. The "Moorong Self-Efficacy Scale" (MSES), this standard structured questionnaire along with socio-demographic and disease-related questions were used to find the level of self-efficacy of people with spinal cord injury after rehabilitation among 45 participants. The study was conducted by using quantitative descriptive analysis. ***Result:*** The study comprised of 45 SCI participants among them 86.7% (n = 39) were male and 13.3% (n = 6) were female and 71.1% (n = 32) were paraplegic and 28.9% (n = 13) were tetraplegic. The study showed an association between MSES items and socio-demographic variables age, gender educational qualification, occupation, skeletal level of injury, neurological level of injury, cause of lesion, type of paralysis with a 5% ($p<0.05$) level of significance. ***Conclusion:*** Enhancing self-efficacy has been described as a target in the rehabilitation of SCI. Successful rehabilitation involves reintegration into the community and psychological adjustment to disability and changed life circumstances. One psychological variable that has been the subject of a recent study concerning health outcomes in people with a range of medical conditions is self-efficacy. Self-efficacy is important to the psychosocial accommodation of all persons, including those with SCI.

Keywords: Self-Efficacy, Spinal Cord Injury, MSES, Rehabilitation.

CHAPTER – I INTRODUCTION

1.1 Background

Spinal cord injury occurs due to any damage to the spinal cord which interrupts communication between the brain and the body. A person's sensory, motor, and reflex messages are affected following the spinal cord injury and the person may not be able to deal with the damage in the spinal cord. The person's experience of dysfunction depends upon the level of injury. Based on whether any movement and sensation occur at or below the level of injury referred to as either complete or incomplete. The most important and frustrating issue is that the recovery of each person from spinal cord injury is distinct (Shepherd Center, 2011).

Spinal cord injury includes a set of conditions that consists of a wide range of changes in physiology, secondary medical complications, and altered social roles, all of which act upon activity participation (Fernhall et al., 2007). A spinal cord injury is defined as an acute traumatic injury to the spinal cord which results in varying degrees of sensory and/or motor deficits and paralysis. Cauda equina injury is also included but the definition omits isolated injuries to other nerve roots. The condition can lead to a raised rate of morbidity and mortality and a lifelong loss of function and reduced quality of life (Hagen et al., 2012).

Physical changes along with functional limitations will ensue and continue to exist depending on the degree of the injury and impacts can be drastic, immediate, and life-altering. Persons with SCI will have to go through a lot of changes in employment, functional activities social life. These may alter individual identity, view of self-concerning others, and enjoyment deducted from life. Injured individuals have to spend a great amount of time engaged in self-care and daily living activities if compared with uninjured persons. Such changes include long-term continuous consequences of the SCI these can trigger stress and loss reactions to the event that caused the injury. Potentially this experience can diminish the quality of life, whereas, many survivors of SCI represent moderate to even high levels of psychological well-being (deRoon-Cassini et al., 2009).

Spinal cord injury (SCI) is a relatively uncommon disorder with devastating effects. The injury is usually associated with permanent paralysis of voluntary muscles and loss of sensation below the lesion. These lead to reduced functional independence and mobility, impairment of social activities, and hampers of vocational activities. Also includes bad impacts on the person's health and well-being (Craig et al., 2009).

SCI leads to a reduction or cessation of participation in physical activity for many people. This inactivity leads to profound deconditioning, decreased physical capacity, and a higher risk for secondary health problems and various chronic diseases (Ginis et al., 2010).

Spinal cord injury (SCI) is not only limited to physical and social consequences but also includes psychological consequences severely. Compared with the general population, the risk for major depression, post-traumatic stress disorder, substance abuse, anxiety disorder, and suicide is elevated for people with SCI. People with SCI may be protected from negative secondary consequences of the injury by activating their inbuilt psychological resources (Peter et al., 2012).

Self-efficacy is the belief in one's ability to produce the effects or outcomes one wants. (Bandura et al., 1999) defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required for producing given attainments". He recognized the importance of cognitive processes in mediating behavioral change through different modes (enactive, vicarious, exhortative, and emotive) and proposed that expectation of personal efficacy determined not only the initiation of behavior but also the persistence of effort performing a particular behavior in the face of adversity.

The concept of self-efficacy is a core component of social cognitive theory. In this theory, psychosocial functioning is determined by mutual interactions between an individual's personal (biological, cognitive, and affective) factors, the environment in which he/she functions, and his/her behavior. People develop perceptions about their capabilities which mediate future behavior. Self-efficacy beliefs impact behavior through several avenues and also determine the course of action an individual chooses. Most people prefer a course of action in which they feel capable enough rather than one in

which they do not. Besides, one's belief in one's ability to succeed influences the extent of stress experienced, the amount of effort expended, and the degree of persistence in the confrontation of difficulties (Amtmann et al., 2012).

Otherwise stated, it is the belief 'I can do it. Self-efficacy appears to be related to different constituents of the ICF framework. Persons with high self-efficacy present less secondary physical conditions and better mental health, considering overall health conditions. High self-efficacy is linked with less impairment and might be compromised by pain at the body level. Self-efficacy concerning environmental factors seems to be associated with social support in SCI, although there is some contradiction. Even though persons with high self-efficacy consistently show higher life satisfaction and well-being (Geyh et al., 2012).

Perceived self-efficacy is one of the most widely researched concepts in health promotion. The role of efficacy beliefs in sustaining attachment to exercise regimens. Research has found that people with high self-efficacy beliefs before engaging in an exercise program show better adherence to an exercise regimen once carried out. This holds true for both supervised programs and personal unsupervised exercise regimens. Concisely, success in adopting and maintaining regular exercise relies largely on the individual's self-regulatory efficacy (Kroll et al., 2007).

Individuals with high self-efficacy beliefs, as a result, persist in challenging circumstances, in contrast, people with low self-efficacy are less likely to persevere as obstacles are encountered. This concept is particularly important related to disability. As individuals with SCI are likely to experience a broad spectrum of obstacles in daily life, from those related to limitations in function to attitudinal and structural barriers in society (Miller, 2009).

In persons with SCI, self-efficacy is related to increased exercise, and self-efficacy is a predictor of exercise outcomes. Furthermore, other studies proposed that self-efficacy could be a key mediating factor in the advancement of physical activity in persons with SCI (Nooijen et al., 2013). Persons with SCI and other chronic health conditions with

high self-efficacy were observed to have better well-being, mental health, and health behavior (Peter et al., 2014a).

In various studies, involving both people with and without SCI, it has been found that higher self-efficacy is strongly linked with greater Leisure-Time Physical Activity (LTPA) participation (Phang et al., 2012).

1.2 Rationale

Spinal Cord Injury (SCI) is a life-disrupting complex medical condition. SCI is a condition with not just physical but also has social and psychological consequences. These consequences depend on the level and completion type of lesion, facilitators, and barriers in the surrounding environment, and characteristics of the person.

Individuals with SCI experience permanent paralysis, loss of sensation, alteration of bladder, bowel, and sexual function. These lead to neuropathic pain, pressure ulcers, UTI, and many more physical distresses along with psychological stress caused by societal barriers and attitudes.

SCI is a health condition with severe physical, social and psychological issues. A conceptual framework is provided by WHO known as the International Classification of Functioning, Disability, and Health (ICF). It is based on an integrative bio-psycho-social model that corresponds to the complexity and nature of SCI. the ICF components also include psychological sources. among those psychological factors “Self-efficacy” is the most prominent.

Social re-integration is a critical construct and key goal of rehabilitation related to SCI. Despite the injury and related consequences, establishing community connections is a major challenge for individuals with SCI. Despite massive efforts, they face a variety of physical and psychological challenges after returning to the community. Improvement of clinical and psychological attributions and well-being of SCI individuals are sufficiently related to active participation and social reintegration.

SCI brings down a lot of limitations that may affect each individual's belief and ability in his/her performance of daily activities and gaining future goals. These also lead to poor social re-integration and psychological issues like depression and anxiety.

Reduced quality of life, difficulties returning to work, adapting to new social roles, and achieving general individual independence are associated with depression and anxiety. Minimizing or eliminating these barriers is essential to maintaining health and well-being, preventing secondary complications, and maximizing quality of life.

The aforementioned facts all are highly associated with a person's self-efficacy level. Thus, measuring the self-efficacy of persons with disabilities specifically people with SCI is a must to bring out the areas of limitations. So that these areas may be addressed in the development of total counseling and rehabilitation goals.

It may be possible to achieve improvements in health behavior, better social reintegration, and fewer secondary complications by strengthening the resources of self-efficacy within the rehabilitation process of people with SCI.

1.3 Research Question

What is the level of self-efficacy of people with spinal cord injury after rehabilitation?

1.4 Study Objectives

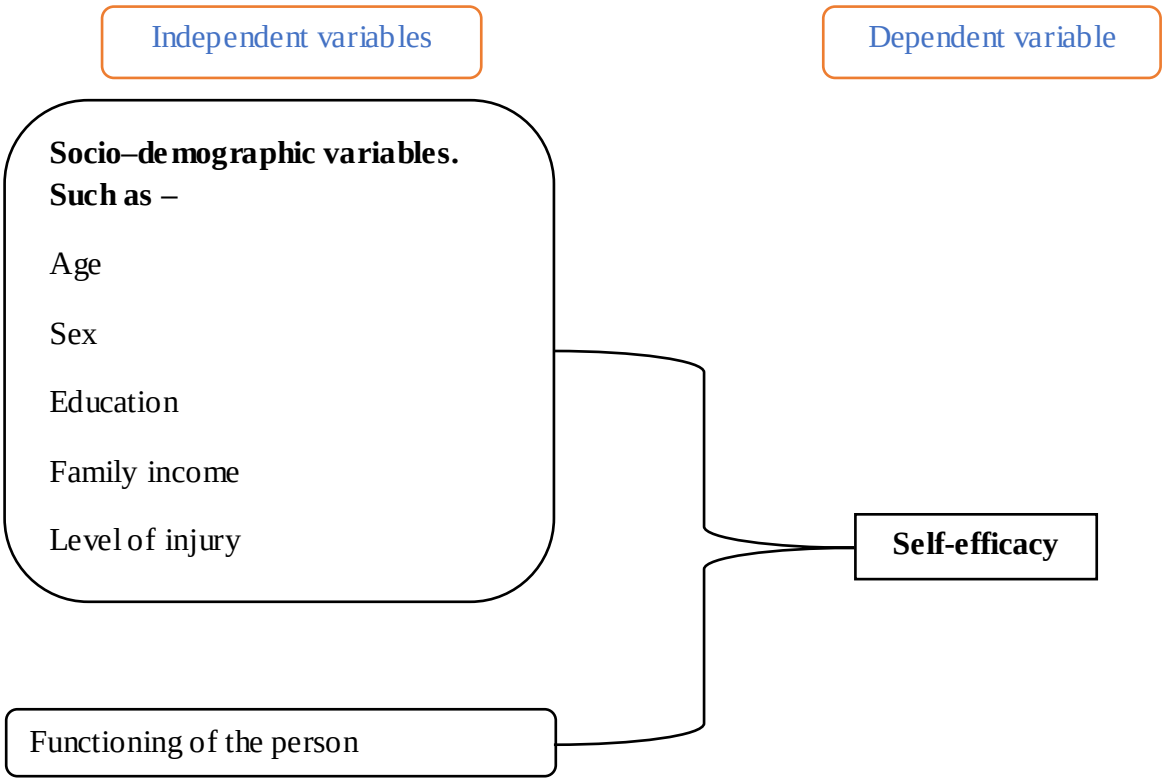
1.4.1 General Objective

- To evaluate the level of self-efficacy of people with spinal cord injury after rehabilitation.

1.4.2 Specific Objectives

- To find out the health and wellbeing condition among SCI patients.
- To identify the personal function status among SCI patients.
- To ascertain the social function state among the SCI patients.
- To determine the general activity properties among the SCI patients.
- To discover the limitation in everyday activities among the SCI patients.

1.5 Conceptual Framework



1.6 Operational Definition

Spinal Cord Injury

A Spinal Cord Injury (SCI) is also known as Spinal Cord Lesion. It can be defined as damage to the neural components (spinal cord and cauda equina) that can be occurred by either trauma or pathological cause, resulting in permanent or temporary motor, sensory and autonomic function loss.

Paraplegia

Loss of motion or paralysis typically affects the trunk and both legs. This is usually a result of damage at the thoracic and lumbar levels.

Tetraplegia

Tetraplegia is also called quadriplegia. Paralysis approximately from the neck down results from damage to the neural elements in the neck or cervical region. Total or partial loss of function in both arms and legs, trunk, and pelvic organs.

