

# **Barriers of Structured Exercise Regimen for people with Spinal Cord Injury**

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled,

**Barriers of Structured Exercise Regimen for people with Spinal Cord Injury**

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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).

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**Date:**

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## Acronyms

ASIA= American Spinal Injury Association.

BHPI= Bangladesh Health Professions Institute.

BMRC= Bangladesh Medical Research Council.

CRP= Centre for the Rehabilitation of the Paralysed.

IRB= Institutional Review Board.

QQL= Quality of Life.

RTA= Road Traffic Accident.

SCI = Spinal Cord Injury.

TB= Tuberculosis.

TM= Transverse myelitis.

WHO= World Health Organization

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## Abstract

**Purpose:** To explore the barriers to structured exercise regimen for the spinal cord injury patients according to Bangladesh's perspective. **Objectives:** To find out the obstacles or barriers to the structured physiotherapy regimen or protocol for the spinal cord injury patients according to Bangladesh's perspective. **Methodology:** A qualitative study design was used to conduct the study. Nine spinal cord injury patients were recruited in this study. The sample was selected by convenience sampling method. The data were collected using semi-structured questionnaire form and coded by seven themes; finally, the coded data are analyzed and presented qualitative analysis. **Results:** Following themes have been emerged on the basis of data analysis. These include, treatment protocol for spinal cord injury patients at CRP was quality full, existing treatment facilities was insufficient, existing privacy facilities for participants was not sufficient, Patients faced some barriers of accommodation facilities, physiotherapists of CRP were supportive and knowledgeable, lack of energy of patients could prevent themselves from taking treatment, some recommendations of the patients to prevent those barriers. **Conclusion:** This study explores the barriers to structured exercise regimen for the spinal cord injury patients according to Bangladesh's perspective. Insufficient treatment facilities, insufficient privacy facilities and lack of physical energy of participants, lack of seat number are the main barriers to the structured exercise regimen for the people with spinal cord injury. Good thing is participants admitted that, physiotherapy exercise regimen which is providing to the SCI patients is quality full and standard, accommodation facilities is good and the physiotherapists are supportive and knowledgeable. They got improvements by taking the physiotherapy treatment in CRP.

**Keywords:** Barriers, SCI, Physiotherapy, Physiotherapist, CRP.

## 1.1 Background

A spinal cord injury (SCI) causes a variety of motor, sensory, and autonomic abnormalities, predisposing a person to multisystem dysfunction and increasing the risk of secondary sequelae, which are medical repercussions that might create functional limits (Munce et al., 2014).

The causes of spinal cord injury (SCI) range from motor vehicle accidents and community violence to recreational activities and workplace-related injuries, with an annual incidence of 15 to 40 cases per million in various countries around the world. Of the estimated 12,000 new cases of paraplegia and quadriplegia that occur in the United States each year, 4000 die before reaching the hospital and 1000 die during their hospitalization (Shekhon et al., 2001).

The causes of acute SCI are many. Most available epidemiologic figures focus on SCI in developed nations. Clearly, the causes of injury vary between countries, as they do between regions within a country and urban versus rural locations. On a global level traffic accidents involving motor vehicles, bicycles, or pedestrians account for the greatest number of SCIs, typically 50% of all injuries. Some comments on recent trends can be made. Sports and recreational causes have increased and work-related accidents have decreased in some countries, as work safe practices have improved. The logging, mining, and construction industries are safer now than ever before. Conversely, recreational activities, such as parachuting, hang gliding, surfing, abseiling, and rock climbing, by virtue of the major forces transmitted to the spinal column in potentially uncontrolled situations, have increased the frequency of sports and recreational injuries, which in some countries are more common than work-related injuries (Shekhon et al., 2001).

The most obvious consequence of spinal cord injury (SCI) is paralysis. However, SCI also has widespread consequences for many body functions, including bladder, bowel,

respiratory, cardiovascular and sexual function. It also has social, financial and psychological implications, and increases people's susceptibility to late-life renal complications as well as musculoskeletal injuries, pain, osteoporosis and other problems (Harvey, 2016).

Common secondary problems after SCI include pressure ulcers, urinary tract infections, bowel problems, fractures, chronic pain, and depressive disorders. Despite the fact that many of these complications are amenable to treatment or prevention, secondary complications represent a significant burden at both the health system and individual level: they are costly, in terms of limited health-care resources (Munce et al., 2014).

Generally, trauma of various method is acknowledged to be the principal cause of spinal cord injury. Fall from height, road traffic accident, gunshot injury, sports injury is so far identified to the leading cause of injury around the world and spinal tumor, tuberculosis(TB), transverse myelitis (TM) seems to the principle non-traumatic cause. American Spinal Injury Association (ASIA) impairment score has been used for measuring the extent of injury and level of impairment varies from paraplegia to tetraplegia (Rahman et al., 2017).

Spinal cord injury is a severe condition of the musculoskeletal system, more often leading to permanent disability and on the top of that brings about drastic changes the functioning ability of the patient and eventually encompassing each and every aspect of life. Complications may associate virtually all systems of the body namely cardio-respiratory system, genitourinary system, local disorders like pressure sore or full-blown biochemical disorders. Such domino effect following the injury to spinal cord significantly decreases the quality of life of the individual and happens on the early or acute stage when initial rehabilitation processes are being initiated. Spinal cord injury whether traumatic or form other cause and its associated chronic disabilities and deterioration of the quality of life may be generalized by more substantial data on the demographic distribution of the condition, association of complications with sex, employment, social status and overall condition of the individual (Qadir et al., 2017).

Spinal cord injuries are defined as complete or incomplete according to the International Standards for the Neurological Classification of SCI and the American Spinal Injuries Association Impairment Scale (AIS). Complete lesions are defined as AIS A, and incomplete lesions are defined as AIS B, AIS C, AIS D or AIS E. This classification system was introduced in 1982 to replace the original, but perhaps more intuitive, Frankel system whereby a person was classified as having an incomplete SCI if they had any motor or sensory preservation more than three levels below the level of injury. In contrast, the International Standards for the Neurological Classification of SCI distinguishes between complete and incomplete injuries on the basis of sensory and motor preservation in the S4/5 segments. A lesion is classified as complete if a person has no voluntary anal contraction (indicative of S4/5 motor preservation) and/or sensation in or around the anus (indicative of S4/5 sensory preservation), regardless of how much motor or sensory function they have below the level of the lesion. The distinction between different types of incomplete lesions is based on a detailed motor and sensory assessment. The precise definitions of different types of SCIs are surprisingly complex and contain ambiguities that continue to be debated (Harvey, 2016).

The most important premorbid factors for survival after acute SCI are age, level of injury, and neurologic grade. Patients with lesions at C1–C3 have a 6.6 times higher mortality than the mortality rate for those with paraplegia. Similarly, the relative risks for those lesions at C4 or C5 and C6–C8 were 2.5 and 1.5 times higher, respectively, than the mortality rate for those with paraplegia (Shekhon et al., 2001).

Traumatic spinal cord injury (TSCI) is a catastrophic event worldwide often leading to permanent disabilities. Patients with TSCI may suffer physically and emotionally as well as having financial difficulties after the injury. Presently there is no available treatment enhancing functional recovery of the paraplegic/tetraplegic patients following a TSCI. This demonstrates the importance of the development of preventing strategies worldwide. Most of the SCI are due to trauma; commonly motor vehicle accidents, falls, violations, and sports injuries. Although there are publications on incidence and prevalence of TSCI

from different countries of the world as well as systematic reviews on incidence and prevalence of TSCI in city(s) or at national, regional, and global level, yet the literature lacks an overview on the extent of SCI in single countries from parts of the world where data are of low quality or even not available (Jazayeri et al., 2014).

Acute medical management of people with SCI focuses on minimizing further neurological damage to the spinal cord and optimizing recovery. Stability of the spine is clearly a priority. This is established either conservatively with bed rest (with or without traction) or surgically (typically with decompression and fusion). While surgical management is now more common than conservative management, there is still a lot of debate about the superiority of each approach. However, management of the spine is just one aspect of acute medical care. There are many other aspects related to maintaining blood pressure, circulation, respiration, bladder drainage, bowel care, nutrition and body temperature, and minimizing psychological distress for patients and their families. During this stage, physiotherapy is predominantly focused on treating respiratory complications and preventing secondary musculoskeletal problems related to prolonged bed rest (Harvey, 2016).

Health promotion for SCI patients, has historically been directed at primary prevention of disability rather than prevention of secondary conditions; however, the benefits of exercise in improving outcomes after SCI are increasingly recognized. Exercise has been shown to improve functional capacity, bone density in upper limbs, endurance, muscle strength, pain and psychological well-being and to reduce stress. Despite these benefits, there are physiological, psychological, and environmental barriers to exercise that can impede participation in exercise after SCI, thereby increasing health risks. There are some beneficial effects of exercise for the SCI patients, there are physical and psychological barriers preventing them from participating in a rehabilitation program and reaping its benefits (Scelza et al., 2005).

According to World Health Organization (WHO), “The overall purpose of physiotherapy for patients with spinal cord injury is to improve health-related quality of life. This is achieved by improving patient’s ability to participate in activities of daily life. The

barriers to participation which are amenable to physiotherapy interventions are impairments that are directly or indirectly related to motor and sensory loss. Impairments prevent individuals from performing activities such as walking, pushing a wheelchair and rolling in bed. During the acute phase, immediately after injury when patients are restricted to bed, the key impairments physiotherapists can prevent or treat are pain, poor respiratory function, loss of joint mobility and weakness.

Despite the salutary effects of exercise on the overall health of those with SCI, there are physical and psychological barriers preventing them from participating in a fitness program and reaping its benefits. Identification of barriers to exercise among individuals with SCI is the first step to reducing such barriers to facilitate participation in exercise and improve health outcomes (Scelza et al., 2005).

## **1.2 Rationale**

Lesion to the spinal cord due to traumatic and pathological cause is known as spinal cord injury. It leads a patient to paralysis. It also affects many body functions such as bowel and bladder impairment, respiratory and cardiovascular problems etc. SCI patients need long time rehabilitation program. Physiotherapy is one of important part of this program.

Physiotherapy treatment is very much effective to reduce all kind of these problems. In Bangladesh, Physiotherapy is a new and very challenging health care profession and the Centre for the Rehabilitation of the Paralyzed (CRP) is the only place where the SCI patients are rehabilitated by the holistic approach.

Different articles in different countries describe various obstacles or barriers of the patients having spinal cord lesion. In Bangladesh's perspective, we still do not know the exact barriers or challenges of a spinal cord injury patient soak in.

