



Faculty of Medicine

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**ECONOMICAL BURDEN OF PEOPLE WITH SPINAL CORD INJURY IN  
THE HOSPITAL PATIENTS**

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**“ECONOMICAL BURDEN OF PEOPLE WITH SPINAL CORD INJURY IN THE HOSPITAL PATIENTS”**

Submitted by **Mithun Adhikari** for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc. in PT)



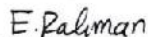
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## DECLARATION

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 for any publication, presentation or dissemination of information of the study, I would bound to take written consent from the Department of Physiotherapy of Bangladesh Health Professions Institute (BHPI).

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## Acronyms

<b>ADL</b>	Activities of daily Living
<b>BHPI</b>	Bangladesh Health Professions Institute
<b>BMRC</b>	Bangladesh Medical Research Council
<b>CBR</b>	Community Based Rehabilitation
<b>CRP</b>	Centre for the Rehabilitation of the Paralysed
<b>IPA</b>	Impact on Participation and Autonomy
<b>IRB</b>	Institutional Review Board
<b>SCI</b>	Spinal Cord Injury
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>WHO</b>	World Health Organization

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## Abstract

**Background:** Traumatic spinal cord injuries (tSCI) exact an extensive burden on the injured individual, their family and carers, and society as a whole. In addition to the physical and psychosocial trauma, the economic burden is thought to be substantial, due to increased health care costs as well as higher rates of morbidity and premature mortality.

**Purpose:** The purpose of this study is to estimate the current lifetime economic burden of traumatic spinal cord injury (tSCI) in Bangladesh from a societal perspective, including both direct and indirect costs, using an incidence-based approach. **Methodology:** The study design was cross-sectional. Total 60 samples were selected conveniently for this study from Spinal Cord Injury unit, CRP, Savar. Data was collected by using of questionnaire. The study was conducted by using quantitative descriptive analysis through using SPSS software 20.0 version. Available resource use and cost information for complete/incomplete tetraplegia and paraplegia was applied to the estimated annual incidence of tSCI, by severity, in Bangladesh. **Analysis of data:** Self-made questionnaire & SPSS was used for analyzing the data. **Results:** In this study, the results found that 70% tSCI patient (hospitalized) strongly agreed wheelchair as an economic burden. Among the total participants, 75% had costs about 1-5lakh, 15% had costs about 6-10lakh, 5% had costs about 11-15lakh, 5% had costs about >20lakh after the injury. **Conclusion:** This study focuses on the economic burden of SCI patients in their own community and found that the costs after injury were really an economic burden for the SCI hospital patients.

**Key words:** Spinal Cord Injury (SCI), Economic burden, Community

## **1.1 Background**

Spinal cord injury can occur in everyone's life and the patient with Spinal cord injury faces lots of challenges in coping with the injury process as well as rehabilitation; Although some patients recover partial to perform the daily living activities through rehabilitation but many activities are permanently altered (Kumar & Gupta, 2016).

Spinal Cord Injury is the most complex injury of all catastrophic injuries where patients usually have permanent and devastating neurologic deficits with disability and the injury causes negative effect on the injured person's functional, medical, psychological and economic wellbeing (Smith et al., 2013).

Spinal cord injury (SCI) is a devastating disorder that can cause impairment in physical, psychological, and social functioning (Gurcay et al., 2010; New et al., 2013; Smith et al., 2013). It is a frequent cause of mortality, and is reflected in radical changes in lifestyle and quality of life (QOL) for both the persons with SCI and their family members (Kawanishi & Greguol, 2013).

Spinal cord injury (SCI) is one of the most serious injuries of the musculoskeletal system which most cases brings about permanent disability and the unexpected occurrence of the injury and experiencing a new life situation result in a decrease in the quality of life in individuals with SCI (Pokaczajlo et al., 2016).SCI is a condition with an annual incidence of 12.1–57.8 cases per million worldwide (Munce et al., 2013).

People with SCI must relearn basic skills such as eating, bathing, dressing, driving and in addition, individuals with SCI must often cope with an increased incidence of many health problems, such as neurogenic bowel and bladder, respiratory symptoms and complications, cardiovascular complications, pressure ulcers, altered sexual functioning, urinary tract infections, autonomic dysreflexia, neuropathic pain, osteoporosis and fractures and often have to cope with altered social roles and psychiatric comorbidities including reactive

depression and anxiety disorders ; these issues represent major challenges to living with SCI all of which greatly affect economically & also as a burden (Tulsky et al., 2015) .

Hospitalization is a critical component of treatment for SCIs. Nearly all patients who incur a SCI and survive the initial trauma undergo hospitalization for stabilization of the injury and prevention of immediate complications (Buechnes et al., 2000).