Re-integration

Re-integration can be defined as being a whole part of the mainstream of family and social life by fulfilling normal roles and responsibilities and being an able and contributing person to the community.

Rehabilitation

Rehabilitation can be defined as a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment

Self-efficacy

Self-efficacy is a construct that can be defined as a belief or self-confidence of each person over his/her ability to perform or execute any course of action or specific behavior required for pursuing a desired goal or executing a particular task.

CHAPTER – II LITERATURE REVIEW

Spinal cord injury (SCI) is the injury of the spinal cord from the foramen magnum to the cauda equina which occurs as a consequence of compulsion, incision, or contusion. The functions performed by the spinal cord are disrupted at the distal level of the injury. SCI causes grievous disability among patients. Every year, about 40 million people globally suffer from SCI. Most of them are young men, typically aged from 20 to 35, although 1% of this population are children (Nas et al., 2015).

SCI is permanent neurological damage resulting in varying levels of paralysis, sensory impairment, and sphincter disturbance which are irreversible in some cases (Rahimi-Movaghar et al., 2013). The spinal cord is located within the spinal column; Spinal cord is 42-45 cm long & it continues down from the brain to the L1-L2 vertebral level, ending in the conus medullaris, extending from the end of the spinal cord in the spinal canal, is the cauda equina (or "horse's tail"). The spinal cord itself has neurological segmental levels that correspond to the nerve roots that exit the spinal column between each of the vertebrae; There are 31 pairs of spinal nerve roots. Among them 8 cervical, 12 thoracic, 5 lumbar, 5 sacral, and 1 coccygeal; Due to the difference in length between the spinal column and the spinal cord, the neurological levels do not necessarily correspond to the vertebral segments (Bickenbach et al., 2013).

SCI can be traumatic or non-traumatic; traumatic SCI can be resulting from – falls, RTA, sports injuries, occupational injuries, violence. On the other hand, non-traumatic SCI usually includes pathological causes which can be – infectious disease, tumor, musculoskeletal disease (i.e., osteoarthritis), congenital problems (i.e., spina bifida) (Bickenbach et al., 2013; Perry, 2014).

Symptoms shown in individuals with SCI depend on the degree of injury or non-traumatic cause. Symptoms may include – loss of sensory or motor control of the upper limbs, trunk, lower limbs. Loss of autonomic regulations can affect breathing, heart rate, blood pressure, temperature control, bowel and bladder control, and sexual function. Cervical SCI usually causes sensory and motor paralysis in the arms, body, and legs

which are termed tetraplegia. Thoracic SCI causes sensory and/or motor loss in the trunk and legs and lumbar SCI commonly causes sensory and motor loss in the hips and legs both conditions are known as paraplegia. According to the International Standards for Neurological Classification of SCI with the American Spinal Injury Association (ASIA) Impairment Scale (AIS), SCI is believed complete if there is no sensory and motor function at S4-S5; Although some sensory and or motor function is conserved below the level of injury in incomplete SCI including the lowest sacral segments S4-S5, still may result in severe disabilities (Almeida et al., 2013; Bickenbach et al., 2013; Lim et al., 2017; Perry, 2014).

In spinal cord injury risk of morbidity and mortality is high. In the first year after injury mortality risk is highest and stays high equated to the general population. People with spinal cord injury are likely to die prematurely 2 to 5 times more than general people. This grievous condition has several epidemiological studies that have been implemented in different parts of the world. The incidence of SCI varies from 9.2 to 56.1 per million worldwide (Mathur et al., 2015). Among worldwide incidence of spinal cord injury, the number of males is predominant than females, children also included (Nas et al., 2015). According to WHO estimates, males are most at risk in young adulthood between 20-29 years and older age greater than 70 years. On the other hand, females are most at risk in adolescence between 15-19 years and older age greater than 60 years. Studies report male-to-female ratios of at least 2:1 among adults, sometimes much higher (Bickenbach et al., 2013).

SCI prevalence rate is raising because of better survival rates, worldwide prevalence estimation is a range between 223 and 75 per million people. The life expectancy of SCI people has been shown to increase in the national database of 30822 SCI people in the USA. With the mortality rate reduced, world age-standardized incidence ranges between 10.4 and 83 per million persons per year; men still being under the risk radar aged 15-24 years at approximately 40 per million. The majority of people commonly sustain SCI due to motor vehicle accidents, fall-related injuries, sports injuries, and gunshot wounds (Craig et al., 2009). In Bangladesh, falls while carrying heavy loads on the neck or back are a common cause (Ning et al., 2012).

In the first systematic review of TSCI in Asia, the range of incidence was counted between 12.06 and 61.6 per million. In a comparison of incidence between Asia and North America, the estimate suggested that the incidence of TSCI in Asia was lower than that of in North America. The article reported that developing countries like in Asia had lower incidence rates compared to the developed ones like in North America. The average age in Asia ranged between 26.8-56.6 years (Ning et al., 2012).

The incidence of SCI increased gradually with the expansion of human activities. The incidence varies in a range between 13.019 to 163.420 per million people. In developed countries, the incidence ranges between 13.121 to 163.420 per million people, and in non-developed countries rates varied from 13.019 to 220.022 per million. Among developed countries, prevalence ranges from 49024 to 52625 per million. Prevalence is about 440.026 per million in non-developed countries (Kang et al., 2017).

In Bangladesh, the ratio between males and females is 4.5:1 among the people with SCI. According to recent studies the number of females with SCI is on the rise (A. Razzak et al., 2017). In Bangladesh's perspective, 60% is paraplegic TSCI, 40% tetraplegic TSCI; besides these among non-traumatic SCI cases 84% paraplegic and 16% tetraplegic. A study in Bangladesh uncovered that falling from height (either from trees, construction works, electric poles, or roofs) was detected to be the most common cause (40.30%), and falling while carrying a heavy load overhead was the second most common cause (16%). Among the non-traumatic cases of SCI spinal TB was found to be the most common (7%). Other causes were RTA, fall of an object on the back, GBS, and transverse myelitis (Razzak et al., 2011).

Shnek et al. (1997) defined self-efficacy as the belief of an individual that he/she will be able to perform specific behaviors in particular situations that may contain novel, unpredictable, and stressful elements. Self-efficacy is a concept that can generally be outlined as a person’s belief or sense of confidence in his/her ability to perform a particular task or behavior successfully in the future (Craig et al., 2009).

Self-efficacy is the belief that one can successfully execute the behavior required to produce the desired outcomes. Therefore, self-efficacy is an important clinical predictor

of adjustment of people with SCI, with strong correlations with depressed mood, anxiety, participation, and quality of life. Arguably, self-efficacy could be a promising target for interventions during the SCI rehabilitation process (van Diemen et al., 2020).

Self-efficacy has been evidenced to be a strong predictor of health behaviors, and it can be a significant regulator of the experience of chronic illness. Studies have established that particular self-efficacy is nearly related to significant outcome measures such as subjective well-being, functional recovery, and psychological well-being after spinal cord injury (SCI) (Amtmann et al., 2012).

Self-efficacy was greatly linked with depression for the SCI. Employment status and disability were also importantly related to self-efficacy. Increased self-efficacy was consociated with greater psychological adaptation (Shnek et al., 1997).

For individuals with SCI, common challenges are often based on limitations in mobility, alters in appearance, reduced sensation, alterations in bowel and bladder function, continuing pain, and ongoing medical complications. These challenges may affect an individual's confidence in his/her ability to achieve desired goals such as having purposeful relationships, a good sense of well-being, or the ability to manage health issues (Amtmann et al., 2012).

Health promotion and self-care of SCI people are of great importance in avoiding Secondary Health Conditions (SHCs). It has also been proposed that, in chronic disease, a person's self-efficacy is required to execute self-care. Unitedly this directs to the assumption that better self-efficacy will lead to better self-care which in turn may prevent SHCs. This systematic review study discussed that there is an association between self-efficacy and SHCs. The study found that both somatic and psychological SHCs are negatively correlated with self-efficacy. These emphasize the magnitude of research into the prevention of this and the potential part of enhancing the self-efficacy of persons with SCI. Therefore, self-efficacy appears a significant target in the rehabilitation of patients living with SCI to prevent SHCs (van Diemen et al., 2017).

A multicenter randomized controlled trial study was done in Korea to evaluate the effects of self-efficacy enhancement program on self-care behaviors, self-care knowledge, and

self-efficacy concerning pressure ulcer prevention in patients with a spinal cord injury resulted in a significantly greater in the experimental group. The group was given an 8-week self-efficacy enhancement program. The study concluded that the self-efficacy enhancement program empowered patients with a spinal cord injury to engage in continued self-care behaviors and served them to improve their knowledge and self-efficacy regarding pressure ulcer prevention (Kim & Cho, 2017).

There has been found an association between self-efficacy or perceived control with definite aspects of participation, such as physical activity, mobility, work, school, recreation, or social integration. The study concluded that interventions focusing on targets like self-efficacy and self-esteem may enhance participation, sense of coherence, social support to enhance the quality of life (Geyh et al., 2012).

The limitations that an SCI enforces may dramatically affect each individual's belief in his or her ability to execute daily tasks and attain larger life goals. The measurement of self-efficacy within rehabilitation may help discover areas in which individuals with SCI may have limited self-efficacy, so that these areas may be covered in counseling and the development of rehabilitation goals. As persons with SCI go through a loss of physical functioning that may greatly affect their sense of self-efficacy, the psychometrically sound measurement of self-efficacy is important in rehabilitation settings. Subjective well-being and social support were found to be significantly correlated with self-efficacy in persons with SCI (Miller, 2009).

A study conducted with over 100 persons with SCI living in the community and found that low self-efficacy and high pain intensity were associated with reduced QOL above and beyond the consequence of any physical impairment. Findings suggestive of the negative impact on QOL may well be cumulative. The combination of the two negative factors 'low self-efficacy' and 'pain intensity' was linked with an even greater reduction in QOL (Craig et al., 2009).

Another study reported a small positive correlation between the FIM motor score and the score on the Moorong Self-Efficacy Scale. This suggests that people with better physical function report higher self-efficacy. Some past studies suggested that people with higher

education report higher self-efficacy. The study also found a positive and strong relationship between social functioning and self-efficacy. More confident people are more able to manage their symptoms this results in happier with their social roles and functions (Amtmann et al., 2012).

Several mediating factors (e.g., hopelessness/helplessness and low self-efficacy) were considered that are felt to enhance the vulnerability of people with SCI to develop psychological morbidity. For instance, in a considerable number of SCI people, increased levels of hopelessness/helplessness and low self-efficacy have been accounted, and this has been found to alter their risks of developing depression and PTSD (Craig et al., 2009).

Given the number of depressions among people with SCI, it would be important to distinguish potentially modifiable causative psychological factors. Three of the given factors may be acquired helplessness, self-efficacy, and cognitive distortions (Shnek et al., 1997).

Strengthening resources such as self-efficacy is important can help to achieve betterments in health behavior, which could in turn assist to avoid secondary complications in SCI, such as pressure sores or urinary tract infections (Peteret al., 2014a). Improvements in self-efficacy of persons with SCI have been attained with an active or independent living program, physical activity, or sports programs (Peteret al., 2014b).

Measurement of self-efficacy of SCI persons is important within rehabilitation settings and research. Individuals determined of having low self-efficacy anticipations may benefit from counseling directed at increasing confidence in their abilities.

CHAPTER – III METHODOLOGY

3.1 Study Design

A cross-sectional study was selected by the researcher to execute the research. Cross-sectional studies were carried out at a one-time point or over a short period. In this study, a cross-sectional study design is accustomed to determining the level of self-efficacy of people with spinal cord injury after rehabilitation. This study design was suitable to discover the objectives. The data was collected all at the same time or within a short time frame. A cross-sectional design provides a snapshot of the variables included in the study, at one particular point in time.

3.2 Study Site

Data was gathered from patients with spinal cord injury attending at Halfway Hostel of SCI unit in Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka; the only specialized & largest rehabilitation center in Bangladesh.

3.3 Study Population and Sample Population

A population is a total group or set of events or totality of the observation on which research is carried through. In this study, the people who had SCI and people who had completed rehabilitation were in the re-integration stage and were selected to carry out the study. About 45 samples were selected for this study.

3.4 Sample Technique

Samples were selected through the convenience sampling method for carrying on this study. A convenience sample is a group of people who (conveniently) were available for study.

3.5 Sample Size

When the sample frame is finite –

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

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

$= (1.96)^2 \times 0.5 \times 0.5 / (0.05)^2$

$= 384$

Here,

Z (confidence interval) = 1.96

P (prevalence) =50%

And, q = (1-p)

= (1-0.5)

= 0.5

The actual sample size was, n = 384.