The primary purpose of this study is to describe barriers to structured exercise regimen for the people with spinal cord injury both paraplegia and tetraplegia according to Bangladesh's perspective.

### **1.3 Research question**

What are the barriers to structured exercise regimen for the spinal cord injury patients according to Bangladesh's perspective?

### **1.4 Study objectives**

To find out the obstacles or barriers to the structured physiotherapy regimen or protocol for the spinal cord injury patients according to Bangladesh's perspective.

### **1.5 Variables**

#### **1.5.1 Independent variables**

- Structured physiotherapy treatment regimen.
- Barriers to take physiotherapy regimen.

#### **1.5.2 Dependent variables**

- Spinal cord injury.



A spinal cord injury damage to any part of the spinal cord or nerves at the end of the spinal canal (cauda equina) often causes permanent changes in strength, sensation and other body functions below the site of the injury.

If anybody has recently injured his spinal cord, it might seem like every aspect of his life has been affected. He might feel the effects of his injury mentally, emotionally and socially. (World Health Organization and International Spinal Cord Society, 2013)

Spinal cord injury (SCI) is a devastating event causing significant burden to the individuals, their family and society. Damage to the spinal cord results in neurological impairment affecting motor, sensory and autonomic function. Persons with paraplegia have damage to their thoracic, lumbar or sacral spinal cord and tetraplegia occurs with damage to the cervical cord (Noonan et al., 2012).

Acute spinal cord injury (SCI) is a traumatic event that results in disturbances to normal sensory, motor or autonomic function and ultimately impacts a patient's physical, psychological and social well-being (Fehlings et al., 2017).

Spinal cord injury (SCI) and spinal infarction lead to neurological complications and eventually to paraplegia or quadriplegia. These extremely debilitating conditions are major contributors to morbidity. Our understanding of SCI has certainly increased during the last decade, but remains far from clear. SCI consists of two defined phases: the initial impact causes primary injury, which is followed by a prolonged secondary injury consisting of evolving sub-phases that may last for years (Anwar et al., 2016).

Estimations of TSCI incidences vary widely, from 13.1 per million to 52.2 per million within 13 articles reviewed. Among developed countries, the incidence rates of TSCI dropped from 52.2 to 13.1 per million people. Among developing countries, the incidence rates ranged from 12.7 to 29.7 per million people (Chiu et al., 2010).

The incidence of spinal cord injury (SCI) in low-income countries is four times that in high-income countries. The CIVIC trial will provide unbiased and precise estimates of the effectiveness and cost-effectiveness of an inexpensive and sustainable model of community-based care for people with SCI in Bangladesh. Evidence of effectiveness and cost-effectiveness will have widespread implications for provision of health services for people with SCI and other conditions that cause serious disability in low-income and middle-income countries (Hossain et al., 2016).

The NSCID and NSSCID document 37 causes of injury. The most common etiologies of SCI were automobile crashes (31.5%) and falls (25.3%), followed by gunshot wounds (10.4%), motorcycle crashes (6.8%), diving incidents (4.7%), and medical/surgical complications (4.3%). These 6 causes collectively accounted for 83.1% of total SCIs reported to the NSCID and NSSCID since 2005.

The most common age of injury was between the ages of 16 and 30 years (38.5%), followed by ages 31 to 45 and 46 to 60 years (21.0% and 21.5%). The etiology profile varied substantially by age. Automobile crashes were the leading cause of SCI until age 45 years and then dropped to number 2, whereas falls were the leading cause after age 45 years. In fact, falls accounted for about 75% of all SCIs among persons 76 years of age and older. Gunshot wounds were the second leading cause for persons aged 16 to 30 years (19.0%) and the third most common cause for those 0 to 15 years old (8.1%), but this etiology declined rapidly with advancing age. Motorcycle crashes ranked third for persons 31 to 45 and 46 to 60 years of age (10.9% and 7.1%, respectively) (Chen et al., 2013).

Medical/surgical complications were the second leading cause for children younger than 16 years (12.8%) and the third leading cause for persons older than 60 years (10.9%). Overall, 78.3% of all reported SCIs occurred among males. The first 2 leading causes, automobile crashes and falls, collectively accounted for 53.5% of all SCIs in males and 68.6% in females. Gunshot wounds, motorcycle crashes, and diving caused more SCIs in males than females (11.7% vs 5.8%, 8.0% vs 2.4%, and 5.3% vs 2.4%, respectively). In

contrast, medical/ surgical complications ranked number 6 for males, but were the third leading cause for females (3.3% vs 7.6%)(Chen et al., 2013).

Acute SCI is comprised of a primary injury with subsequent secondary injury resulting from a progressive local cascade of tissue destruction, which may be furthered by systemic autonomic dysfunction. Mitigation of these pathophysiological processes forms the basis of medical and surgical management of SCI.

**Primary Injury:** The primary injury results from a traumatic insult to the spinal cord. Most commonly this is from a failure of the biomechanical integrity of the spinal column, leading to compressive forces on the spinal cord resulting in a disruption of neuronal axons, blood vessels, and cell membranes.

**Secondary Injury:** The primary injury triggers a pathophysiological cascade comprising the secondary injury phase. Within seconds, disruption of the microvasculature causes hemorrhage and edema which impairs perfusion of blood to the traumatized spinal cord. Thrombosis and vasospasm result, further exacerbating the ischemia. Necrosis from mechanical disruption of cellular membranes occurs and there is a concomitant release of glutamate which may reach excitotoxic levels along with ionic dysregulation from Na<sup>+</sup> and Ca<sup>2+</sup> influx.<sup>7</sup> The mechanisms of the early secondary injury phase are conceptually separated into the immediate (<2 hour), early acute (<48 hour), and subacute (<2 week) phases. It is early on in these phases that medical intervention, early surgical decompression and potentially the administration of neuroprotective and neuro regenerative agents are thought to hold the greatest promise for altering neurological and functional outcomes (Witiw & Furlan, 2015).

Spinal cord injuries are defined as complete or incomplete according to the International Standards for the Neurological Classification of SCI<sup>1</sup> and the American Spinal Injuries Association Impairment Scale (AIS). Complete lesions are defined as AIS A, and incomplete lesions are defined as AIS B, AIS C, AIS D or AIS E. This classification system was introduced in 1982 to replace the original, but perhaps more intuitive, Frankel system whereby a person was classified as having an incomplete SCI if they had any motor or sensory preservation more than three levels below the level of injury. In

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Traumatic spinal cord injury (SCI) can result in motor, sensory and autonomic dysfunction, all of which can be devastating for the individual, both socially and economically. Further, many individuals with SCI require extensive medical attention due to the complexities and secondary conditions associated with this injury. Therefore, effective healthcare policies to promote efficient practices are of utmost importance to ease the burden on the healthcare system, while at the same time maintaining high standards of care. A deeper understanding of the epidemiology of SCI is required in order to gain a better appreciation of the potential impact of healthcare management strategies and health policies to prevent and minimize the consequences of SCI (Furlan et al., 2013).

Rehabilitation following SCI commences as soon as the patient is medically stable after injury. This can vary from a few days to many weeks, depending on whether the patient suffered other injuries at the time of the accident or subsequently developed medical or respiratory complications. Rehabilitation involves a team and patient centered approach. The overall aim of rehabilitation is to enable the person to return to a productive and satisfying life. This means different things to different people.

Physiotherapy during the rehabilitation phase focuses on goals related to motor tasks such as walking, pushing a wheelchair, transferring and using the upper limbs. A recent study examined physiotherapist's ability to predict the likelihood of patients walking (and performing an array of other motor tasks) at 3 months and then 1 year from injury; this

was based on physiotherapist's assessments of patients at the time of admission to rehabilitation. The assessment of a patient with SCI is an important initial step in physiotherapy management. This step is not only important for setting realistic goals, but also for identifying key problems (Harvey, 2016).

Patients with cervical or thoracic spine injuries with evidence of spinal shock should receive volume restoration therapy or airway clearance techniques as positioning/postural drainage ventilator/manual hyperinflation, non-Invasive ventilation, Insufflation/exfoliation with cough assist machine, manual insufflations, manual techniques, PEP devices, manually assisted cough), Abdominal binder, bronchodilators, humidification section 4-6 hourly during Physiotherapy service hours. Patients who are unable to maintain respiratory status or who will deteriorate without physiotherapy treatment outside these hours may require additional overnight treatment (Berney et al., 2011).

Impairment and activity management: strengthening exercises, muscle length management, spasticity management, sensation management, pain management, musculoskeletal assessment, function e.g., transfers, bed mobility, wheelchair skills and upper limb function as appropriate, cardiovascular conditioning, prevention of secondary complications, provision of home physiotherapy programs(Harvey., 2008).

Rehabilitation is a crucial part for person with SCI to restore full physical and psychological functioning and renovating social connection in their livelihood. Their major goal is to integrate into the society and be able to battle life situation. As an acquired disability, newly injured patient experiences various types of physical, psychological and social limitations in the community. Perhaps it occurs due to insufficient knowledge on reintegrating towards society (Akter et al., 2019)

Formal rehabilitation in an SCI center is the first move towards restoring the health and well-being of a patient with SCI. The role of rehabilitation goes beyond promoting functional independence and aims to return individuals to "the life they want as far as their disability will allow". Thus, a vital part of rehabilitation is to educate people how to take care of a dramatically altered body and teach people to live independently and

maintain their health and well-being. This includes improving muscle weakness and poor posture, as well as teaching patients' essential skills of daily living (ADL), such as floor to chair transfers. To continue to improve and maintain health and well-being upon discharge from rehabilitation to the community, and avoid the onset of secondary health conditions, it is vital people lead a physically active lifestyle (Williams et.al.,2018).

Rehabilitation should be offered to patients with acute spinal cord injury when they are medically stable and can tolerate required rehabilitation intensity and can tolerate required rehabilitation intensity (Fehlings et al., 2017).

The rehabilitation of individuals with SCI can be divided into 3 phases: acute, subacute, and chronic. During the acute and subacute phases of treatment, rehabilitation strategies focus on preventing secondary complications, promoting neuro recovery and maximizing function.

In the chronic phase, compensatory or assistive approaches are often used, whereas in the acute and subacute phases, there is a greater emphasis on techniques that address underlying impairments. Rehabilitation is critical for patients confronted with a life-altering event such as a SCI as these individuals are eager and willing to work toward improving function. Furthermore, patient transition to a rehabilitation unit maintains patient flow and resource availability for newly injured individuals (Fehlings et al., 2017).