Both paraplegia and tetraplegia patient with spinal cord injury lead a poor health related quality of life where the ‘physiological problems’ as well as ‘psychological problems’ hamper the normal activities of daily living and overall quality of life and delays the phase of rehabilitation, thereby increase the economic costs or enhance the economic burden (Robertovich et al., 2017).

Spinal cord injury refers to injury to the spinal cord that disrupts normal spinal cord function (McKinley et al., 2005), its result in devastating impairments that can cause severe functional limitations (Scivoletto et al., 2005) & incidence varies depending on age, gender, region and occupation (Vasiliadis, 2012).

Internationally, between 12 and 58 SCI cases are reported per million annually (Van den Berg et al., 2010). When the spinal cord is damaged, communication is disrupted between the brain and parts of the body that are innervated at or below the lesion, the lesion may be complete or incomplete, the cord need not be completely severed to result in a complete injury; the nerve cells may be destroyed as a result of pressure, bruising or loss of blood supply and if they die they do not have the ability to regenerate, here individuals who sustain damage at the cervical level will have impaired function in both their upper and lower extremities, a condition known as tetraplegia & those who are injured at or below the thoracic level will have paraplegia, with function maintained in their upper extremities but some degree of impairment in the trunk and lower extremities, slightly more than half of injuries result in tetraplegia (Brodwin et al., 2009).

Barriers of people with spinal cord injury patient in community depend on several factors

like as environmental, physical, emotional/psychological, perceptions and attitudes. The natural environment is inherently inaccessible, this included lack of curb cuts, inaccessible access routes, doorways being too narrow for wheelchair access, facility front desk being too high for persons in wheelchairs to communicate with the person at the desk, and lack of elevators and people with disabilities specifically mentioned difficulty in accessing hot tubs and saunas, explaining that doors to saunas are too narrow and ramps are seldom available for access to hot tubs or whirlpools, members in the architect group also highlighted safety issues, including slippery floors and the absence of handrails on stairs (Rimmer et al., 2005).

Spinal cord injury is one of the most serious medical condition that causes functional, psychological and socioeconomic disorder and also lead to lifelong disability. The amount of disability associated with completeness as well as the level of injury (Sezer et al., 2015).

Traumatic spinal cord injury (tSCI) is a devastating event, resulting from mechanical disruption of the spinal cord tissue. Spinal cord injury also occurs in non-traumatic disorders including spondylitis, tumors, and infection (Nagosi et al., 2015). It is a low incidence, high burden, life- altering health conditions. And the current treatment process of spinal cord injury are primary healing, rehabilitation and prevention of complications. About 40 million people in the worldwide are suffer from SCI in every year, among them young men are common, children are also included that occurs most commonly due to road traffic accident, gunshot injuries, knife injuries, falls and also sports injury (Sezer et al., 2015).

However, Spinal cord injury occurs as a result of compulsion, incision or contusion of the spinal cord from foramen magnum to the cauda equina that interrupted the function of spinal cord at the distal level of injury (Nas et al., 2015). Without good community reintegration, patients are more prone to get secondary complications, such as pressure ulcers, urinary tract infections, resulting re-hospitalization or even death. Below the level of lesion motor, sensory and autonomic innervation occurs, as a result SCI patients are often restricted in their physical activities of daily living. As a consequence, compare with

able-bodied persons, SCI patients are live with the risk of developing a hypoactive lifestyle with possible harmful effects on physical fitness, social participation, and quality of life (Bussman et al., 2008).

## **1.2 Rationale**

Spinal cord injury (SCI) is a debilitating condition that has a broad impact on the medical, social, physiological aspects of those who are directly affected their caregivers and the community. The objectives of the spinal cord injury rehabilitation include not only prevention of death and disability but also community reintegration and improving their quality of life. It is viewed as one of the key goals of rehabilitation following an SCI and community reintegration is also recognized by the World Health Organization as critical outcome following disability. Through community reintegration, rehabilitation of the spinal cord injury patients become fulfillment and also it get meaningfulness.

Bangladesh is a poor country, half of the 150 million people living below the poverty line. Here, a majority of people with spinal cord injury (SCI) are either poor or very poor. So, after completion of rehabilitation from Center for the rehabilitation of the paralysed (CRP) when they access in the community, they faces many barriers in community reintegration. Accessibility is one of the most common barriers in community reintegration. For that cause community participation is reduced and slowly patients become isolate from the community that has a bad impact on patient's health.

As Bangladesh is a developing country and trying to develop health care system. If we want to give appropriate rehabilitation of spinal cord injury patients then we have to know the economic cost for spinal cord injury that is burden for the patients in their own community. CRP managed the patients with multi and interdisciplinary approach which emphasis on the development of community based rehabilitation programs but there has been no specific research of is conducted to identify the barriers in accessibility in community reintegration based on perspective of spinal cord injury patients in Bangladesh and economic burden in their own community. Through the study the patient's experience about the economic costs for spinal cord injury is a burden for the participants in their own community. If the barriers are identify and generate the importance to focusing on this expect an overcoming strategy can be undertaken by the professionals so that the sufferers can reintegrate themselves successfully and can lead a better productive life as well as the working area of the physiotherapist will broaden in this spectrum.