As it is an academic thesis, self-funding and data were collected from a single specialized rehabilitation Centre by considering the feasibility and time limitations 45 samples were selected conveniently.

3.6 Inclusion Criteria

- Both male and female persons with spinal cord injury attending at CRP.
- The Patients attending at the halfway hostel.
- The patients above 18 years of age.
- The patients have a better understanding of the command.
- The patients who will volunteer with interest.

3.7 Exclusion Criteria

- Children with spinal cord injury.
- Patients in acute and rehabilitation stages inwards.
- Medically unstable.
- Those patients who are not interested to participate in the study.

3.8 Data Collection

3.8.1 Data Collection Tools

- Record or Data collection form: The researcher used a 6 paged data collection form to collect information from the samples.
- Consent Form: The researcher took written consent from every participant during data collection by using a Bangla consent form.
- Structured questionnaire: The researcher used a structured questionnaire for collecting data.
- Stationery Items (Pen, Pencil, Papers)

3.8.2Measurement Tools

i. Socio-demographic Questionnaire

ii. Disease-related information

iii. Moorong Self-Efficacy Scale

Socio-demographic Questionnaire: In the socio-demographic sector there were 9 questions including, Age, Gender, Marital status, Educational Qualification, Living Area, Family Member, Occupation, Earning Member, Monthly Family Income.

Disease-related information: In this sector of the questionnaire there were 6 questions including Date of Injury, Skeletal Level, Neurological Level, Completeness of Lesion, Cause of Lesion, Type of Injury.

Moorong Self-Efficacy Scale: The Moorong Self-Efficacy Scale (MSES) is an SCI-specific measure of self-efficacy. Individuals with SCI are required to rate their confidence in their ability to perform 16 tasks, using a seven-point Likert scale (1 = very uncertain to 7 = very certain). The MSES consists of two factors: daily activities (e.g., I can maintain my personal hygiene with or without help), and social functioning (e.g., I can enjoy spending time with my friends).

3.9 Data Collection Procedure

Data collection is a systematic process of accumulating observations or measurements. Whether performing research for business, health, governmental or academic purposes, data collection allows researchers to acquire first-hand knowledge and original insights into the research problem/question.

The researcher chooses to collect quantitative data and compiled a questionnaire that includes socio-demographic, disease-related questions, and MSES. For the study researcher collected data from the participants by following the instructions are given on the "MSES". Before beginning the collection of data, the researcher made sure of inclusion and exclusion criteria and choose participants accordingly. The researcher himself acted as a data collector. After screening the participants, the data collector took information directly meeting them at the study site.

Before approaching the participants, the collector took potential precautions to avoid any possible difficulties and ruled out any chance of participant's discomfort. Participants who had the reading ability administered the questionnaire on own-self. Before collecting information, the study aims and purpose were explained to the participants. The participants or careers read (if they can) the \ information sheet and consent form. Participants who were unable to read the researcher were explained the information sheet and the consent form. All the participants had the opportunities to ask any study-related questions and if they showed interest to participatein the study, they could sign in the consent form willingly.

The data collector took only the participant's response to the items of the questionnaire to assure accuracy and consistency. The collector gathered disease-related information and made sure the validity of socio-demographic information validity from the participant's assessment book provided by the Halfway Hostel, SCI, CRP, Savar. The researcher collected data by structured questionnaire, pen, pencil, and paper.

3.10 Data Analysis

Data were analyzed with Statistical Package for Social sciences (SPSS) version 25. The researcher analyzed the data by descriptive statistics using Frequency, Percentage (%), Pie diagram, Bar diagram, 95% confidence interval, Interquartile Range (IQR) and also showed the association by non-parametric Chi-Square test.

95% Confidence Interval (CI)

A 95% confidence interval (CI) of the mean is a range with an upper and lower number calculated from a sample. Because the true population mean is unknown, this range identifies possible values that the mean could be. If multiple samples were drawn from the same population and a 95% CI counted for each sample, we would anticipate the population mean to be found within 95% of these CIs. CIs are sensitive to variability in the population (spread of values) and sample size.

Calculation of 95% CI: To calculate the confidence interval, start by computing the mean and standard error of the sample. Must calculate an upper and low score for the confidence interval using the z-score for the chosen confidence level. For 95% CI z-score is ±1.96.

Confidence interval formula = $\bar{\boldsymbol{x}} \pm \boldsymbol{Z} \times \frac{\boldsymbol{s}}{\sqrt{\boldsymbol{n}}}$

Here, $\bar{\boldsymbol{x}}$ is the mean

$\boldsymbol{Z}$ is the chosen Z-value (1.96 for 95%)

$\boldsymbol{s}$ is the standard error

$\boldsymbol{n}$is the sample size

The standard error is divided by the square root on sample size, and then multiply the sum of this calculation by the z-score (1.96 for 95%). Finally, subtract the value of this calculation from the sample mean for the lower interval score, and the upper interval score adds the value of this calculation from the sample mean.

The narrower the interval (upper and lower values), the more precise is our estimate.

Interquartile Range (IQR): The interquartile range is a measure of where the "middle fifty" is in a data set. Where a range is a measure of where the beginning and end are in a set, an interquartile range is a measure of where the bulk of the values lie. The first and third quartiles are also sometimes called the 25th and 75th percentiles because those are the equivalent figures when the data set is divided into percent rather than quarters.

The IQR formula is:

$$\mathbf{IQR = Q_3 - Q_1}$$

Where Q_3 is the upper quartile and Q_1 is the lower quartile.

The IQR is used to measure how spread out the data points in a set are from the mean of the data set. The higher the IQR, the more spread out the data points; in contrast, the smaller the IQR, the more bunched up the data points are around the mean. The IQR range is one of many measurements used to measure how spread out the data points in a data set are.

Chi-Square ($\chi 2$) Test:

Chi-square ($\chi 2$) Test is the most popular discrete data hypothesis testing method. It is a non-parametric test of statistical significance for bivariate tabular analysis with a contingency table. In this study, Chi-square ($\chi 2$) test was done to measure the associations between two variables. It was used to test the statistical significance of results reported in bivariate tables.

Assumption

Different and Independent variable

Variables were quantitative

Normal Distribution of the variable

Formula: the test statistics follow –

$$\boldsymbol{\chi^2 = \Sigma_{i=1}^{k} \frac{(O - E)^2}{E}}$$

Here,

$\boldsymbol{\chi^2}$ = Chi square value

$\boldsymbol{\Sigma}$ = The sum of

$\boldsymbol{O}$ = Observed count

$\boldsymbol{E}$ = Expected count

Chi-square is the sum of the squared differences between observed ($\boldsymbol{O}$) and the expected($\boldsymbol{E}$) data divided by expected ($\boldsymbol{E}$) data in all possible categories.

Level of significance

The researcher has used a 5% level of significance to test the hypothesis. If the p-value for the calculated $\boldsymbol{\chi^2}$ is $p<0.05$ resolve that there is a significant association between the two variables.

3.11 Ethical Consideration

The researcher maintained some ethical considerations by following the Bangladesh Medical Research Council (BMRC) guideline & WHO research guideline. A research proposal was submitted to the Physiotherapy Department of Bangladesh Health Professions Institute (BHPI) for approval and the proposal was approved by the faculty members and given permission initially from the supervisor of the research project and the course coordinator before conducting the study. The proposal of the dissertation including methodology was presented to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) for oral presentation defense was done in front of the IRB. Then the necessary information was approved by Institutional Review Board (IRB) and was permitted to do this research. After getting the permission of doing this study from the academic institute the researcher initiated the study. The researcher had been taken permission for data collection from the SCI unit of Savar, CRP. The participants would be informed before inviting participation in the study. A written consent form was used to take the permission of each participant for the study. The researcher ensured that all participants were informed about their rights and reserves and the aim and objectives of the study. All kinds of confidentiality were highly maintained. The researcher ensured not to leak out any type of confidentiality. All rights of the participants were reserved and the researcher was accountable to the participant to answer any type of study-related question.

3.12 Informed Consent

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

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

The participants were informed clearly that their information would be kept confidential, their names won't appear in any report or publications. Their data will be stored safely and only the related persons with this study will have the access to this information. They were assured that confidentiality will be provided to the fullest extent.

The investigator assured the participants that the study would not be harmful to them. It was explained that there might not be a direct benefit from the study for the participants but in the future cases like them might get benefit from it. They were also assured that their decision not to volunteer will not affect the treatment that they are receiving and their relationship with the staff of CRP either then or in the future.

The participants had the right to withdraw their signed consent and discontinue participation at any time for any reason without prejudice to present or future care at CRP. With their withdrawal from the study, all the associated data collected will be destroyed immediately.

The investigator also informed that the participants were free to ask any study-related questions. They were also free to contact the supervisor of this study if they had any questions regarding the whole process or about their rights as participants in the study.

The investigator received written consent from every participant after making sure of their full understanding including signature. So, the participant assured that they could

understand the consent form and their participation was voluntary. Information from this study was anonymously coded to ensure confidentiality and was not personally identified in any publication containing the result of this study.

3.13 Rigor of the study

A rigorous manner was maintained to conduct the study. The study was conducted cleanly and systemically. During the data collection, it was ensured that participants were not influenced by experience. The answer was accepted whether they were in a negative or positive impression. No leading questions were asked. The participant information was coded accurately checked by the supervisor to eliminate any possible errors. The entire information was managed with confidentiality. In the result section, the outcome was not influenced by showing any personal interpretation. Every section of the study was checked & rechecked by the research supervisor.

CHAPTER – IV RESULTS

4.1 Age group of the participants

There were several age groups among 45 participants. The participants with 18 – 27 years were 51.1% (n = 23), 28 – 37 years were 13.3% (n = 6), 38 – 47 years were 22.2% (n = 10), 48 – 57 years were 11.1% (n = 5) and over 58 years were 2.2% (n = 1).

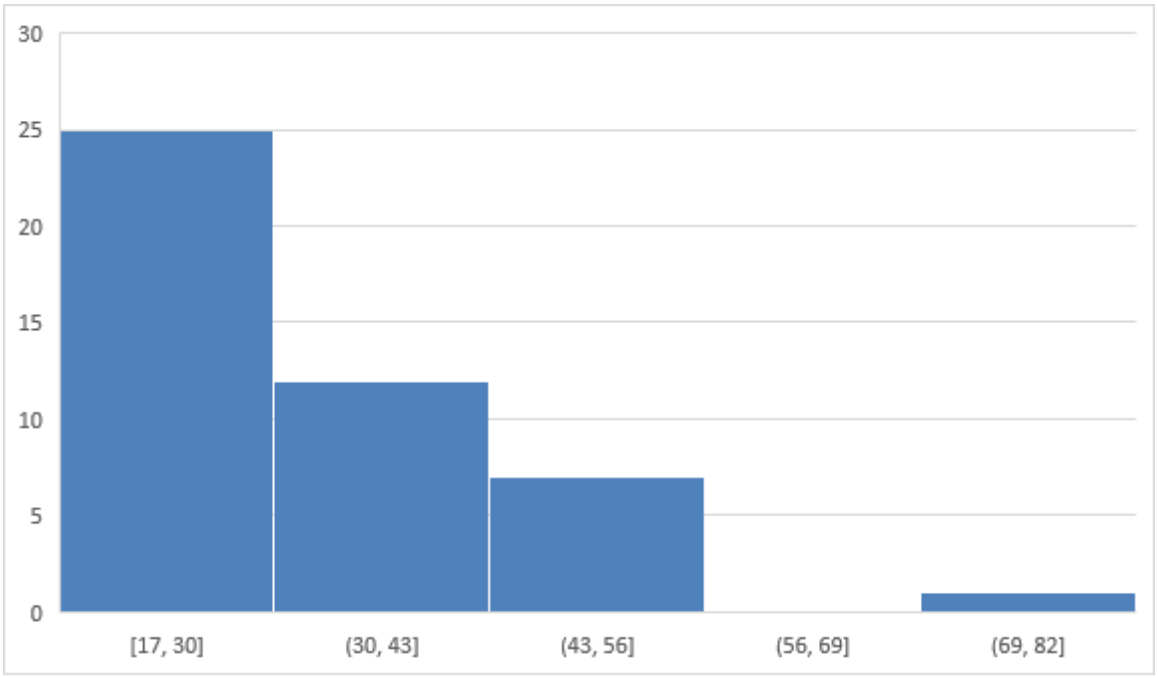


Figure-1: Age group of the participants

4.2 Gender of Participants

Among 45 participants, most of them were Male 86.7% (n = 39) and Female were 13.3% (n = 6).