Patients with cervical or thoracic spine injuries with evidence of spinal shock should receive volume restoration therapy or airway clearance techniques as positioning / postural drainage ventilator/manual hyperinflation, non-Invasive ventilation. Insufflation with cough assist machine, manual insufflations, manual techniques, PEP devices, manually assisted cough), Abdominal binder, bronchodilators, humidification section 4-6 hourly during Physiotherapy service hours. Patients who are unable to maintain respiratory status or who will deteriorate without physiotherapy treatment outside these hours may require additional overnight treatment (Berney et al., 2011).

Impairment and activity management: strengthening exercises, muscle length management, spasticity management, sensation management, pain management, musculoskeletal assessment, function e.g., transfers, bed mobility, wheelchair skills and upper limb function as appropriate, cardiovascular conditioning, prevention of secondary complications, provision of home physiotherapy programs (Harvey., 2008).

Initial care in the field prioritizes securing the airway, breathing, and circulation followed by early recognition of SCI and rapid referral to specialized centers in order to expedite delivery of time sensitive interventions.<sup>36</sup> To limit further insult to the highly vulnerable cord, spinal immobilization should be performed for all patients with suspected or confirmed injuries.<sup>36</sup> This typically involves a rigid cervical collar, backboard for transport, and spinal precautions for patient transfers e.g., logroll maneuver with inline manual cervical stabilization and a transfer board (Ahuja et al., 2017).

Exercise is a cornerstone that can ameliorate several of the aforementioned medical conditions after SCI. The American College of Sports Medicine (ACSM) refers to exercise as a type of physical activity consisting of planned, structured, and repetitive bodily movement done to improve and/or maintain one or more components of physical fitness. This can be accomplished for variety of purposes including musculoskeletal strengthening, cardiovascular performance and weight reduction and weight maintenance. Exercise after SCI can be either target towards fitness (cardiovascular or muscular), compensatory (using assistive device) and restorative (functional electrical stimulation and locomotor training). According to current guidelines, adults with SCI should engage in at least 20 min of aerobic exercise training twice weekly prescribed at moderate-vigorous intensity or 3 sets of 8-10 repetitions of resistance training to the major muscle groups (Gorgey., 2014).

Despite the salutary effects of exercise on the overall health of those with SCI, there are physical and psychological barriers preventing them from participating in a fitness program and reaping its benefits. Identification of barriers to exercise among individuals with SCI is the first step to reducing such barriers to facilitate participation in exercise and improve health outcomes (Scelza et al., 2005).

Service use, unmet need for services and service obstacle responses at 6 and 12 months. There was strong evidence that use of allied health services was statistically lower at 12-months compared to 6-months, and weak evidence that use of nursing and unmet need for services were statistically different between 6- and 12-months (Borg et al., 2020).

We have to be aware of the barriers that interfere with long term commitments to persons with SCI. These barriers may include lack of access to exercise facility, lack of accessible public transportation, lack of background knowledge on dealing with persons with SCI, failure to provide the appropriate exercise routine based on the person's neurologic level and spared muscle function. For example, prescribing an exercise routine for a person with C6 SCI will be completely different than one for a person with T6 SCI. Clinicians should be aware of these factors to appropriately customize exercise programs which allow long-term engagement and prevent drop-out (Gorgey, 2014).

Early surgery in individuals with traumatic spinal cord injury (T-SCI) can improve neurological recovery and reduce complications, costs and hospitalization. Patient-related and healthcare related factors could influence surgical delay. Based on the growing clinical evidence that prompt surgery in patients with traumatic SCI is beneficial and favors better outcomes changes in logistics to prioritize spine surgeries for T-SCI should be made (Thompson et al., 2018).

Barriers of SCI were grouped into "organization," "medical," "emotional," "a lack of available information" and "views held by others. There were also many barriers to participating including organizational e.g., availability of facilities, medical e.g., urinary tract infections, emotional e.g., general lack of confidence, lack of relevant information e.g., lack of or inappropriate medical advice and views held by others e.g., patronizing views of others (Stephens et al., 2012).

The response rate for the survey was with the majority of physicians having been asked by patients with spinal cord injuries about epidural stimulation. Numerous current barriers to clinical implementation were identified, including need for additional efficacy studies, lack of clear guidelines on stimulation parameters, and inability to identify which patients will benefit (Solinsky et al., 2020).



**3.1 Study design:**

Qualitative research approach was applied to gain understanding and explore the barriers of spinal cord injury patients during receiving treatment in CRP. Semi-structured face to face interview was conducted among the SCI patients for getting a clear idea about the socio-demographic characteristics, accommodation facilities, personal barriers, environmental barriers and their suggestions for improvement of treatment.

**3.2 Study Site:**

The study was conducted at Spinal cord injury Unit, Centre for rehabilitation of the paralyzed (CRP),Savar, Dhaka.

**3.3 Study Population:**

Spinal cord injury patients during receiving physiotherapy treatment at Centre for rehabilitation of the paralyzed (CRP).

**3.4 Sampling Method:**

The samples were selected by convenience sampling method.

### **3.5 Inclusion Criteria:**

- Spinal cord injury patient who was receiving treatment in CRP,
- Spinal cord injury patients with age between 18 to 60 years,
- Both male and female patients were participants,
- Subject who was willing to participate in the study,
- SCI patient who was medically stable,
- SCI patients who had not cognitive problem.

### **3.6 Exclusion Criteria:**

- Those who were not interested,
- Age < 18 years and >60 years,
- Those who was medically unstable,
- Those who had cognitive problem.

### **3.7 Sample Size:**

Nine (9) spinal cord injury patients receiving treatment in Spinal cord injury Unit of Centre for rehabilitation of the Paralyzed (CRP) were interviewed.

### **3.8 Data Collection Tools:**

A mobile tape recorder was used during the interviews to record the conversation. Simultaneously pen and papers were also used to write down field notes.

### **3.9 Method of Data Collection:**

Data were collected by conducting face to face interviews providing a semi structured questionnaire form.

### **3.10 Procedure of Data Collection:**

The data were collected by face-to-face interview with an open-ended questionnaire. Informed consent was taken from the participants. All question and information sheet were developed into Bangla. The interview was conducted in Bengali language and recorded by the recorder of a mobile phone. Venue of an interview were spinal cord injury ward but the place of interview depended on situation and permission of regarding the authority. The data has been taken until similar assessors were obtained as a maximum response as repetition.

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 caregivers 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 participate in 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 CRP, Savar. The researcher collected data by structured questionnaire, pen, pencil, and paper.

### **3.11 Data Analysis:**

The data were evaluated by Qualitative content analysis (QCA) and 3 stages: coding, categorizing and generating theme. The researchers were arranging all the information according to the categorization. Under these categories, the researcher coded all the information from the interviewed transcript. After finishing the tabulation of coding, the researcher detected some important codes that made the themes of the study. At last, themes were identified and emerged as a process of interpretation.

### **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.

### **3.14 Ethical Consideration:**

The Research proposal was submitted to the ethical committee that Institutional Review Board (IRB) and approval was obtained from the Board. Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) guideline also were followed to conduct the study. The protocol initially approved by ethical review committee of Bangladesh health professional institute (BHPI) Savar, Dhaka. Written informed consent was taken at the time of enrolling the respondents. However verbal consent was taken when required. In consent form, the title, aim of the study, data collection procedures, required time for data collection, confidentiality and anticipated use of the result of the study was written in plain and simple Bangla language and it was brief to each respondent before data collection. All respondents were informed that they are free to leave or to refuse to take part in this study at any time. The personal information of the respondents was kept totally confidential. The information given by the respondents were analyzed using code number so that nobody can identify them.

#### 4.1 Participants Details

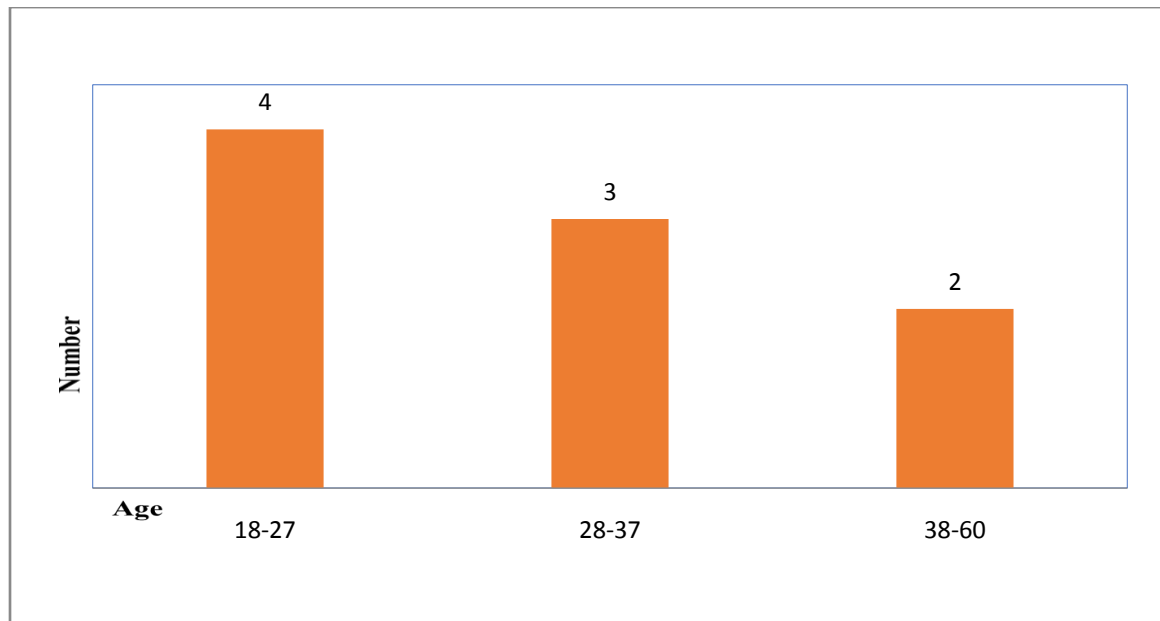
Nine (9) spinal cord injury patients both male and female were included in this study. Among, the participants, seven participants were male and two were female. The mean age was 32.8 with minimum age 19 years and maximum 55 years.