### **1.3 Research Question:**

Is the economic cost a burden for the hospital patients of spinal cord injury?



## **1.4. Objectives**

### **1.4.1. General objective**

To evaluate the economic burden of traumatic Spinal Cord Injury patients attending at Specialized Rehabilitation Centre.

### **1.4.2. Specific objectives**

1. To evaluate the financial costs of the participants.
2. To determine the treatment expenditure of the participants.
3. To identify the earning members of family of the participants.
4. To find out if the earnings are more than the costs.
5. To detect if the costs after injury is a burden for the participants.

## **1.5. Operational Definitions**

### **Spinal cord injury**

A spinal cord injury (SCI), also called spinal cord lesion, is damage to the spinal cord as a result of trauma or pathological change, either temporary or permanent, of the normal motor, sensory, or autonomic function of the spinal cord.

### **Accessibility**

Accessibility refers to the design of products and environments for people with disabilities. Examples include wheelchairs, entryway ramps, hearing aids, and braille signs.

### **Economic**

Economic is relating to, or based on the production, distribution, and consumption of goods and services.

### **Burden**

An obstacles faced by the participations in their own community as well as their everyday tasks.

### **Community**

A community is a small or large social unit (a group of people) who have something in common, such as norms, religion, values, or identity and the communities share a sense of place that is situated in a given geographical area (e.g. a country, village, town, or neighbourhood).