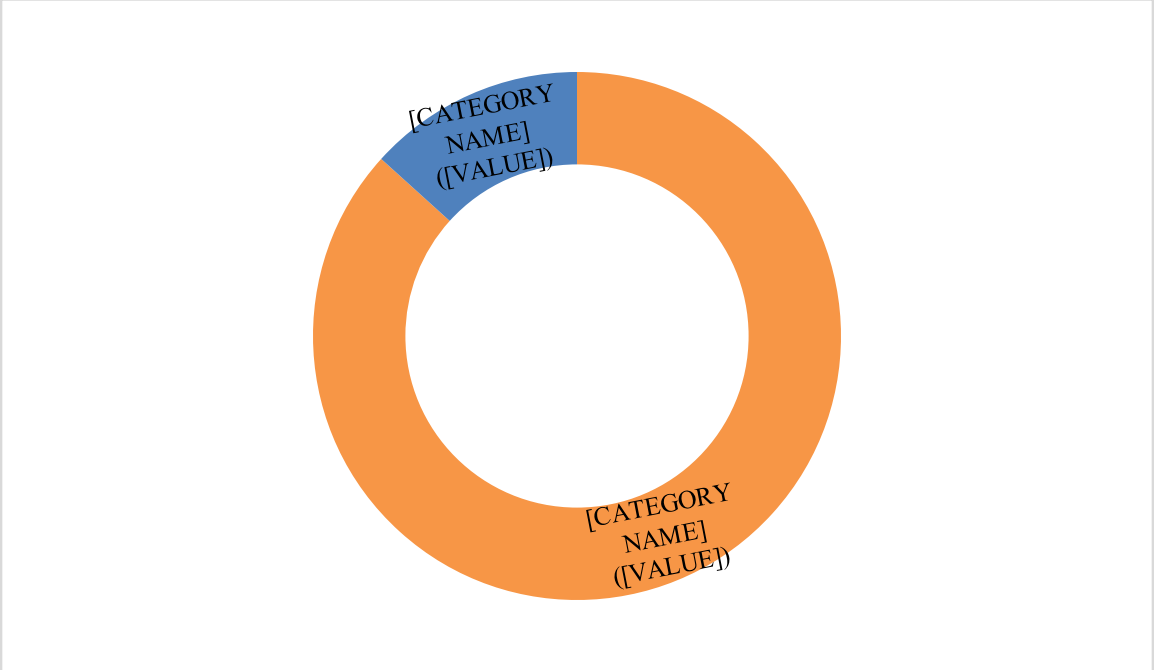


Figure-2: Gender of Participants

4.3 Marital status of participants

There were 62.2% (n = 28) participants were married, 35.6% (n = 16) participants were unmarried and 2.2% (n = 1) participants were widowed among 45 participants.

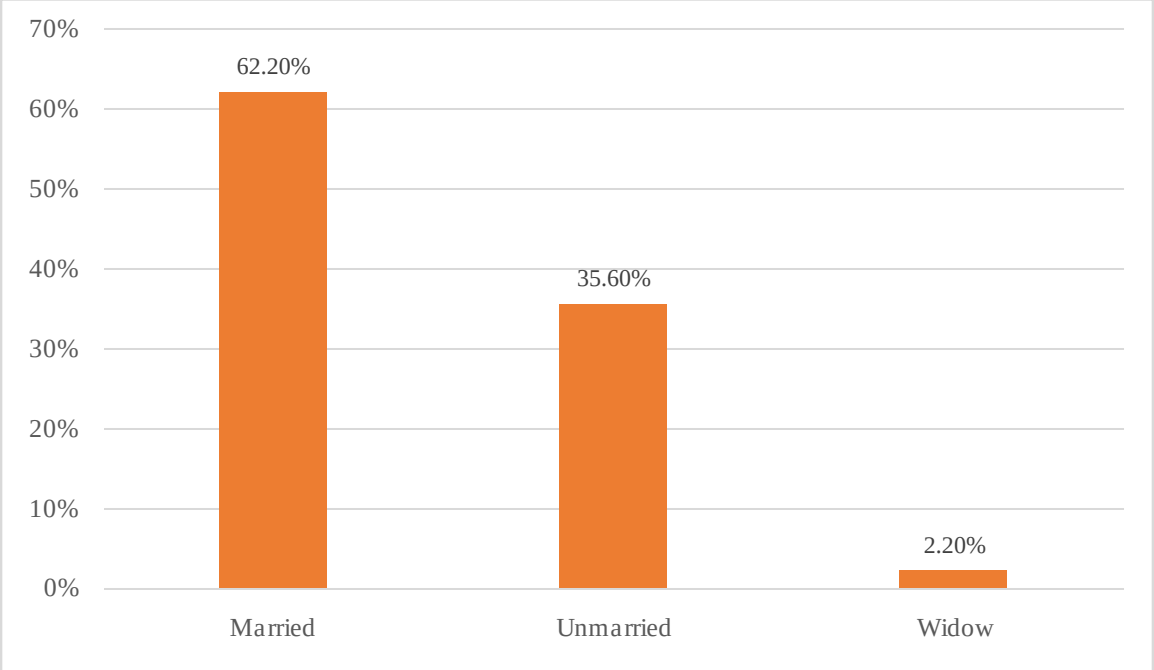


Figure-3: Marital status of participants

4.4 Educational qualification of participants

Out of 45 participants, there were 15.6% (n = 7) illiterate, 33.3% (n = 15) passed primary level, 40% (n = 18) passed S.S.C level, 6.7% (n = 3) passed H.S.C, 2.2% (n = 1) passed post-graduation and 2.2% (n = 1) included in others.

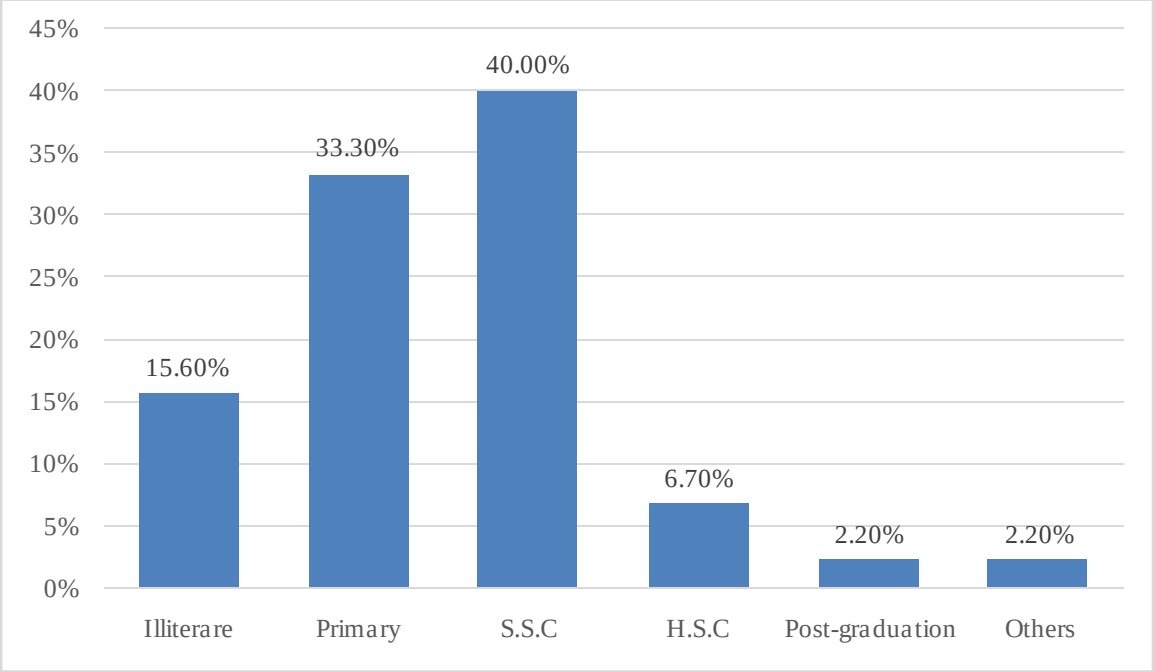


Figure-4: Educational qualification of participants

4.5 Participant's Occupation

Participants were occupied with service, business, day labor, housewife and others before injury. Among 45 participants, 26.7% (n = 12) were in service, 11.1% (n= 5) were in business, 33.3% (n = 15) were day laborer, 8.9% (n = 4) were housewife and 20% (n = 9) were engaged in other occupation.

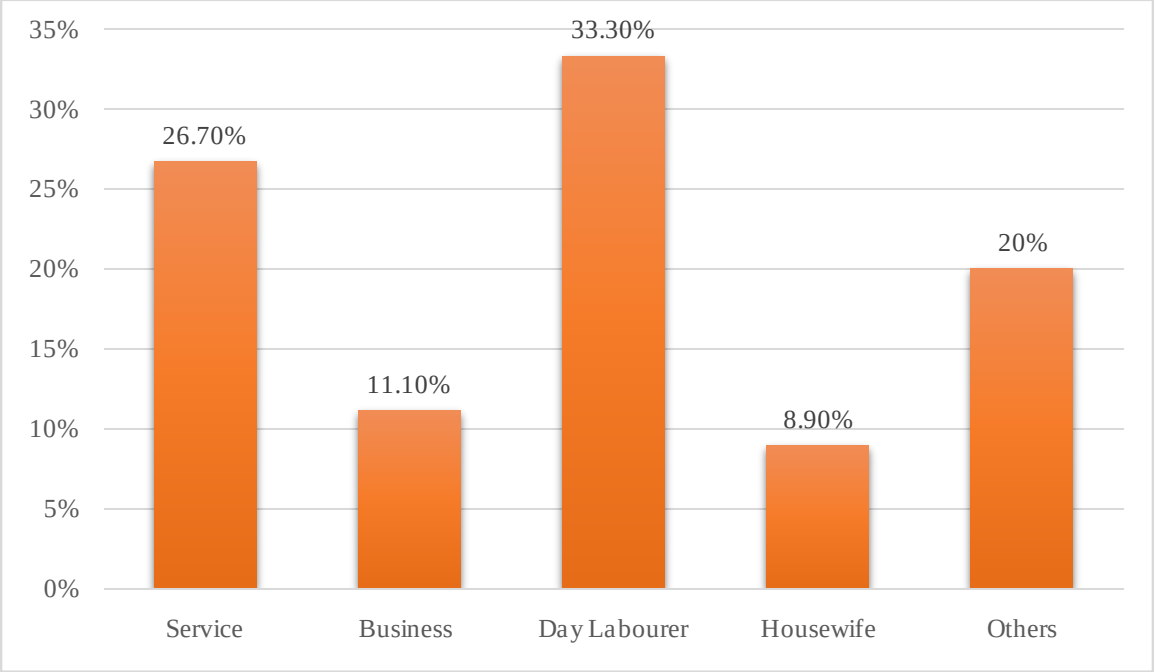


Figure-5: Participant's Occupation

4.6 Completeness of lesion of the participants

Most of the participants were Complete-A according to ASIA impairment scale (AIS).71.1% (n= 32) were Complete-A, 13.3% (n = 6) were Incomplete-B, 8.9% (n = 4) were Incomplete-C and 6.7% (n = 3) were Incomplete-D among 45 participants.