#### 4.2 Socio-demographic Information

##### Age:

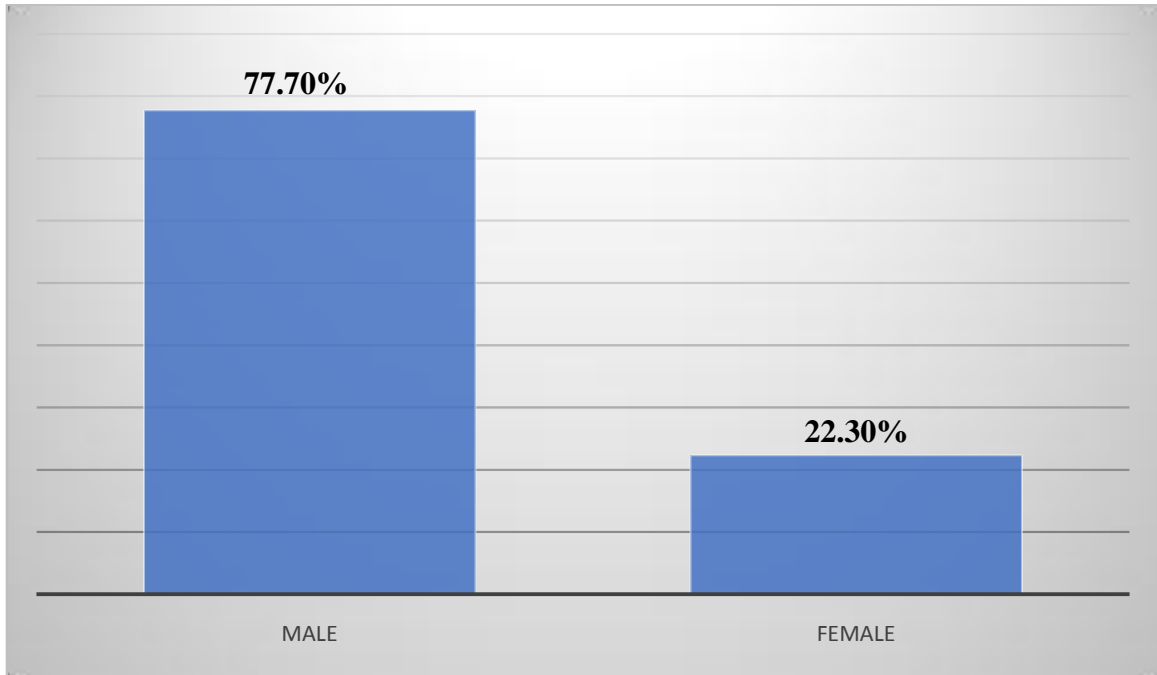
Among nine participants 18-27 years old participants were 04, 28-37 old

participants were 03, 38-60 old participants were 02 and their mean age was 32.8 with age range 18-60. Interquartile range of age is 19.



**Gender:**

Among the 09 participants 77.7% (n=7) were male and 22.3% (n=2) were female.

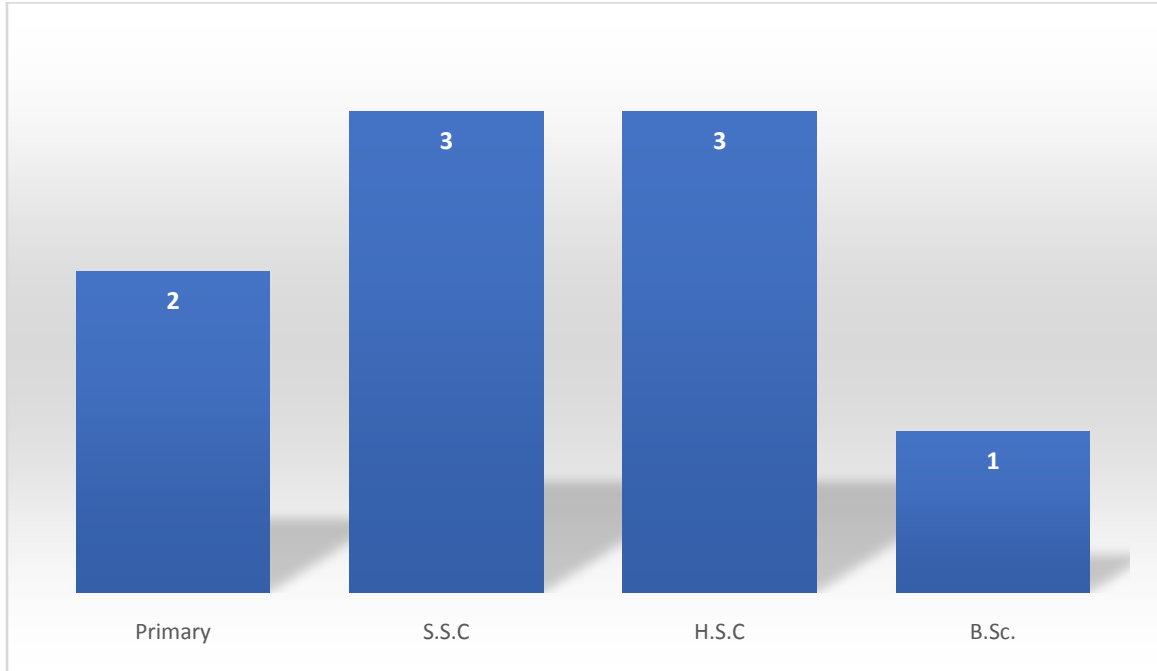


**Figure-1:** Gender distribution of the participants.



**Educational Status:**

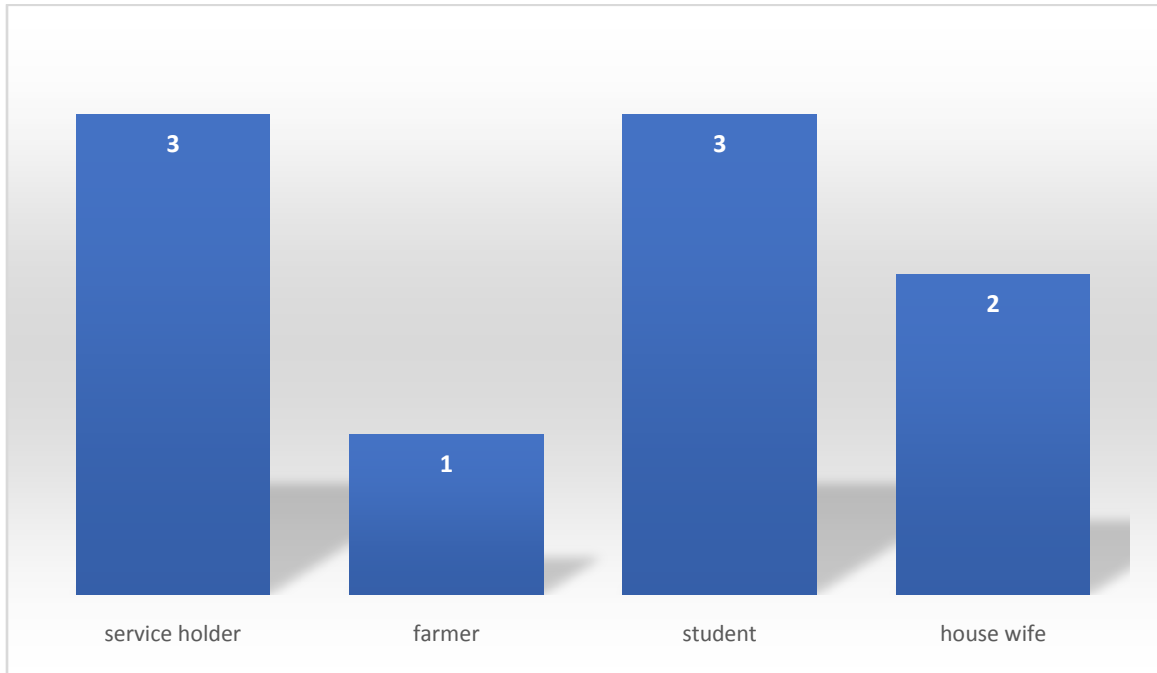
Among the nine (09) participants, 2 participants had primary, 03 participants completed S.S.C, 03 participants had H.S.C and 01 participants had bachelor degree (Figure-03).



**Figure-2:** Educational distribution of the participants

### Occupational Status

Among the 09 participants, 02 participants were housewife, 03 participants were service holder, 01 participants were farmer, 03 were students (Figure-3)



**Figure-3:** Occupation of the participants.

### **4.3 Following themes are emerged on the basis of data analysis**

**Theme 1:** Treatment protocol for spinal cord injury patients at CRP is quality full.

**Theme 2:** Existing treatment facilities is insufficient.

**Theme 3:** Existing privacy facilities for participants is not sufficient.

**Theme 4:** Patients have faced some barriers of accommodation facilities.

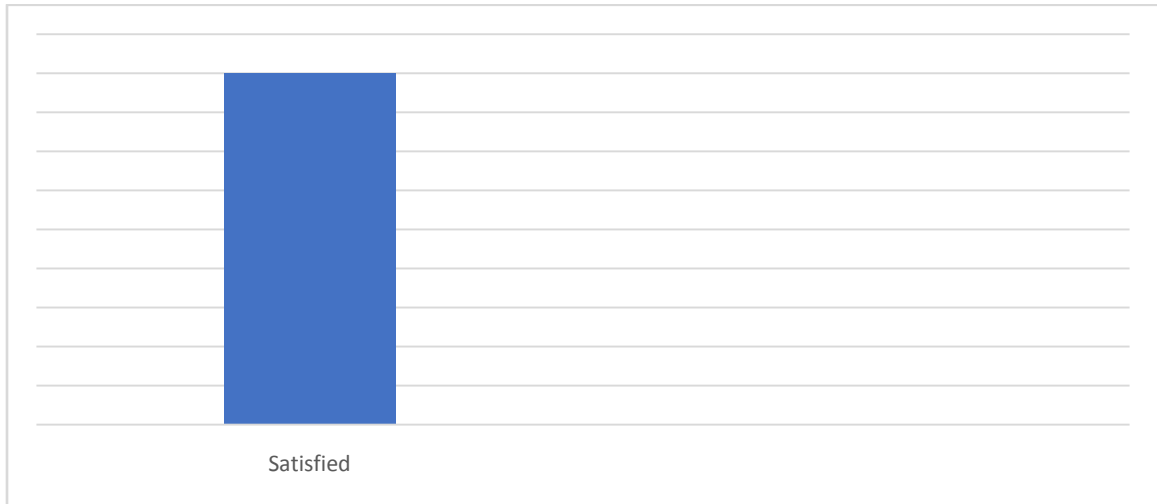
**Theme 5:** Physiotherapists of CRP are supportive and knowledgeable.

**Theme 6:** Lack of energy of patients can prevent themselves from taking treatment.

**Theme 7:** Some recommendations of the patients to prevent those barriers.

#### 4.3.1 Treatment protocol for spinal cord injury patients at CRP is quality full.

The researcher wanted to find out whether treatment of spinal cord injury patients at CRP is quality full or not. The participants responses are displayed below (Figure-4)



**Figure-4:** Satisfaction towards the treatment of SCI patients in CRP.

This figure represents that all participants are said that treatment of spinal cord injury in CRP is quality full.