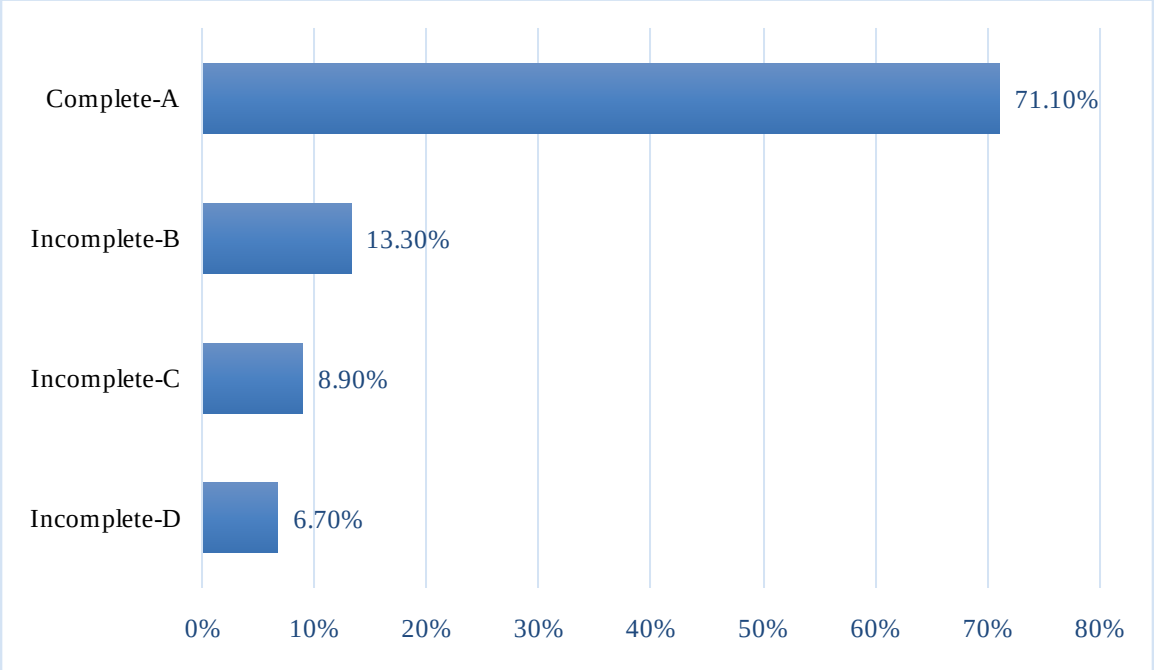


Figure-6: Completeness of lesion of the participants

4.7 Cause of lesion of the participants

The causes of spinal cord injury can be traumatic or non-traumatic. Out of 45 participants, most of their lesions were caused by trauma. Spinal cord injury due to traumatic cause were 95.6% (n = 43) and non-traumatic cause were 4.4% (n = 2)

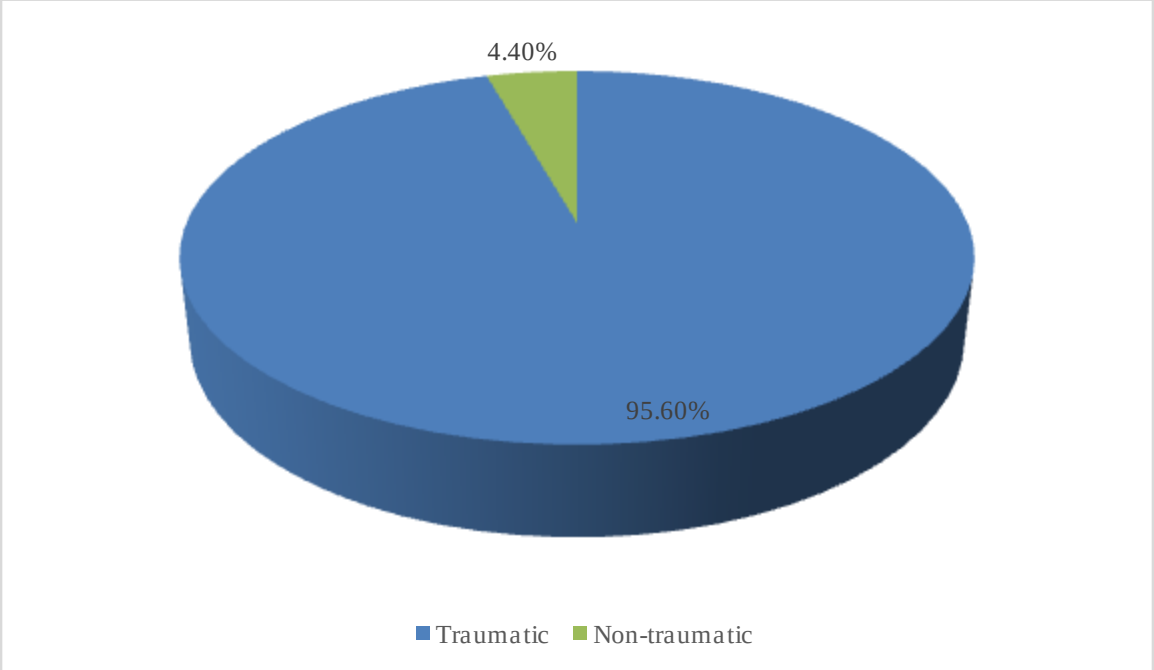


Figure-7: Cause of lesion of the participants

4.8 Type of paralysis of the participants

Out of 45 participants, paraplegia was 71.1% (n = 32) and tetraplegia were 28.9% (n = 13).

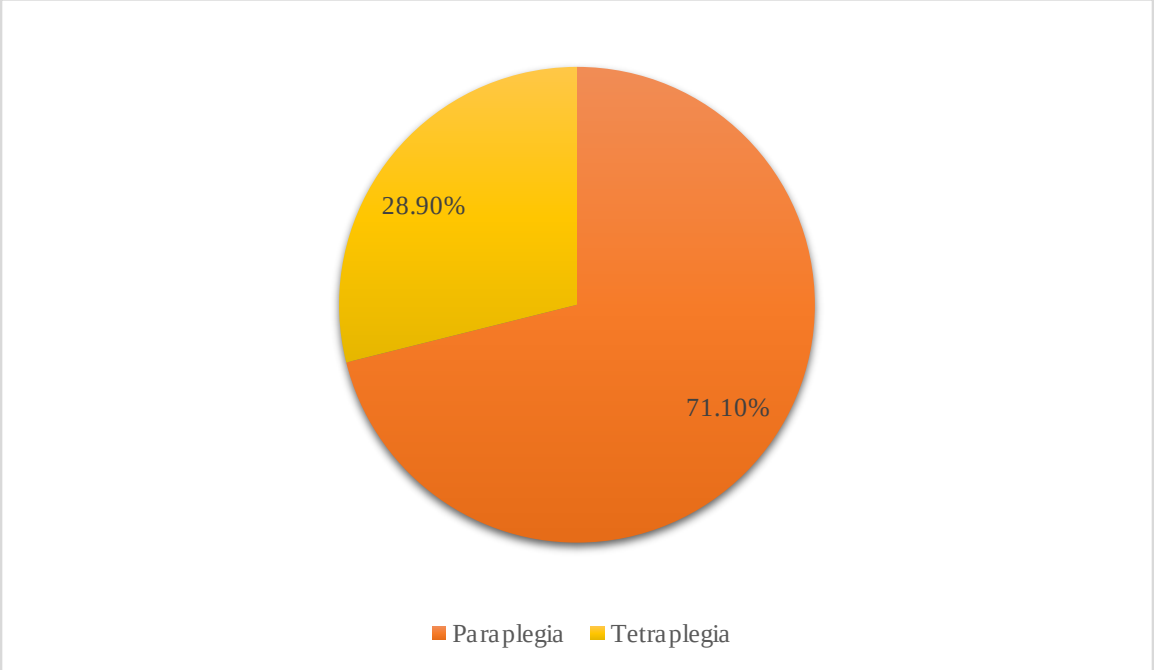


Figure-8: Type of paralysis of the participants

Table 1: Characteristics of all participants (n = 45)

Variables	n (%)	Variables	n (%)
Age of participants		**Occupation**	
18 - 27	23 (51.1)	Service	12 (26.7)
38 - 47	6 (13.3)	Business	5 (11.1)
48 - 57	10 (22.2)	Day Laborer	15 (33.3)
>58	1 (2.2)	Housewife	4 (8.9)
Gender of participants		Other	9 (20.0)
Male	39 (86.7)	**Completeness of lesion**	
Female	6 (13.3)	Complete-A	32 (71.1)
Marital status of participants		Incomplete-B	6 (13.3)
Married	28 (62.2)	Incomplete-C	4 (8.9)
Unmarried	16 (35.6)	Incomplete-D	3 (6.7)
Widow	1 (2.2)	**Cause of lesion**	
Educational qualification		Traumatic	43 (95.6)
Illiterate	7 (15.6)	Non-traumatic	2 (4.4)
Primary	15 (33.3)	**Types of paralysis**	
S.S.C	18 (40.0)	Paraplegia	32 (71.1)
H.S.C	3 (6.7)	Tetraplegia	13 (28.9)
Graduation	-		
Post-graduation	1 (2.2)		
Others	1 (2.2)		
Living area			
Urban	2 (4.4)		
Semi-urban	4 (8.9)		
Rural	39 (86.7)		

The overall characteristics of all participants (n = 45) are shown in the aforementioned table (table 1).

Table 2: Results of the questionnaire for all participants (n = 45)

Variables	Strongly disagree n (%)	Disagree n (%)	Slightly disagree n (%)	Neutral n (%)	Slightly agree n (%)	Agree n (%)	Strongly agree n (%)
Personal hygiene	-	2 (4.4)	1 (2.2)	-	4 (8.9)	38 (84.4)	-
Bowel accidents	2 (4.4)	19 (42.2)	2 (4.4)	8 (17.8)	8 (17.8)	14 (31.1)	-
Household participation	-	9 (20.0)	-	-	15 (33.3)	21 (46.7)	-
Family relationships	-	-	-	-	-	43 (95.6)	2 (4.4)
Getting out of the house	-	10 (22.2)	2 (4.4)	-	2 (4.4)	30 (66.7)	1 (2.2)
Sexual relationships	3 (6.7)	9 (20.0)	-	2 (4.4)	8 (17.8)	6 (13.3)	-
Spending time with friends	-	1 (2.2)	-	-	7 (15.6)	37 (82.2)	-
Hobby and leisure pursuits	-	10 (22.2)	1 (2.2)	-	7 (15.6)	27 (60.0)	-
Maintaining contacts	-	8 (17.8)	1 (2.2)	-	10 (22.2)	25 (55.6)	1 (2.2)
Dealing with unexpected problems	-	10 (22.2)	3 (6.7)	-	14 (31.1)	18 (40.0)	-
Able to work in the future	-	1 (2.2)	1 (2.2)	-	6 (13.3)	34 (75.6)	3 (6.7)
Accomplish things	-	5 (11.1)	-	-	15 (33.3)	25 (55.6)	-
Persistence in learning things	-	1 (2.2)	-	-	3 (6.7)	39 (86.7)	2 (4.4)
Meeting people	-	7 (15.6)	1 (2.2)	-	6 (13.3)	30 (66.7)	1 (2.2)
Good health & well-being	-	2 (4.4)	1 (2.2)	-	8 (17.8)	33 (73.3)	1 (2.2)
Fulfilling lifestyle	-	-	-	-	2 (4.4)	31 (68.9)	12 (26.7)

MSES Moorong Self-efficacy Scale

4.9 Performance of the participants according to the Moorong Self-Efficacy Scale (MSES)

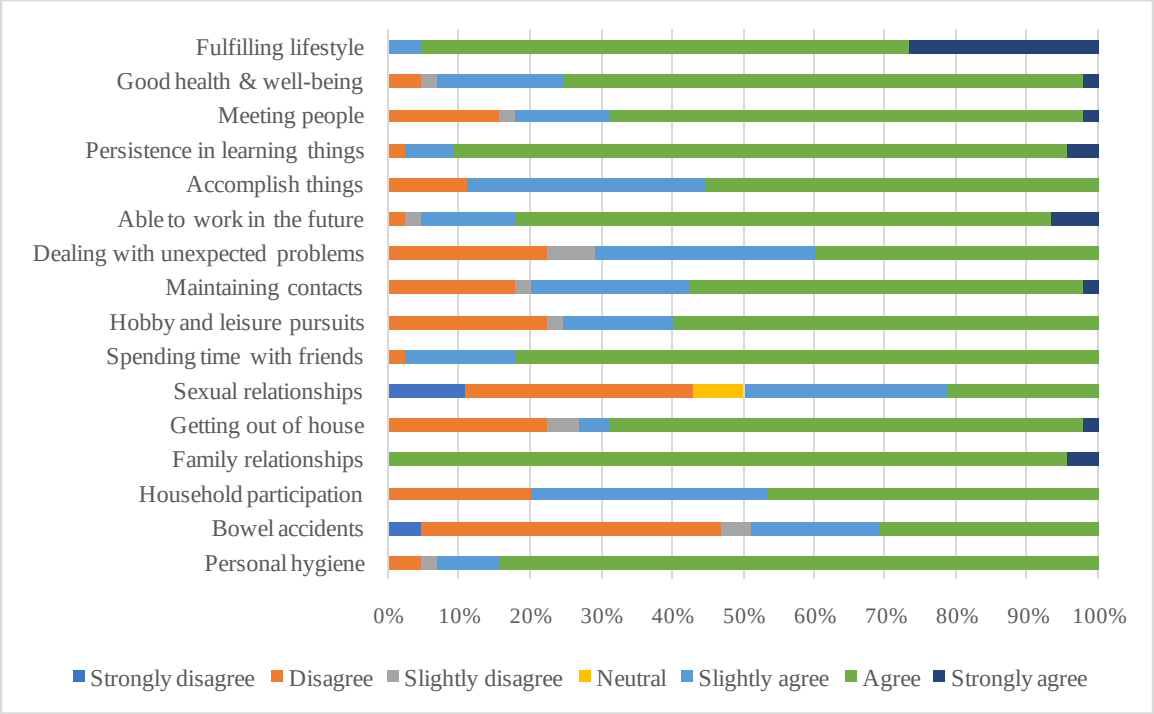


Figure-9: Results of the questionnaire for all participants (n = 45)

All the participants (n= 45) performed for the 16 items of the MSES. Each item has 7-point Likert scale responses. All the participants choose the proper response according to their situation and condition and the responses were not manipulated by the interviewer. An overall summary is given in (Table 2).

The first item is about maintaining personal hygiene with or without help. Among 45 participants 4.4% (n = 2) responded disagree, 2.2% (n = 1) responded slightly disagree, 8.9% (n = 4) responded slightly agree and 84.4% (n = 38) responded agree. None responded with strongly disagree, neutral, or strongly agree. Most of the participants responded with agree.

About avoiding bowel accidents 4.4% (n = 2) responded strongly disagree, 42.2% (n = 19) responded disagree, 4.4% (n = 2) responded slightly disagree, 17.8% (n = 8) responded neutral, 17.8% (n = 8) responded slightly agree and 31.1% (n = 14) responded agree. Strongly agree response is absent in the item. Most of the participants responded with disagree.

Participation as an active member of the household. This item was responded 20% (n = 9) as disagree, 33.3% (n = 15) as slightly agree and 46.7% (n = 21) as agree. Most of the responses were recorded as agree and none were recorded as strongly disagree, slightly disagree, and strongly agree.

Maintaining relationships in the family, this item is the most agreed item among 16 items. None responded with strongly disagree, disagree, slightly disagree, neutral, and slightly agree. 95.6% (n = 43) of participants responded with agree and 4.4% (n = 2) responded strongly agree.

The item regarding getting out of house whenever need is responded 22.2% (n = 10) as disagree, 4.4% (n = 2) as slightly disagree, 4.4% (n = 2) as slightly agree, 66.7% (n = 30) as agree and 2.2% (n = 1) as strongly agree. Most of the response came out as agree.

Having a satisfying sexual relationship, the item was performed by only married participants 28 of total participants. So, 16 unmarrieds and 1 widowed participant didn't perform in the item. Among 28 performers 6.7% (n = 3) responded strongly disagree, 20% (n = 9) responded disagree, 4.4% (n = 2) responded neutral, 17.8% (n = 8) responded slightly agree and 13.3% (n = 6) responded agree. The highest response came as disagree.

Enjoy spending time with friends, 2.2% (n = 1) responded disagree, 15.6% (n = 7) responded slightly agree and 82.2% (n = 37) responded agree. Agree is the most recorded response for this item.

Finding hobbies and leisure pursuits of interest, most response for this item is agree 60% (n = 27). 22.2% (n = 10) responded disagree. 2.2% (n = 1) slightly disagree and 15.6% (n = 7) responded slightly agree. None responded strongly disagree, neutral and strongly agree.

Maintaining contact with important people, this item was responded 17.8% (n = 8) as disagree, 2.2% (n = 1) as slightly disagree, 22.2% (n = 10) as slightly agree, 55.6% (n = 25) as agree and 2.2% (n = 1) as strongly agree. Agree is the most recorded response for this item. Nobody responded as strongly disagree or neutral.

Dealing with unexpected problems that come up, among the 45 participants out of 7 Likert responses 22.2% (n = 10) responded disagree, 6.7% (n = 3) responded slightly disagree, 31.1% (n = 14) responded slightly agree and 40% (n = 18) responded agree. None was recorded as neutral, strongly agree, and strongly disagree. Agree is the highest response.

Imagine being able to work at some time in the future, among 45 participants this item was responded 2.2% (n = 1) as disagree, 2.2% (n = 1) as slightly disagree, 13.3% (n = 6) as slightly agree, 75.6% (n = 34) as agree and 6.7% (n = 3) as strongly agree. Most response came as agree. None recorded as strongly disagree and neutral.

Accomplish most things set out to do, for this item 11.1% (n = 5) responded disagree, 33.3% (n = 15) responded slightly agree and 55.6% (n = 25) responded agree. None responded as strongly disagree, slightly disagree, neutral, and strongly agree. Most responses recorded as agree.

While trying to learn something new persistence until successful, out of 45 participants 2.2% (n = 1) responded disagree, 6.7% (n = 3) responded slightly agree, 86.7% (n = 39) responded agree and 4.4% (n = 2) responded strongly agree. Nobody responded as strongly disagree, slightly disagree, and neutral. The highest response was recorded as agree.

Meeting people and able to make first contact, 15.6% (n = 7) responded disagree, 2.2% (n = 1) responded slightly disagree, 13.3% (n = 6) responded slightly agree, 66.67% (n = 30) agree and 2.2% (n = 1) responded strongly agree for this item. None recorded as strongly disagree and neutral. Most of the participants responded with agree.

Maintaining good health and well-being, for this item out of 45 participants 4.4% (n = 2) responded disagree, 2.2 (n = 1) responded slightly disagree, 17.8% (n = 8) responded slightly agree, 73.3% (n = 33) responded agree and 2.2% (n = 1) responded strongly

agree. None responded with strongly disagree and neutral. Most of the participant choose the agree as response.

Imagine having a fulfilling lifestyle in the future, this item is mostly responded as agree by 68.9% (n = 31) out of 45 participants. 26.7% (n = 12) responded strongly agree. And 4.4% (n = 2) responded slightly agree. None responded slightly disagree, disagree, slightly disagree, and neutral. Among 16 items this item showed the highest strongly agree response.

A graphical brief is shown in (figure 9) reviewing the participants' performance on 16 items of MSES.

Table 3: 95% CI and IQR of variables

Variables	95% CI		IQR
	(UL)	(LL)	
Monthly family income	11,128.80	17,804.54	7000

MSES variables	(UL)	(LL)
Personal hygiene	5.38	5.95
Bowel accidents	3.21	4.35
Household participation	4.41	5.32
Family relationships	5.98	6.11
Getting out of the house	4.44	5.48
Sexual relationships	3.03	4.47
Spending time with friends	5.55	5.96
Hobby and leisure pursuits	4.39	5.39
Maintaining contacts	4.56	5.49
Dealing with unexpected problems	4.12	5.08
Able to work in the future	5.58	6.03
Accomplish things	4.85	5.60
Persistence in learning things	5.68	6.09
Meeting people	4.75	5.65
Good health & well-being	5.30	5.90
Fulfilling lifestyle	6.07	6.38

MSES Moorong Self-Efficacy Scale, 95% CI 95% Confidence Interval, UL upper level, LL lower level, IQR Interquartile Range

4.10 Association in between Self-Efficacy & Socio-demographic information

Table-4: Association in between MSES & Age

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Age	Personal hygiene	14.596	0.264
	Bowel accidents	23.075	0.112
	Household participation	13.371	0.100
	Family relationships	2.855	0.582
	Getting out of the house	15.022	0.523
	Sexual relationships	14.622	0.552
	Spending time with friends	10.727	0.218
	Hobby and leisure pursuits	10.206	0.598
	Maintaining contacts	18.557	0.292
	Dealing with unexpected problems	27.732	0.006*
	Able to work in the future	17.982	0.325
	Accomplish things	5.760	0.674
	Persistence in learning things	8.247	0.766
	Meeting people	11.270	0.792
	Good health & well-being	25.965	0.055
	Fulfilling lifestyle	5.670	0.684

*Significant ($p<0.05$)

In this study, MSES was used by the author to measure self-efficacy. MSES has 16 items among them only one item (Dealing with unexpected problems) was found as associated with socio-demographic item Age. The chi-square ($\chi 2$) value was 27.732 which was strongly significant with a p-value of 0.006 ($p>0.05$) with age.

Table-5: Association in between MSES & Gender

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Gender	Personal hygiene	7.538	0.057
	Bowel accidents	3.976	0.409
	Household participation	0.879	0.644
	Family relationships	2.435	0.119
	Getting out of the house	6.346	0.175
	Sexual relationships	4.916	0.296
	Spending time with friends	0.160	0.923
	Hobby and leisure pursuits	0.307	0.959
	Maintaining contacts	6.793	0.147
	Dealing with unexpected problems	1.223	0.748
	Able to work in the future	14.457	0.006*
	Accomplish things	0.923	0.630
	Persistence in learning things	8.166	0.043*
	Meeting people	10.096	0.039*
	Good health & well-being	2.517	0.642
	Fulfilling lifestyle	3.127	0.209

*Significant ($p<0.05$)

Among 16 MSES items, 3 items have shown an association with the Gender variable. The items (Able to work in the future) chi-square ($\chi 2$) value was 14.457 which was strongly significant with a p-value of 0.006 ($p<0.05$). The other two items (Persistence in learning things, Meeting people) also were significant where chi-square ($\chi 2$) values were accordingly 8.166, 10.096 with p-value accordingly 0.043 and 0.039 ($p<0.05$).

Table-6: Association in between MSES & Educational qualification

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Educational qualification	Personal hygiene	9.930	0.824
	Bowel accidents	19.559	0.486
	Household participation	9.596	0.477
	Family relationships	2.579	0.765
	Getting out of the house	21.983	0.341
	Sexual relationships	24.163	0.086
	Spending time with friends	6.721	0.751
	Hobby and leisure pursuits	11.670	0.704
	Maintaining contacts	16.073	0.712
	Dealing with unexpected problems	16.291	0.363
	Able to work in the future	37.003	0.012*
	Accomplish things	6.815	0.743
	Persistence in learning things	7.455	0.944
	Meeting people	14.176	0.821
	Good health & well-being	6.926	0.997
	Fulfilling lifestyle	4.245	0.936

*Significant ($p<0.05$)

Here, only one item showed a significant association with educational qualification. This item's (Able to work in the future) chi-square ($\chi 2$) value was 37.003 with a p-value of 0.012 ($p<0.05$).

Table-7: Association in between MSES & Occupation

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Occupation	Personal hygiene	7.273	0.839
	Bowel accidents	17.831	0.334
	Household participation	8.386	0.397
	Family relationships	1.439	0.837
	Getting out of the house	19.717	0.233
	Sexual relationships	16.042	0.189
	Spending time with friends	7.656	0.468
	Hobby and leisure pursuits	13.560	0.330
	Maintaining contacts	11.296	0.791
	Dealing with unexpected problems	20.873	0.052
	Able to work in the future	33.542	0.006*
	Accomplish things	7.973	0.436
	Persistence in learning things	12.244	0.426
	Meeting people	18.150	0.315
	Good health & well-being	10.943	0.813
	Fulfilling lifestyle	6.507	0.591

*Significant ($p<0.05$)

Out of 16 MSES items, only one item (Able to work in the future) was significantly associated with the Educational Qualification variable. The chi-square ($\chi 2$) value was 33.542 with a p-value of 0.006 where $p<0.05$.

Table-8: Association in between MSES & Skeletal level of injury

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Skeletal level of injury	Personal hygiene	86.536	0.000*
	Bowel accidents	75.004	0.092
	Household participation	33.551	0.299
	Family relationships	24.070	0.064
	Getting out of the house	90.900	0.006*
	Sexual relationships	51.204	0.349
	Spending time with friends	31.753	0.379
	Hobby and leisure pursuits	89.734	0.000*
	Maintaining contacts	98.535	0.001*
	Dealing with unexpected problems	37.471	0.780
	Able to work in the future	45.167	0.923
	Accomplish things	26.193	0.665
	Persistence in learning things	44.974	0.473
	Meeting people	57.717	0.560
	Good health & well-being	50.600	0.801
	Fulfilling lifestyle	61.276	0.001*

*Significant ($p<0.05$)

Among 16 items of MSES 5 items were significantly associated with participants Skeletal level of injury. For item "Personal hygiene" chi-square ($\chi 2$) value was 86.536 with a p-value of 0.000, for "Getting out of the house" chi-square ($\chi 2$) value was 90.900 with a p-value of 0.006, for "Hobby and leisure pursuits" chi-square ($\chi 2$) value was 89.734 with a p-value of 0.000, for "Maintaining contacts" chi-square ($\chi 2$) value was 98.535 with a p-value of 0.001 and for "Fulfilling lifestyle" chi-square ($\chi 2$) value was 61.276 with a p-value of 0.001. Here, all the p-values of the associated items are $p<0.05$.