Out of 9 participants, 2 participants said that, *“We are taking physiotherapy treatment to improve our impairments regularly. It helps us a lot. Before, we are unable to move our legs. Now, we can. We can’t shift ourselves from one place to another. Now, this also can. Our dreams come true. We are very much satisfied”*.

Another 4 participants stated that, *“Physiotherapy exercise regimen are very much effective for us. It helps us to improve our limitation of activities. CRP is providing the best quality of treatment for the SCI patients. SCI treatments are very much quality full”*.

Out of 9 participants, 3 participants stated that, *“Physiotherapy exercise program helps us to reduce the physical barriers. Now, we are quite confident to do our daily activities*

*independently. These are not possible if we are not going through the physiotherapy exercise program”.*

Above figure and statements indicate that treatment for the SCI patients in CRP is quality full and standard. All participants (n=9) were satisfied to the present structured physiotherapy treatment protocol.

#### **4.3.2.Existing treatment facilities is insufficient.**

This theme covers the issues whether the duration of treatment of spinal cord injury patient at CRP is sufficient or not.

Out of the 9 participants 5 of them said that, *“Duration of treatment period is less, we get only 20/30 minutes in a session, it will be good if time period prolonged”*.

Two of them said that, *“treatment session is quite little. It will be better if it is possible to increase the duration of treatment”*.

Another participant stated that, *“treatment will be better if physiotherapists can see them properly. We get only 20-30 minute in a session. 20-30 minutes is not enough for us. We don't get enough time to share our problems with the therapist”*.

One participant said that, *“they get approximately 20-30 minutes in a therapy session. In this time physiotherapist can't cover the all treatments most of the time. It will be better if the treatment duration prolonged”*.

One participant stated that, *“duration of each session should be increase, we didn't get enough treatment during this short time”*.

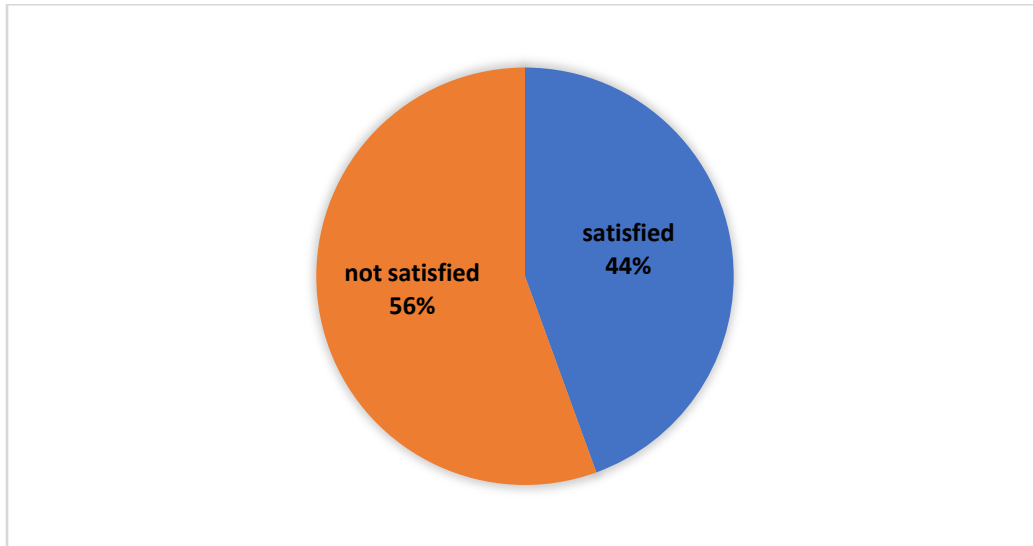
Out of 9 participants, 4 of them are pleased with the present treatment duration.

One participant said that, *“everything is good here. I get proper treatment sessions for my poor physical condition”*.

Another 3 participants stated that, *“we are pleased with the treatment facilities here. Everything is good. All kind of therapy is effective for them. These help us to improve our impairments”*.

Out of 9 participant, 3 participant said that, *“CRP is providing the best treatment facilities here. All are good. Environment is neat and clean. We are not facing any kind of barrier here. But I have one recommendation. That is, we are getting only 30-40 minutes in each treatment session. I think, this not sufficient for the patients, most the time therapists can't fulfil daily treatment task in this short session. So, I think that would*

*be good if it is possible to give proper 1 hour time for a treatment then it will be more effective for us.”*



**Figure 5:** Patient’s satisfaction with existing treatment facilities

More than 50% participants (56%) were facing barriers from the treatment sessions and 44% participants were not facing any barriers from present treatment facilities. They were not pleased with the present treatment sessions. They didn’t get more than 20-30 minutes from each treatment session. They suggested that it will be better if it is possible to prolong the duration of treatment session then it will be better for them. Most of them complained that they only get 20-30 minutes for each treatment sessions. In this short time most of the times therapists can’t complete their treatment protocol properly.

### **4.3.3 Existing privacy facilities for participants are not sufficient.**

This theme covers the issues about privacy system for women during treatment session is perfect or not.

Out of 9 participants 2 female participant said that, *“present privacy facilities for women need to be stronger. All should maintain the privacy more strongly. Supportive staffs are need to be aware about this issue”*.

In this study, two participants were female and they were Muslim. All of them complained that existing privacy facilities are not enough for them. Sometimes they needed to go to the male therapists or staffs. They thought poor privacy facilities can hamper their religious perception. Also complained that they can't share their treatment needs with the male staffs frankly and during treatment session there were lack of privacy facilities.

Out of 2 female participants, one participant said that, *“during treatment session some male staffs have come to woman-ward without any permission, sometimes they feel shy”*.

Participants also complained about the supportive staffs. According their statements, most of the supportive staffs were come into the female ward without any permission.

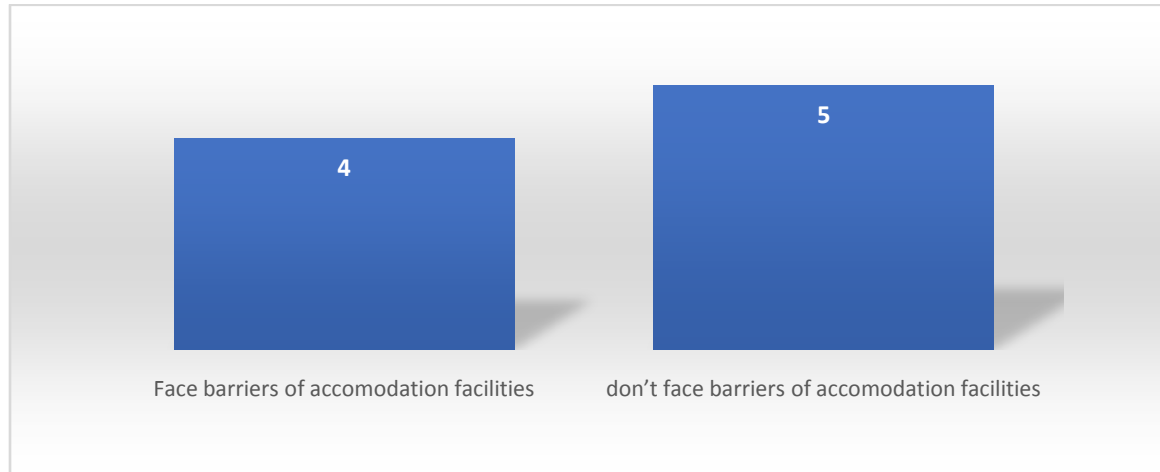
Another one participant said that, *“they feel shy during treatment sessions if there is any male person is present. Their religion is not support it”*.

Above statements reflect that if it is possible to make a strong privacy protocol for women during treatment session then it will be more effective. All female participants of this study had recommendation about the existing privacy system for them. They suggested to make it stronger, because sometimes poor privacy facilities could hamper their religious view.



#### 4.3.4 Patients have faced some barriers of accommodation facilities.

This theme covered the issues whether the spinal cord injury patients face barriers of accommodation facilities or not during receiving treatment in CRP (Figure-6).



**Figure-6:** Barriers of accommodation facilities of SCI patient at CRP

Among the 9 participants, 4 participants faced accommodation facilities barriers and 5 participants didn't face accommodation facilities barriers.

Out of nine participants, two of them said that, *“Patient flow is more than the seat, its take long time to get accommodation facilities. Many SCI patients can't admit in CRP due to lack of seat facilities.”*

Out of the participants, 2 participants said that, *“It take time to get admit in CRP and sometimes we are suffering from shortage of seat inside CRP. Most of the time patients can't admit here due to lack of bare seat in spinal cord injury unit of CRP”.*

Out of the nine participants, one participant said that, *“In this ward, nine seats are available but here are 11 patients at this time. So, we don't get enough accommodation facilities due to lack of seat facilities. CRP should increase the number of seats for the SCI patients”.*

One participant stated that, *“people with low income just like us can’t get enough accommodation facilities here. Lots of mosquito here due to damp surface. We can’t get proper access to do physical activities. Surrounding should be neater and cleaner”*.

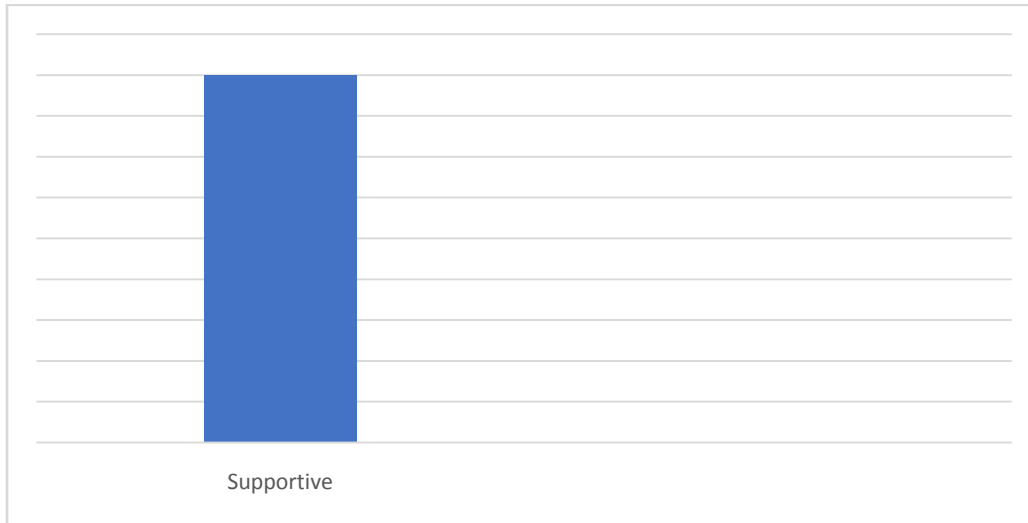
Out of the 9 participants 5 participants didn’t face any kind of barriers about the accommodation facilities. They are totally pleased with the present accommodation facilities.

2 of them said that, *“Accommodation facilities are good here. Environments are suitable for the patients with spinal cord injury”*.

Above statements reflect that the accommodation facilities were not available to all patient and there was lack of seat for SCI patients. So, more seat for the patient with SCI was required and need to be neater and cleaner to reduce mosquito problems.

#### 4.3.5 Physiotherapists of CRP are supportive and knowledgeable.

By this theme, researcher wanted to find out the participant's perception about the physiotherapists of CRP. The participant's responses are displayed below (Figure-7)



**Figure 7:** Perception of SCI participants to physiotherapists

This table represent that among the all participants thought that physiotherapists of CRP spinal cord unit were supportive.

Out of 9 participants 6 participants said that, *“Physiotherapists are act like our teacher. They teach us how to live independently and confidently. They are very much supportive towards us. They are able to treat us physical disabilities”*.

One participant stated that, *“Most of the physiotherapists are knowledgeable and cooperative. They are providing the best quality of treatment for the patients with spinal cord injury in Bangladesh”*.

Two participants said that, *“My physical condition is getting improve after taking physiotherapy treatment under the physiotherapists here. They are very much supportive, collaborative towards us”*.

Above statements represent that physiotherapist in CRP were illegible, cooperative, supportive, collaborative towards the SCI patients. They were providing the best quality of treatment here. All patients were satisfied to their treatment.

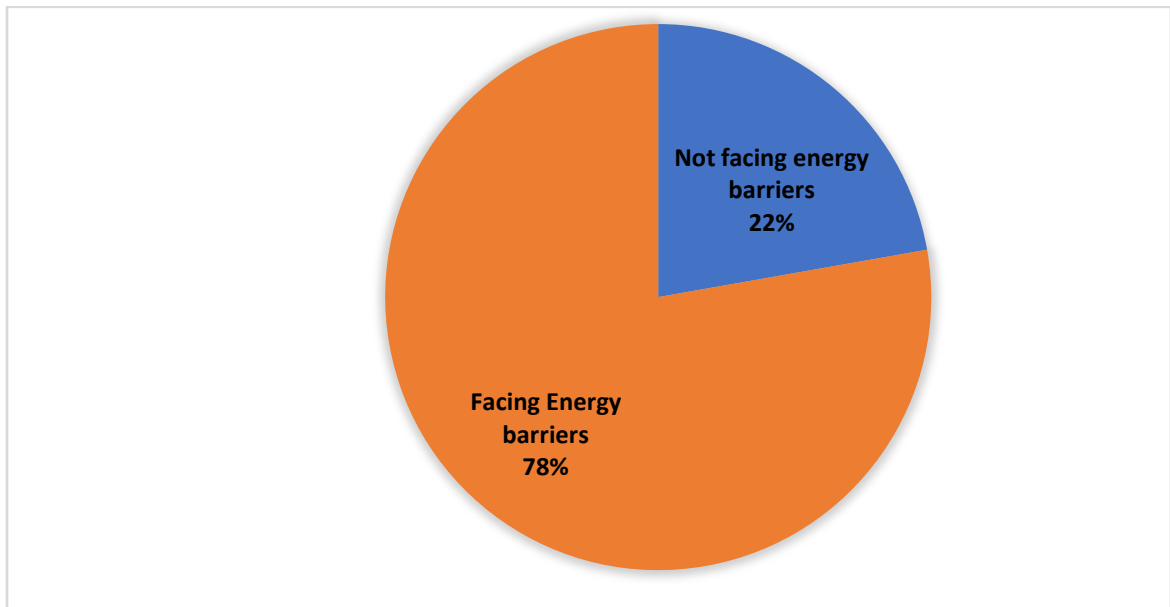
#### 4.3.6 Lack of energy of patients can prevent themselves from taking treatment.

By this theme researcher wanted to find out the patient's energy issues which can prevent themselves from taking treatment.

Out of 9 participants 3 of participants said that, *“they have no previous experience about these kinds of vigorous physical activities. Sometimes, they feel tired during treatment sessions.”*

One participant said that, *“Most of the time their body can't tolerate the physical load, they become weak and can't continue further treatment sessions. They need to take rest”*.

2 participants stated that, *“After injury their body become very weak. They have lack of appetite for food, so they can't eat properly. That's why they don't get proper energy to do exercises. Sometimes it may difficult to continue their treatment sessions”*.



**Figure 8:** Patient's perspective about their physical energy issues.

Above statements and figure express that lack of physical energy could prevent a patient from taking treatment.

Most of the participants (78%) were facing the physical energy barriers which could prevent themselves to continue further treatment sessions. 22% participants were not facing any kind of energy related barriers which could prevent themselves to take physiotherapy treatments.

So, exercise should be given to the patients according to their physical ability. Physiotherapists should be aware about it.

#### **4.3.7 Some recommendations of the patients to prevent those barriers.**

According to female participants of this study, privacy protocols of women should be maintained strongly during treatment sessions.

Out of 9 participants, 2 of them said that, *“Behavior should be good who are serve in a counter, seat should increase, it should be better if scheduled session is increase”*.

3 participants stated that, *“If CRP provide more accommodation facilities, if consider stand at a line, sometimes announcement is not understandable, treatment time should increase then they can provide more effective treatment facilities”*.

Another 2 participants said that, *“Duration of treatment period is less it will be good if time period prolonged. CRP should provide its regular basis service; and toilet is bad”*.

The study focused on the obstacles or barriers to the structured physiotherapy regimen or protocol for the spinal cord injury patients according to Bangladesh's perspective.

The objective of this research was to find out the barriers to structured exercise regimen for the spinal cord injury patients according to Bangladesh's perspective.

The primary objective of this study was to describe perceived barriers to exercise in a sample of individuals with SCI. In this study, the majority of participants indicated they would like to be participating in some type of exercise program; however, all of them were currently doing so. No single perceived barrier stood out as being most problematic. A qualitative study design was used to conduct the study.

Nine SCI patients were recruited in this study. The samples were selected by convenience sampling method. The data were collected by using a semi-structured questionnaire form and coded by seven themes; finally, the coded data are analyzed and presented qualitative analysis. Following themes have been emerged on the basis of data analysis.

These include treatment of spinal cord injury at CRP is quality full, duration of treatment session should be increased, privacy system for women should be increased, patients have faced some barriers of accommodation facilities, physiotherapists of CRP are supportive, lack of energy of patients can prevented them from taking treatment, some recommendations of the patients to prevent those barriers.

**Theme 1:** Treatment protocol for spinal cord injury patients at CRP is quality full.

From the transcripts, among nine participants, all of them reported that treatment of CRP for spinal cord injury patients is quality full, 3 participants faced some minor problems such as schedule problem, additional staff's behavioral problem etc.

Two of them said, *"treatment quality of CRP towards SCI patients is world-class standard but some receptionists and stuffs are not as supportive as they expected"*.

But, all of them admitted that treatment for SCI patients in CRP was quality full and effective for them.

Over recent decades, medical advances in the care of people with spinal cord injury (SCI) have led to improved rates of survival and life expectancy. In turn, emphasis has shifted from survival to life-long follow-up and quality of life (QOL). Despite this change in focus, the degree to which people with SCI experience QOL that is equivalent to their able-bodied peers, and the predictors of that QOL remain underexplored (Barker et al., 2009).

Chronic SCI and quality of treatment are both largely associated with several psychologic factors of which pain catastrophizing and SCI helplessness were most important. Psychologic intervention programs may be useful for persons suffering from chronic SCI to improve their impairments and disabilities (Wollaarss et al., 2007).

Literature explored that, quality of treatment of a patient is significantly poorer for people with SCI compared to the others. It was found to be associated with secondary impairments, activity limitations and participation restrictions but not with neurological level, age or time since injury. The single most important predictor of QQT was secondary impairments whereas the second most important predictor was participation.

**Theme 2:** Existing treatment facilities is insufficient.

Out of the 9 participants 5 of them said that, *“Duration of treatment period is less, we get only 20/30 minutes in a session, it will be good if time period prolonged”*.

One participant stated that, *“Duration of each session should be increase, we didn’t get enough treatment during this short time”*.

Among the 9 participants, 4 of them were pleased with the existing treatment facilities.

3 participants stated that, *“we are pleased with the treatment facilities here. Everything is good. All kind of therapy is effective for them. These help our to improve our impairments”*.



More than 50% participants were facing barriers from the treatment sessions. They were not pleased with the present treatment sessions. Maximum participants complained that they only get 20-30 minutes from each 1-hour treatment sessions. In this short time most of the times therapists can't complete their treatment protocol properly. They also said that in this short time of each treatment session they couldn't express their current needs to the therapists.

So, to remove this barrier they suggested that, "Duration of treatment sessions should be prolonged".

Time is most commonly reported barriers to implementing neurological rehabilitation (McCluskey et al., 2013).

In all centers, the largest proportion of the therapy time was spent at the level of basic activities and body functions, and the smallest proportion at the level of complex activities. Most therapy time was spent on interventions in the categories of 'Muscle power', 'Walking' and 'Hand rim wheelchair propulsion. The mean therapy time in minutes per patient per week should be 300 minutes (Langeveld et al., 2011).

Rehabilitation teams generally are described as consisting of a single representative of 6-8 disciplines, but research suggests that the number of individuals may be much larger. Continuity of care, whether it involves transfers between shifts in a hospital, coordination between phases of care (e.g., inpatient acute rehabilitation and subacute rehabilitation or home care), or collaboration between various care providers with the same or different specialty, is an important issue in health services research, because poor coordination has the potential to bring about inferior patient outcomes (Dijkers et al., 2012).

Literature revealed that, treatment should be given minimum 40 minutes to the SCI patients according to their physical needs. Their physical abilities should be added with it. Most of the participants complained that they get only 20-30 minutes time form 1 hour treatment session. Most the time therapists couldn't complete their task in this short time. So, they suggested to improve the existing treatment facilities.

**Theme 3:** Existing privacy facilities for participants are not sufficient.

Out of 9 participants 2 female participants stated that, *“they feel shy during treatment sessions if there is any male person is present. Their religion is not support it”*.

Out of 2 female participants, one participant has said that, *“during treatment session some male stuffs have come to woman-ward without any permission, sometimes they feel shy”*.

In this study, two participants were female and they were Muslim. All of them complained that existing privacy facilities are not enough for them. Sometimes they needed to go to the male therapists or stuffs. They thought poor privacy facilities could hamper their religious perception. Also complained that they can't share their treatment needs with the male stuffs frankly.