Table-9: Association in between MSES & Neurological level of injury

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Neurological level of injury	Personal hygiene	91.480	0.000*
	Bowel accidents	90.656	0.016*
	Household participation	34.167	0.364
	Family relationships	25.378	0.063
	Getting out of the house	92.625	0.011*
	Sexual relationships	58.891	0.135
	Spending time with friends	27.235	0.707
	Hobby and leisure pursuits	45.405	0.580
	Maintaining contacts	84.450	0.044*
	Dealing with unexpected problems	44.687	0.609
	Able to work in the future	84.706	0.043*
	Accomplish things	32.800	0.428
	Persistence in learning things	45.385	0.581
	Meeting people	55.705	0.760
	Good health & well-being	81.406	0.070
	Fulfilling lifestyle	29.546	0.591

*Significant ($p<0.05$)

Among 16 items of MSES 5 items were significantly associated with participants Neurological level of injury. For the significant items "Personal hygiene" chi-square ($\chi 2$) value was 91.480 with a p-value of 0.000, "Bowel accidents" chi-square ($\chi 2$) value was 90.656 with a p-value of 0.016, "Getting out of the house" chi-square ($\chi 2$) value was 92.625 with a p-value of 0.011, "Maintaining contacts" chi-square ($\chi 2$) value was 84.450 with a p-value of 0.044 and "Able to work in the future" chi-square ($\chi 2$) value was 84.706 with a p-value of 0.043. Here, all the p-values of the associated items are $p<0.05$.

Table-10: Association in between MSES & Cause of lesion

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Cause of lesion	Personal hygiene	4.413	0.220
	Bowel accidents	0.828	0.935
	Household participation	0.598	0.742
	Family relationships	0.097	0.755
	Getting out of the house	1.047	0.903
	Sexual relationships	2.593	0.628
	Spending time with friends	0.453	0.798
	Hobby and leisure pursuits	1.395	0.707
	Maintaining contacts	1.674	0.795
	Dealing with unexpected problems	0.897	0.826
	Able to work in the future	0.677	0.954
	Accomplish things	1.674	0.433
	Persistence in learning things	6.360	0.095
	Meeting people	22.238	0.000*
	Good health & well-being	0.761	0.944
	Fulfilling lifestyle	0.629	0.730

*Significant ($p<0.05$)

Socio-demographic variable cause of lesion is associated with one MSES item (Meeting people) with the chi-square ($\chi 2$) value of 22.238 where the p-value was 0.000 ($p<0.05$).

Table-11: Association in between MSES & Type of paralysis

Socio-demographic variable	MSES Items	Chi-square value ($\chi 2$)	P-value
Type of paralysis	Personal hygiene	6.954	0.073
	Bowel accidents	5.856	0.210
	Household participation	10.230	0.006*
	Family relationships	0.850	0.356
	Getting out of the house	10.114	0.039*
	Sexual relationships	6.863	0.143
	Spending time with friends	6.133	0.047*
	Hobby and leisure pursuits	17.418	0.001*
	Maintaining contacts	7.348	0.119
	Dealing with unexpected problems	5.285	0.152
	Able to work in the future	8.730	0.068
	Accomplish things	5.279	0.071
	Persistence in learning things	3.312	0.346
	Meeting people	5.988	0.200
	Good health & well-being	9.026	0.060
	Fulfilling lifestyle	0.693	0.707

*Significant ($p<0.05$)

4 items of MSES were significantly associated with the Type of Paralysis variable. For the associated items "Household participation" chi-square ($\chi 2$) value was 10.230 with a p-value of 0.006, "Getting out of the house" chi-square ($\chi 2$) value was 10.114 with a p-value of 0.039, "Spending time with friends" chi-square ($\chi 2$) value was 6.133 with a p-value of 0.047 and "Hobby and leisure pursuits" chi-square ($\chi 2$) value was 17.418 with a p-value of 0.001. All the p-values of the associated items were $p<0.05$.

CHAPTER – V DISCUSSION

Spinal cord injury (SCI) impacts both physical and psychological performance and challenges all areas of a person's life. Physical aspects include limitations in strength, function, and mobility, loss of sensation, spasm, pain, and changes in bladder, bowel, and sexual functioning. Psychological consequences can include elevated depressive mood, anxiety, and fatigue, which also may have a negative influence on the quality of life. Recently, there has been seen an increased interest in clinical research contribution of self-efficacy in people with SCI. It is a key component of adjustment after SCI along with other chronic health conditions (van Diemen et al., 2020). In this study, Moorong Self-efficacy Scale (MSES) was used to measure the level of self-efficacy of spinal cord injured persons who have completed their rehabilitation. Miller (2009) concluded that individuals having low self-efficacy may benefit from proper counseling aimed at increasing confidence in their abilities. Kang et al. (2017) discussed that number of male SCI patients is more than that of female SCI patients and showed a male: female ratio ranging from 1.1: 1 to 6.69: 1 among the developed country. This study found, male participants 86.7% (n= 39) were higher than female participants 13.3% (n= 6). Most of the participants were male following injury or trauma. Middleton et al. (2003) showed that among 36 participants 77.8% (n= 28) were male and 22.2% (n= 8) were female. So, it seems that male is more vulnerable than female participants in spinal cord injury.

This study showed that most participants were under the 18 – 27 age group which was 51.1% (n = 23). Kang et al. (2017) found that the age range between 15 – 29 tends to be more vulnerable to fall in grip of spinal cord injury. Similarly, another study discussed that young individuals are more likely to have suffered from a neurological injury or SCI (Kumar et al., 2018).

In this study among 45 participants, most of the participants were occupied with day laborers 33.3% (n= 15) and most of them were from rural areas 86.7% (39) thus fall from tree or height were the most common cause of trauma. Similarly, a study discussed that

Laborers, farmers were 3 SCI groups with high risk, the cause of high falls was more believably related (Kang et al., 2017).

Among all the participants in the current study, most of them were complete-A 71.1% (n= 32) according to ASIA Impairment Scale (AIS). According to Ning et al. (2012) AIS grade A, it was observed most frequently and this trend was agreed for most Asian studies. Again Middleton et al. (2003) studied with 36 participants among them complete-A were 58.3% (n= 21) and incomplete were 41.7% (n= 15).

Among 45 participants most of them were paraplegic 71.1% (n= 32) and tetraplegic were 28.9% (n= 13). There is no significant difference between the type of injury (paraplegia and tetraplegia), anyone with spinal cord injury would be paraplegia or tetraplegia.

Most of the participant's injuries were caused by trauma 95.6% (n= 43) mostly fall from height and RTA. According to Ning et al. (2012) traumatic SCI is more frequent in Asia compared to other world regions.

Spinal cord injury (SCI) is a health condition, which has not only severe physical but may also have psychological and social consequences. The consequences depend on the level and completeness of the lesion, on facilitators and barriers in the circumferent environment as well as characteristics of the person. Performance of the affected individuals, even with the same lesion level, may therefore vary substantially (Geyh et al., 2012). Self-efficacy is an important factor for patients with a spinal cord injury in their continual self-care and rehabilitation behaviors.

This study found an association between age and self-efficacy levels among SCI participants. The associated item was “Dealing with unexpected problems” with a p-value of 0.006 ($p<0.05$). This study also found an association between Gender and self-efficacy levels among participants. The items were “Able to work in the future” with a p-value of 0.006, “Persistence in learning things” with a p-value of 0.043, and “Meeting people” with a p-value of 0.039. ($p<0.05$). Amtmann et al. (2012) validated that, age and sex might theoretically be influenced by an individual’s disease self-efficacy. Although they found a low-level correlation between age and self-efficacy score.

In this study, there was found an association between educational qualification and Self-efficacy levels among SCI participants. The related item was “Able to work in the future” with a p-value of 0.012 ($p<0.05$).Amtmann et al. (2012) suggested that people with higher study levels report higher self-efficacy.

This study showed an association between the Occupation and Self-Efficacy levels among SCI people. “Able to work in the future” this item was significant with a p-value of 0.006 ($p<0.05$). Kim & Cho (2017)showed an association between occupation after injury and self-efficacy, self-care knowledge, and self-care behaviors.

Skeletal level of injury was also associated with self-efficacy levels of SCI people in the current study. “Personal hygiene”, “Getting out of the house”, “Hobby and leisure pursuits”, “Maintaining contacts”, and “Fulfilling lifestyle” these items were significant with $p<0.05$.

This study found an association between neurological level of injury and Self-Efficacy levels of people with SCI. The following items “Personal hygiene”, “Bowel accidents”, “Getting out of the house”, “Maintaining contacts”, “Able to work in the future” were significant with p-values accordingly 0.000, 0.016, 0.011, 0.044, 0.043 ($p<0.05$).

The variable “Cause of lesion” was associated with Self-Efficacy levels among SCI people. The item “Meeting people” was significant with a p-value of 0.000 ($p<0.05$).

In this study, 4 items of MSES were found associated with the type of paralysis. Significant items were “Household participation” with a p-value of 0.006, “Getting out of the house” with a p-value of 0.039, “Spending time with friends” with a p-value of 0.047,and “Hobby and leisure pursuits” with a p-value of 0.001.

Though this study found a few associations between socio-demographic variables and Self-Efficacy (MSES) items. Results may not be fully accurate. Miller (2009) revealed that neither MSES items nor the total score were significantly associated with years since injury, injury level, or living situation. The author also reported that there was no relationship between self-efficacy and demographic variables.

Limitation of the Study:

There might be some limits in every research. The small sample size may appoint as a limitation in this study. As the study was conducted at a selected area of the Center for the Rehabilitation of the Paralysed (CRP) in the Spinal Cord Injury (SCI) unit which might not interpret the whole population with SCI in the circumstance of Bangladesh. Another major limitation was a shortage of time and resources which have a great impact on the study and affect the result to generalize for the wider population. As the study period was short so an adequate number of samples could not arrange for the study.

CHAPTER – VI CONCLUSION AND RECOMMENDATION

Conclusion

Spinal cord injury (SCI) causes one of the heaviest emotional and physical challenges to face a human being, with annihilating changes to an individual's physical functioning and independence; social, sexual, and vocational roles; and lifestyle. It is a major cause of disability in Asia as well as in Bangladesh. Every year many people are affected by spinal cord injury with traumatic or non-traumatic causes. Spinal cord injury can affect any person, at any age, at any time but active younger males are more prompt to having spinal cord injury than females. Spinal cord injury negatively affects not only the patient's physical condition but also all aspects of their lives more importantly their mental status and quality of life. Psychiatric disorders among spinal cord injury patients and appear to be more common in disabled persons than in nondisabled people. Psychological variables are well recognized as influencing health outcomes after the onset of SCI. Successful rehabilitation involves reintegration into the community and psychological adjustment to disability and changed life circumstances.

One psychological variable that has been the subject of a recent study concerning health outcomes in people with a range of medical conditions is self-efficacy. Self-efficacy has gained interest in SCI research in the last decades. Self-efficacy is known as the belief that each individual has about his or her ability to acquire desired results when executing particular activities and pursuing desired goals. Enhancing self-efficacy has been described as a target in the rehabilitation of SCI. For instance, this can be done by exercise, through improving physical condition and functional abilities, or by improving self-management abilities through a creative way of thinking. Self-efficacy has a central role in the Spinal Cord Injury Adjustment Model (SCIAM). Enhanced self-efficacy is associated with positive adjustment in the future within this model. Often the outcome discussed in studies focusing on self-efficacy relates to a person's participation. Self-efficacy is important to the psychosocial accommodation of all persons, including those with disabilities.

Recommendations

Physical and psychological co-morbidities are inevitable as a consequence of having Spinal Cord Injury (SCI). It has a negative influence on the quality of life and functioning. Self-efficacy in persons with SCI is important within the rehabilitation of individuals with SCI. A small number of studies have also examined self-efficacy in people with SCI but none has been done in the perspective of Bangladesh's population. If other authors desire to carry out a further related study, they are recommended to do their study with an increased sample size, if possible, from a whole country perspective. Also, self-efficacy of people with SCI in the community to find out the relation with community reintegration or self-efficacy in vocational rehabilitation to increase the likelihood of successful employment outcomes can be recommended.

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Appendices

Appendix – A: Review and ethical approval

Date: 16 June, 2021.

The Chairman

Institution Review Board (IRB)

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka-1343, Bangladesh.

Subject: Application for review and ethical approval.

Dear Sir,

With due respect, I am MD. AHADUL MANNA, student of 4th professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI), academic institute of Centre for the Rehabilitation of the Paralyzed (CRP) under the faculty of medicine of University of Dhaka. This is a four-year full-time course. Conducting thesis project is partial fulfilment of the requirement for the degree of B.Sc. in Physiotherapy. I have to conduct a thesis entitled, **"SELF-EFFICACY OF PEOPLE WITH SPINAL CORD INJURY AFTER REHABILITATION"** under the supervision of MD. SHOFIQUL ISLAM, Associate professor & Head, department of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343. The purpose of this study is to evaluate the level of self-efficacy of people with spinal cord injury after rehabilitation. I would like to assure that anything of my study will not be harmful for the participants. Informed consent will be received from all participants, data will be kept confidential.