They also complained about the supportive stuffs. According to their verbal statement, sometimes they came into their room without their permission. It hampered their religious view.

These statements reflect that existing privacy facilities were not sufficient. So, participants suggested that it should be increased.

**Theme 4:** Patients have faced some barriers of accommodation facilities.

Among the 9 participants of this study, 4 participants faced accommodation facilities barriers and 5 participants didn't face accommodation facilities barriers.

Out of nine participants, two of them said that, *“Patient flow is more than the seat, its take long time to get accommodation facilities. Many SCI patients can't admit in CRP due to lack of seat facilities.*

Out of the participants, 2 participants said that, *“It take time to get admit in CRP and sometimes we are suffering from shortage of seat inside CRP. Most of the time patients can't admit here due to lack of bare seat in spinal cord injury unit of CRP”*.

Out of nine participants, 3 participants were totally satisfied with the existing treatment facilities.

2 participants were facing some minor problems such as, mosquito problem etc.

One participant stated that, *“Sometimes, there are lots of mosquito, for which we can’t complete our home task-oriented exercises”*.

According to Healthy People 2020, 76.8% of adults with disabilities experience barriers that impede them from using available healthcare and wellness services. Barriers include inadequate disability parking (number of spaces or size of spaces), lack of ramps, narrow doorways, doors that swing inward, heavy doors without automatic opening capabilities, lack of elevators, cramped waiting rooms, exam rooms that are too small to maneuver a wheelchair, scales that cannot accommodate a wheelchair, examination tables that are not height adjustable, inaccessible diagnostic equipment, and inaccessible restrooms. These barriers have been identified as a major reason that people with disabilities do not engage in healthcare and wellness services (Pharr et al., 2019).

Above literature revealed that, 76.8% people with disabilities are experience barriers that impede them from using available healthcare and wellness services. Those barriers are showed above.

In this study, I also found some barriers about the accommodation facilities for the people with spinal cord injury. Main barriers were insufficient seat number, mosquito problems etc.

Approximately, 50% participants were facing barrier about the accommodation facilities which can prevent themselves from taking structured exercise regimen.

**Theme 5:** Physiotherapists of CRP are supportive and knowledgeable.

According to the all (9) participants of this study, physiotherapists who were providing structured physiotherapy exercises in CRP were very much supportive and knowledgeable.

Out of 9 participants 6 participants said that, *“Physiotherapists are act like our teacher. They teach us how to live independently and confidently. They are very much supportive towards us. They are able to treat us physical disabilities”*.

One participant stated that, *“Most of the physiotherapists are knowledgeable and cooperative. They are providing the best quality of treatment for the patients with spinal cord injury in Bangladesh”*.

The notion of patient participation has received increasing attention from policymakers and health professionals. In an international context, the World Health Organization has long promoted patient participation. Physicians registered with the UK General Medical Council have the duty to work in partnership with patients including the respect for the patient’s right to make treatment and care decisions with them. The international confederation of physical therapy has emphasized the importance of patients as active participants. National associations such as the American Physical Therapy Association, the Chartered Society of Physiotherapists in the UK and the Swiss Physiotherapy Association to mention a few have promoted the development of competencies enabling physiotherapists to elicit patient’s cooperation during evaluation and treatment (Schoeb & Burge., 2012).

Above literature showed that it is important to held the good relationship between the physiotherapist and patients. The relationship between patients and the physiotherapists of CRP was good. All participants had good perception about the physiotherapist here. So, we didn’t find any barrier in this theme.

**Theme 6:** Lack of energy of patients can prevent themselves from taking treatment.

Most of the participants (78%) were facing the physical energy barriers which can prevent themselves to continue further treatment sessions. 22% participants were not facing any kind of energy related barriers which can prevent themselves to take physiotherapy treatments. So, exercise should be given to the patients according to their physical ability. Physiotherapists should be aware about it.

**Theme 7:** Some recommendations of the patients to prevent those barriers.

According to the participants of this study, they suggested some recommendations to reduce these barriers. These were: supporting staffs should be more supportive, room/ward should be neater and cleaner, privacy facilities should be increase, seat facilities should be increase.

Participants think that, if these recommendations are available then it would be better.

**Limitation:**

To make successful research it may be time consuming. As I get short period of time to complete the research, I have to take small sample size that was 09. If large number of sample size was taken, it would be more effective. Only 09 samples do not represent the whole country condition of spinal cord injury patients. The sample was collected only from CRP. If it was collected another institute, the result would be more reliable and appropriate and also give a clear perception about barriers of SCI patients in Bangladesh. As Sample size was not large number, I could not show it in percentage. As it was the first research of the researcher so there might be some mistakes that should be overlooked by the supervisor and the honorable teachers.

**6.1 Conclusion:**

This study explores the barriers to structured exercise regimen for the spinal cord injury patients according to Bangladesh's perspective. Insufficient treatment facilities, insufficient privacy facilities and lack of physical energy of participants, lack of seat number are the main barriers to the structured exercise regimen for the people with spinal cord injury.

Good thing is participants admitted that, physiotherapy exercise regimen which is providing to the SCI patients is quality full and standard, accommodation facilities is good and the physiotherapists are supportive and knowledgeable. They got improvements by taking the physiotherapy treatment in CRP.

**6.2 Recommendation:**

It is recommended to do further research on large group of people in both qualitative and find out the solution to overcome of barriers to structured exercise regimen for the spinal cord injury patients according to Bangladesh's perspective.

## References

- Ahuja, C.S., Nori, S., Tetreault, L., Wilson, J., Kwon, B., Harrop, J., Choi, D. and Fehlings, M.G. (2017). Traumatic spinal cord injury—repair and regeneration. *Neurosurgery*, 80(3S), pp.S9-S22.
- Akter, F., Islam, S., Haque, O., Hossain, A., Hossain, K.M.A., Imran, M.H., Ahmed, M.S. and Alam, S.(2019). Barriers for individuals with spinal cord injury during community reintegration: a qualitative study. *Int J Physical Medicine Rehabilitation*, 7(513), p.2.
- Anwar, M.A., Al Shehabi, T.S. and Eid, A.H. (2016). Inflammogenesis of secondary spinal cord injury. *Frontiers in Cellular Neuroscience*, 10, p.98.
- Barker, R.N., Kendall, M.D., Amsters, D.I., Pershouse, K.J., Haines, T.P. and Kuipers, P. (2009). The relationship between quality of life and disability across the lifespan for people with spinal cord injury. *Spinal Cord*, 47(2), pp.149-155.
- Berney, S., Bragge, P., Granger, C., Opdam, H. and Denehy, L. (2011). The acute respiratory management of cervical spinal cord injury in the first 6 weeks after injury: a systematic review. *Spinal Cord*, 49(1), pp.17-29.
- Borg, D.N., Foster, M.M., Legg, M., Jones, R., Kendall, E., Fleming, J. and Geraghty, T.J. (2020). The effect of health service use, unmet need, and service obstacles on quality of life and psychological well-being in the first year after discharge from spinal cord injury rehabilitation. *Archives of Physical Medicine and Rehabilitation*, 101(7), pp.1162-1169.
- Chen, Y., Tang, Y., Vogel, L. and DeVivo, M. (2013). Causes of spinal cord injury. *Topics in Spinal Cord Injury Rehabilitation*, 19(1), pp.1-8.
- Chiu, W.T., Lin, H.C., Lam, C., Chu, S.F., Chiang, Y.H. and Tsai, S.H. (2010). Epidemiology of traumatic spinal cord injury: comparisons between developed and developing countries. *Asia Pacific Journal of Public Health*, 22(1), pp.9-18.



Dijkers, M.P. and Faotto, R.M. (2012). Team size in spinal cord injury inpatient rehabilitation and patient participation in therapy sessions: the SCI Rehab project. *The Journal of Spinal Cord Medicine*, 35(6), pp.624-634.

Fehlings, M.G., Tetreault, L.A., Aarabi, B., Anderson, P., Arnold, P.M., Brodke, D.S., Chiba, K., Dettori, J.R., Furlan, J.C., Harrop, J.S. and Hawryluk, G. (2017). A clinical practice guideline for the management of patients with acute spinal cord injury: recommendations on the type and timing of rehabilitation. *Global Spine Journal*, 7(3\_suppl), pp.231S-238S.

Furlan, J.C., Sakakibara, B.M., Miller, W.C. and Krassioukov, A.V. (2013). Global incidence and prevalence of traumatic spinal cord injury. *Canadian journal of Neurological Sciences*, 40(4), pp.456-464.

Harvey, L. (2008). *Management of Spinal Cord Injuries E-Book: A Guide for Physiotherapists*. Elsevier Health Sciences.

Harvey, L.A. (2016). Physiotherapy rehabilitation for people with spinal cord injuries. *Journal of Physiotherapy*, 62(1), pp.4-11.

Hossain, M.S., Harvey, L.A., Rahman, M.A., Muldoon, S., Bowden, J.L., Islam, M.S., Jan, S., Taylor, V., Cameron, I.D., Chhabra, H.S. and Lindley, R.I. (2016). Community-based Interventions to prevent serious Complications (CIVIC) following spinal cord injury in Bangladesh: protocol of a randomised controlled trial. *BMJ open*, 6(1), p.e010350.

Jazayeri, S.B., Beygi, S., Shokraneh, F., Hagen, E.M. and Rahimi-Movaghar, V. (2015). Incidence of traumatic spinal cord injury worldwide: a systematic review. *European Spine Journal*, 24(5), pp.905-918.

McCluskey, A., Vratsistas-Curto, A. and Schurr, K. (2013). Barriers and enablers to implementing multiple stroke guideline recommendations: a qualitative study. *BMC Health Services Research*, 13(1):3-7

- Munce, S.E., Webster, F., Fehlings, M.G., Straus, S.E., Jang, E. and Jaglal, S.B. (2014). Perceived facilitators and barriers to self-management in individuals with traumatic spinal cord injury: a qualitative descriptive study. *BMC Neurology*, 14(1), pp.1-12.
- Noonan, V.K., Fingas, M., Farry, A., Baxter, D., Singh, A., Fehlings, M.G. and Dvorak, M.F. (2012). Incidence and prevalence of spinal cord injury in Canada: a national perspective. *Neuroepidemiology*, 38(4), pp.219-226.
- Pharr, J.R., James, T. and Yeung, Y.L. (2019). Accessibility and accommodations for patients with mobility disabilities in a large healthcare system: How are we doing?. *Disability and Health Journal*, 12(4), pp.679-684.
- Quadir, M.M., Sen, K., Sultana, M.R., Ahmed, M.S., Taoheed, F., Andalib, A., Kabir, R., Fariduzzaman, A.M. and Arafat, S.M. (2017). Demography, diagnosis and complications of spinal cord injury patients in a rehabilitation center of Bangladesh. *International Journal of Neurorehabilitation*, 4, p.244.
- Rahman, A., Ahmed, S., Sultana, R., Taoheed, F., Andalib, A. and Arafat, S.Y. (2017). Epidemiology of spinal cord injury in Bangladesh: A five year observation from a rehabilitation center. *Journal of Spine*, 6(367), p.2.
- Scelza, W.M., Kalpakjian, C.Z., Zemper, E.D. and Tate, D.G. (2005). Perceived barriers to exercise in people with spinal cord injury. *American Journal of Physical Medicine & Rehabilitation*, 84(8), pp.576-583.
- Schoeb, V. and Bürge, E. (2012). Perceptions of patients and physiotherapists on patient participation: a narrative synthesis of qualitative studies. *Physiotherapy Research International*, 17(2), pp.80-91.
- Sekhon, L.H. and Fehlings, M.G. (2001). Epidemiology, Demographics, and Pathophysiology of Acute Spinal Cord Injury. *Spine*, 26(24S), pp.S2-S12.
- Solinsky, R., Specker-Sullivan, L. and Wexler, A. (2020). Current barriers and ethical considerations for clinical implementation of epidural stimulation for functional improvement after spinal cord injury. *The journal of Spinal Cord Medicine*, 43(5), pp.653-656.

Stephens, C., Neil, R. and Smith, P. (2012). The perceived benefits and barriers of sport in spinal cord injured individuals: a qualitative study. *Disability and Rehabilitation*, 34(24), pp.2061-2070.

van Langeveld, S.A., Post, M.W., van Asbeck, F.W., ter Horst, P., Leenders, J., Postma, K., Rijken, H. and Lindeman, E. (2011). Contents of physical therapy, occupational therapy, and sports therapy sessions for patients with a spinal cord injury in three Dutch rehabilitation centres. *Disability and Rehabilitation*, 33(5), pp.412-422.

Williams, T.L., Smith, B. and Papatomas, A. (2018). Physical activity promotion for people with spinal cord injury: physiotherapists' beliefs and actions. *Disability and Rehabilitation*, 40(1), pp.52-61.

Witiw, C.D. and Fehlings, M.G. (2015). Acute spinal cord injury. *Journal of Spinal Disorders and Techniques*, 28(6), pp.202-210.

Wollaars, M.M., Post, M.W., van Asbeck, F.W. and Brand, N. (2007). Spinal cord injury pain: the influence of psychologic factors and impact on quality of life. *The Clinical Journal of Pain*, 23(5), pp.383-391.

World Health Organization and International Spinal Cord Society (2013). International perspectives on spinal cord injury. World Health Organization.

World Health Organization: International Classification of Functioning, Disability and Health: ICF short version. Geneva, World Health Organization (2001).



## সম্মতিপত্র

আমি মোঃমুশফিক-উস সালেহীন মারুফ; আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)-এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি.এস.সি ইন ফিজিওথেরাপি কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হল- **“মেরুরজ্জুতে আঘাত প্রাপ্ত ব্যক্তিদের কাঠামোগত ফিজিওথেরাপি চিকিৎসাবিধি গ্রহন করার ক্ষেত্রে বাঁধাসমূহ”**।

এর মাধ্যমে আমি মেরুরজ্জুতে আঘাতপ্রাপ্ত ব্যক্তিদের ফিজিওথেরাপি চিকিৎসাবিধি গ্রহন করার ক্ষেত্রে বাঁধাসমূহ 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 অংশগ্রহণ স্ব-ইচ্ছা প্রণোদিত এবং আপনি যেকোনো সময় এই অধ্যয়ন থেকে কোনো নেতিবাচক ফলাফল ছাড়াই নিজেই 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 শফিকুল ইসলাম, সহযোগী অধ্যাপক এবং বিভাগীয় প্রধান, ফিজিওথেরাপি 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 তারিখ: \_\_\_\_\_

গবেষকের স্বাক্ষর ও তারিখ: \_\_\_\_\_

## Questionnaire

Demographic information:

Name:

Age:

Gender:

Address:

Phone no.:

Occupation:

Patient ID:

Educational status:

### **Guidelines for in-depth interview**

#### **Level of functioning, capacity in mobility of the patient with spinal cord injury**

1. Please tell me about your current situation?

#### **Rehabilitation services to maximize functioning, activity level and social participation**

2. Please tell me the physiotherapy services you have taken to improve impairments, activity limitations and participation restrictions.
3. Do you think physiotherapy exercise services could help you in your present situation?
4. What is your opinion regarding the services you usually received from CRP?
5. Which services do you think is best for you (at individual and service level)?  
Would you please express your opinion?
6. Any additional services do you think is required for you to minimize your present problem? Please tell me your opinion.
7. Please tell me something about the physiotherapists in CRP?

#### **Barriers in accessing and utilization of rehabilitation services**

8. What is your opinion about accommodation facilities in CRP? Is this sufficient?  
Please tell me in brief.
9. Are there any attitudinal barriers that preventing you from taking Physiotherapy treatment? Please express your opinion?

## **Opportunities to improve rehabilitation services for patients with SCI**

10. What do you think would help to improve rehabilitation services?

## প্রশ্নাবলী

জনতাত্ত্বিক তথ্যাবলীঃ

নামঃ

বয়সঃ

লিঙ্গঃ

ঠিকানাঃ

মোবাইল নম্বর;

পেশাঃ

পেশেন্ট আইডিঃ

শিক্ষাগত যোগ্যতাঃ

### বিশদ সাক্ষাৎকারের জন্য নির্দেশাবলী

মেরুরজ্জুতে আঘাত প্রাপ্তব্যক্তিদের সঙ্গে কাজ, চলাচলের ক্ষমতা ও যোগাযোগের স্তর

১) আপনার বর্তমান অবস্থা সম্পর্কে কিছু বলুন?

কর্মক্ষমতা, সক্রিয়তা এবং সামাজিক অংশগ্রহণ বাড়ানোর লক্ষ্যে পুনর্বাসন সেবা

২) দয়া করে আমাকে বলুন, আপনার শারীরিক বিকলতা, কার্যক্ষমতার সীমাবদ্ধতা এবং সামাজিক অংশগ্রহণে সীমাবদ্ধতা হ্রাসের উদ্দেশ্যে আপনি কি কি ফিজিওথেরাপি চিকিৎসা গ্রহণ করেছেন?

৩) আপনি কি মনে করেন যে, আপনার এই বর্তমান অবস্থায় ফিজিওথেরাপি চিকিৎসা সেবা আপনাকে সাহায্য করতে পারে?

৪) সিআরপি থেকে আপনি সাধারণত যেসব চিকিৎসা সেবাগ্রহণ করে থাকেন সেগুলো সম্পর্কে আপনার মতামত ব্যক্ত করুন।

৫) এগুলোর মধ্যে কোন সেবাটি আপনার জন্য সর্বোত্তম বলে আপনি মনে করছেন (ব্যক্তিগত ও সমষ্টিগত স্তর)? অনুগ্রহ পূর্বক আপনার মতামত ব্যক্ত করুন।

৬) আপনার বর্তমান সমস্যা হ্রাসের উদ্দেশ্যে কোন অতিরিক্ত সেবার প্রয়োজন আছে কি? অনুগ্রহপূর্বক আপনার মতামত ব্যক্ত করুন।

৭) অনুগ্রহপূর্বক সিআরপির ফিজিওথেরাপিষ্টদের সম্পর্কে কিছু বলুন।

পুনর্বাসন সেবা গ্রহণ এবং ব্যবহারে বাধাসমূহ

৮) সিআরপির বাসস্থান সেবা সম্পর্কে আপনার মতামত কি? এটি কি পর্যাপ্ত? দয়া করে বিশদভাবে বলুন।

৯) এমন কোন আচরণগত সমস্যা রয়েছে কি, যা আপনাকে ফিজিওথেরাপি চিকিৎসা গ্রহণ হতে বিরত রাখছে? অনুগ্রহপূর্বক আপনার মতামত ব্যক্ত করুন।

মেরুরজ্জুতে আঘাতপ্রাপ্ত ব্যক্তিদের জন্য পুনর্বাসন সেবা উন্নতকরণের সুযোগ সমূহ

১০) পুনর্বাসন সেবার মান কিভাবে উন্নত করা যায় বলে আপনি মনে করছেন?



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 Mushfique-Us Salehin Maruf, student of 4<sup>th</sup> 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, **"Barriers of structured exercise regimen for people with spinal cord injury"** 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 find out the obstacles or barriers to the structured physiotherapy regimen or protocol for the spinal cord injury patients according to Bangladesh's perspective. I would like to assure that anything in 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,

*Mushfique-Us Salehin Maruf.*  
Mushfique-Us Salehin Maruf

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

Roll no.: 10; Session: 2015-16;

ID: 112150281

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.

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 4<sup>th</sup> year physiotherapy research project.**

Sir,

With due respect and humble submission to state that I am Jannatul Ferdus, a student of 4<sup>th</sup> year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The Ethical committee has approved my research project entitled: **"Barriers of structured exercise regimen for the people with spinal cord injury"** under the supervision of Md. Shofiql 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,

Mushfiq - Us Salehin Maruf.

Mushfiq -Us Salehin Maruf

4th Year

B.Sc. in Physiotherapy

Class Roll: 10; Session: 2015-16

Bangladesh Health Professions Institute (BHPI)

(An academic Institution of CRP)

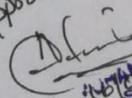
CRP-Chapain, Savar, Dhaka-1343.

Recommended

Shofiql  
16.06.21

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

Approved



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



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)  
**Bangladesh Health Professions Institute (BHPI)**

(The Academic Institute of CRP)

Ref:

CRP/BHPI/IRB/06/2021/475

Date:

17/06/2021

To,  
Md. Mushfique-Us Salehin Maruf  
4<sup>th</sup> year B.Sc. in Physiotherapy  
Session: 2015-2016, Student ID: 112150281  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

**Subject:** Approval of the thesis proposal “**Barriers of Structured Exercise Regimen for people with Spinal Cord Injury**” by ethics committee.

Dear Md. Mushfique-Us Salehin Maruf,  
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 Barriers of Structured Exercise Regimen for people with Spinal Cord Injury. 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 form at the meeting held at 8.30am on 1<sup>st</sup> March, 2020 at BHPI (23<sup>rd</sup> IRB Meeting).

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

Best regards

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

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404

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