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

Sincerely,

Manna

MD. AHADUL MANNA

4th professional B.Sc. in Physiotherapy

Roll No.: 33

Session: 2015-16, ID: 112150304

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

Recommendation from the thesis supervisor:

Shofiq 16.06.21

MD. SHOFIQUL ISLAM

Associate professor & Head, Department of Physiotherapy, BHPI

CRP, Savar, Dhaka-1343, Bangladesh.

Appendix – B: Permission for data collection

Permission Letter

Date:16 June, 2021

The Head of Department

Department of physiotherapy

Bangladesh Health Professions Institute (BHPI)

Chapain, Savar, Dhaka-1343.

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

Sir,

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

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

Yours faithfully,

Manna

MD. AHADUL MANNA

4th Year

B.Sc. in Physiotherapy

Class Roll:33; Session: 2015-16

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

CRP-Chapain, Savar, Dhaka-1343.

Recommended
Shofiq
16.06.2021
Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Aproved
16/6/21
MOHAMMAD ANWAR HOSSAIN
Senior Consultant &
Head of Physiotherapy Dept
Associate Professor, BHPI
CRP Savar, Dhaka-1343

Appendix – C: Approval of the thesis proposal

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)

Bangladesh Health Professions Institute (BHPI)

(The Academic Institute of CRP)

BANGLADESH HEALTH PROFESSIONS INSTITUTE

Ref: CRP/BHPI/IRB/06/2021/474

Date: 17/06/2021

To,
MD. Ahadul Manna
4th year B.Sc. in Physiotherapy
Session: 2015-2016, Student ID: 112150304
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal **"Self-efficacy of people with spinal cord injury after rehabilitation"** by ethics committee.

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

Sr. No. Name of the Documents

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

The purpose of the study is to find out self-efficacy of people with spinal cord injury after rehabilitation. The study involves use of a questionnaire to explore that may take 20 to 30 minutes to answer the questionnaire and there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented from at the meeting held at 8.30am on 1st March, 2020 at BHPI (23rd IRB Meeting).

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

Best regards

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

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

Appendix – D: Consent form (Bangla)

সম্মতিপত্র

আমি মোঃ আহাদুল মান্না; আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)-এ পরিচালনা করছি যা আমার ৪ বছর বিএসসি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হল- "মেরুরজ্জুতে আঘাতপ্রাপ্ত ব্যক্তিদের পুনর্বাসন পরবর্তী স্ব-কার্যক্ষমতা " এর মাধ্যমে আমি মেরুরজ্জুতে আঘাতপ্রাপ্ত রোগীদের পুনর্বাসন পরবর্তী স্ব-কার্যক্ষমতা সম্পর্কে জানতে চাই। আমি এখন আপনাকে কিছু ব্যক্তিগত, রোগের বৈশিষ্ট্য এবং সংশ্লিষ্ট নিয়ামকের উপর আনুষঙ্গিক কিছু প্রশ্ন করতে চাচ্ছি। এতে আনুমানিক ২০-৩০ 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 প্রভাব ফেলবে না। আপনি যেসব তথ্য দিবেন তার গোপনীয়তা বজায় থাকবে।

এই অধ্যয়নে আপনার অংশ গ্রহণ স্বেচ্ছাপ্রণোদিত এবং আপনি যেকোনো সময় এই অধ্যয়ন থেকে কোনো নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোনো নির্দিষ্ট প্রশ্ন অপছন্দ হলে তা উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোনো উত্তর না দিতে চাওয়ার অধিকার আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোনো প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং আমার সুপারভাইজার মোঃ সফিকুল ইসলাম, সহযোগী অধ্যাপক এবং প্রধান, ফিজিওথেরাপী বিভাগ, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-তে যোগাযোগ করতে পারেন।

সাক্ষাৎকার শুরু করার আগে কি আপনার কোনো প্রশ্ন আছে?

সুতরাং, আমি কি আপনার অনুমতিতে এই সাক্ষাৎকার শুরু করতে পারি?

হ্যাঁ ☐ না ☐

অংশগ্রহণকারীর স্বাক্ষর ও তারিখঃ _____

গবেষকের স্বাক্ষর ও তারিখঃ _____

Appendix – E: Consent form (English)

VERBAL CONSENT FORM

Assalamualaikum,

My name is MD. AHADUL MANNA; I am conducting this study for a B.Sc. in Physiotherapy project study dissertation titled **"SELF-EFFICACY OF PEOPLE WITH SPINAL CORD INJURY AFTER REHABILITATION"** under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding self-efficacy of SCI patients. You have to answer some questions which are mention in the attached form. This will take approximately 20-30 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related with this SCI area, so your participation in the research will have no impact on your present or future treatment in the SCI unit. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous and also all information will be destroyed after completion of the study. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer any particular question that you don't like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with me, and/or my supervisor MD. SHOFIQUL ISLAM, Associate Professor & Head, department of physiotherapy, BHPI, CRP, Savar, Dhaka.

Do you have any questions before I start?

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

Yes ☐ No ☐

Signature of the Participant/career with date _____

Signature of the Interviewer with date _____

Appendix – F: Questionnaire (English)

Part-A: Patient's details

ID#	Date of Interview:
Name of respondent:	
Address- House number/village: P.O: P.S: District:	
Contact number:	

Part-2: Patient's socio-demographic information

Please give tick (✓) mark on the box of the correct answer.

Serial	**Question**	**Response**
1.	Age	…… years
2.	Gender	☐ Male ☐ Female
3.	Marital status	☐ Married ☐ Unmarried ☐ Widow ☐ Divorced ☐ Separated
4.	Educational qualification	☐ Illiterate ☐ Primary ☐ S.S.C ☐ H.S.C ☐ Graduation ☐ Post-graduation ☐ Others
5.	Living area	☐ Urban ☐ Semi-urban ☐ Rural
6.	Family member	……
7.	Occupation	……
8.	Earning member	……
9.	Monthly family income	…… taka

Part-C: Disease-related information

Please give tick (✓) mark on the box of the correct answer.

Serial	Question	Response
1.	Date of injury	……
2.	Skeletal level	……
3.	Neurological level	……
4.	Completeness of lesion	☐ Complete-A ☐ Incomplete-B ☐ Incomplete-C ☐ Incomplete-D
5.	Cause of lesion	☐ Traumatic …… ☐ Non-traumatic ……
6.	Type of injury	☐ Paraplegia ☐ Tetraplegia

Part-D: Moorong Self-Efficacy Scale (MSES)

Please give tick (✓) mark on the correct answer.

1. I can maintain my hygiene with or without help

1. Strongly disagree	2. Disagree	3. Slightly disagree	4. Neutral	5. Slightly agree	6. Agree	7. Strongly agree

2. I can avoid having bowel accidents

1. Strongly disagree	2. Disagree	3. Slightly disagree	4. Neutral	5. Slightly agree	6. Agree	7. Strongly agree

3. I can participate as an active member of the household

1. Strongly disagree	2. Disagree	3. Slightly disagree	4. Neutral	5. Slightly agree	6. Agree	7. Strongly agree

4. I can maintain relationships in my family

1. Strongly disagree	2. Disagree	3. Slightly disagree	4. Neutral	5. Slightly agree	6. Agree	7. Strongly agree

5. I can get out of my house whenever I need to

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

6. I can have a satisfying sexual relationship

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

7. I can enjoy spending time with my friends

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

8. I can find hobbies and leisure pursuits that interest me

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

9. I can maintain contact with people who are important to me

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

10. I can deal with unexpected problems that come up in life

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

11. I can imagine being able to work at some time in the future

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

12. I can accomplish most things I set out to do

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

13. When trying to learn something new, I will persist until I am successful

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

14. When I see someone, I would like to meet, I can make the first contact

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

15. I can maintain good health and well-being

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

16. I can imagine having a fulfilling lifestyle in the future

1.	2.	3.	4.	5.	6.	7.
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

Appendix – G: Questionnaire (Bangla)

পর্ব-কঃ রোগীর বিবরণ

আইডিঃ	সাক্ষাৎকার গ্রহণের তারিখঃ
অংশগ্রহণকারীর নামঃ	
ঠিকানাঃ গ্রাম- পোস্টঅফিস- থানা- জেলা-	বাড়ি নং-
মোবাইলনম্বরঃ	

পর্ব-খঃ রোগীর সামাজিক-জনতাত্ত্বিক তথ্যাবলী

অনুগ্রহপূর্বক সঠিক উত্তরের বাম পাশের বক্সে টিক (✓) চিহ্ন দিন।

সিরিয়াল	**প্রশ্ন**	**প্রতিক্রিয়া**
১.	বয়স	..... বছর
২.	লিঙ্গ	☐ পুরুষ ☐ মহিলা
৩.	বৈবাহিকঅবস্থা	☐ বিবাহিত ☐ অবিবাহিত ☐ বিধবা ☐ তালাকপ্রাপ্ত ☐ বিচ্ছিন্ন
৪.	শিক্ষাগত যোগ্যতা	☐ অশিক্ষিত ☐ প্রাথমিক ☐ মাধ্যমিক ☐ উচ্চমাধ্যমিক ☐ স্নাতক ☐ স্নাতকোত্তর ☐ অন্যান্য
৫.	বসবাসের এলাকা	☐ শহর ☐ মফস্বল ☐ গ্রাম

৬.	পারিবারিক সদস্য	…… …
৭.	পেশা	…… …
৮.	উপার্জনকারী সদস্য	…… …
৯.	পারিবারিক মাসিক আয়	…… (টাকা)

পর্ব-গঃ রোগ সম্পর্কিত তথ্য

অনুগ্রহপূর্বক সঠিক উত্তরের বাম পাশের বক্সে টিক (✓) চিহ্ন দিন।

সিরিয়াল	**প্রশ্ন**	**প্রতিক্রিয়া**
১.	আঘাত পাওয়ার তারিখ	……
২.	স্কেলেটাল লেভেল	……
৩.	নিউরোলজিকাল লেভেল	……
৪.	আঘাতের সম্পূর্ণতা	□ সম্পুর্ণ – A □ অসম্পুর্ণ – B □ অসম্পুর্ণ – C □ অসম্পুর্ণ – D
৫.	আঘাতের কারণ	□ আঘাতজনিত …… □ আঘাতব্যাতীত ……
৬.	আঘাতের ধরণ	□ প্যারাপ্লেজিয়া □ টেট্রাপ্লেজিয়া

পর্ব-ঘঃ মুরং এর স্ব-কার্যক্ষমতা বিষয়ক প্রশ্নাবলী

অনুগ্রহপূর্বক সঠিক উত্তরের উপরে টিক (✓) চিহ্ন দিন।

১. আমি কারো সাহায্য নিয়ে বা ছাড়া আমার ব্যক্তিগত পরিচ্ছন্নতা রক্ষা করতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

২. আমি অনিয়ন্ত্রিত মলত্যাগ রোধ করতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

৩. আমি একজন সক্রিয় সদস্য হিসাবে বাড়ি-ঘরের কাজে অংশগ্রহণ করতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

৪. আমি আমার পারিবারিক সম্পর্কগুলো বজায় রাখতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

৫. যখনই আমার প্রয়োজন তখন আমি আমার বাড়ির বাইরে যেতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

৬. আমি সন্তোষজনক যৌন সম্পর্ক বজায় রাখতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

৭. আমি আমার বন্ধুদের সাথে সময় উপভোগ করতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

৮. আমি আমার আগ্রহ অনুসারে শখ ও অবসর সময় বেছে নিতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

৯. আমার কাছে গুরুত্বপূর্ণ ব্যক্তিদের সাথে আমি যোগাযোগ রাখতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

১০. আমার জীবনে আসা অপ্রত্যাশিত সমস্যাগুলো আমি মোকাবিলা করতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

১১. ভবিষ্যতে কখনো কাজ করতে সক্ষম হবো আমি তা কল্পনা করতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

১২. আমি কোনো কাজ শুরু করলে তার অধিকাংশই সম্পূর্ণ করতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

১৩. নতুন কিছু শেখার চেষ্টা করলে সফল না হওয়া পর্যন্ত চেষ্টা চালিয়ে যেতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

১৪. সাক্ষাত করতে ইচ্ছুক এমন কারো সাথে দেখা হলে যোগাযোগ করতে সক্ষম হই

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

১৫. আমি ভালো থাকতে এবং ভালো স্বাস্থ্য বজায় রাখতে পারি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি

১৬. ভবিষ্যতে পরিপূর্ণ জীবন ধারণের স্বপ্ন দেখি

১.	২.	৩.	৪.	৫.	৬.	৭.
বলিষ্টভাবে অসম্মতি	অসম্মতি	কিছুটা অসম্মতি	নিরপেক্ষ	কিছুটা সম্মতি	সম্মতি	বলিষ্টভাবে সম্মতি