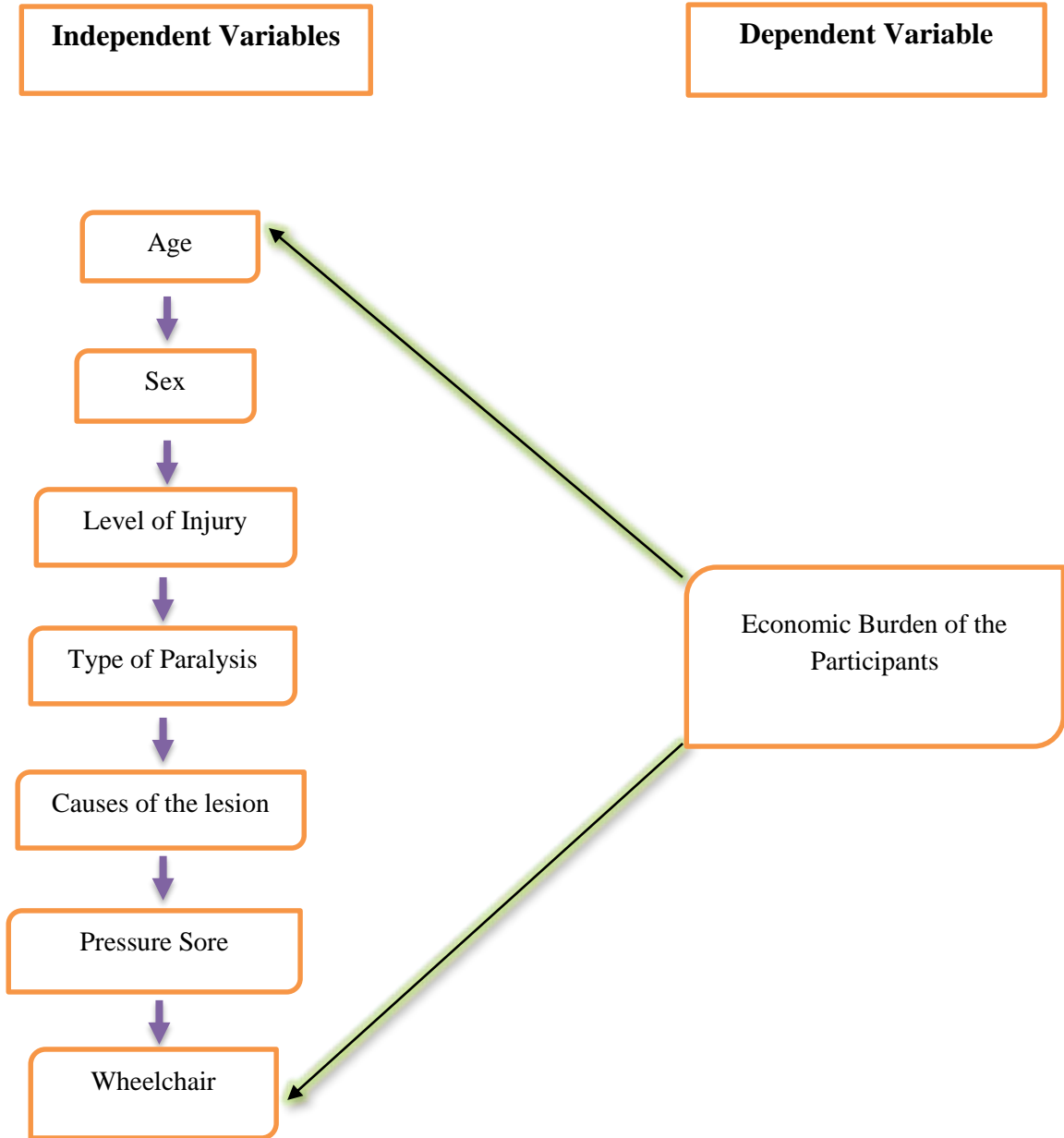
### **Reintegration**

In social and physical environment of communities how the environment enables and disabled people to take part in everyday like others in society.

## **Participation**

Joint consultation in decision making, goal setting, profit sharing, teamwork, and other such measures through which a firm attempts to foster or increase its employees' commitment to collective objectives.

## 1.6. Conceptual Framework



One of the medical complex and life disrupting condition is spinal cord injury (SCI). The mortality rates of this condition associated with historically, ever today high-income countries, and spinal cord injury can be viewed often productive and can be successfully overcome the personal and social challenge. This change reflects good medical practice, which means that people can survive, live and improve after injury. Now a day people with spinal cord injury carry to anticipate not just a long life, but also a fuller and more productive life, better than they have had in previous generations (WHO, 2013).

Spinal cord injury is a term that refers to damage to the spinal cord as a consequence of trauma or from disease or degeneration such as cancer (WHO, 2013). An irreversible neurological impairment ensuing in varying degrees of paralysis, sensory loss and sphincter disturbance which are permanent and irreversible in some cases (Rahimi-Movaghar et al., 2013). A spinal cord injury (SCI) is defined as “the occurrence of an acute, traumatic lesion of neural elements in the spinal canal, resulting in temporary or permanent sensory deficit, motor deficit or bladder or bowel dysfunction” (Barclay et al., 2011).

The risk of morbidity and mortality is high in spinal cord injury. Mortality risk is highest in the first year after injury and remains high compared to the general population. People with spinal cord injury are 2 to 5 times more likely to die prematurely than people without SCI. This life threatening condition has various epidemiological studies that have been carried out in different part of the world. Worldwide incidence of SCI varies from 9.2 to 56.1 per million (Mathur et al., 2015). Among worldwide incidence of spinal cord injury, males are most common than females, children also included (Nas et al., 2015). According to WHO estimate, 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 (WHO, 2013).

In the U.S.A, the recent estimate showed that the annual incidence of spinal cord injury (SCI) is approximately 54 cases per million population or approximately 17,000 new SCI cases each year. The number of people in the U.S. who are alive in 2016 who have SCI has been estimated to be approximately 282,000 persons, with a range from 243,000 to 347,000 persons. Males account for approximately 80% of new SCI cases (White & Black., 2016). In the UK, there are approximately 40,000 people living with SCI (Barclay et al., 2011). In every eight hours someone is paralysed by SCI in the UK (Williams et al., 2014).

In Asia, incidence rates of SCI ranged from 12.06 to 61.6 per million and the average age ranged from 26.8 to 56.6 years old. Commonly, male are at higher risk than female. Most common causes of traumatic spinal cord injury is motor vehicle collisions and fall, war wounds also included (Ning et al., 2012).

In developing countries, such as India, male female ratio of SCI is 4.2:1 and common age group of 20-49. Epidemiological scenario of SCI are different from western countries with major cause being fall. Among the causes of injury, 53% patients had a fall from height and 28% suffered from road traffic accidents. Fall of heavy object overhead and back (10.7%), fall with heavy object overhead (3.0%) and fall following electric shock (4.0%) were uncommon causes (Mathur et al., 2015). In another neighboring country Nepal, there is no reliable estimate of incidence and prevalence of SCI. One estimate indicate yearly incidence of traumatic SCI in Nepal is 300-5000, and prevalence 1500-25000 (Scovil et al., 2007).

Although within both developed and developing countries the ratio of SCI are varies considerably, but the persons with SCI are predominantly male. Among developed countries the male-female ratio ranges from 2.5:1-4.3:1 and among developing countries it is 2.34:1-9:1. Though the populations of Bangladesh are almost the equal gender composition but the male female ratio is 4.5:1 among the people with SCI in Bangladesh. According to the different published articles in Bangladesh, nowadays the number of female with is on the rise in Bangladesh (Razzak et al., 2017). In our country perspective among the traumatic spinal cord injury lesions, 60% is paraplegics and 40% tetraplegic beside these among the non-traumatic spinal cord lesions cases 84% paraplegic and 16% tetraplegic. SCI have various non-traumatic and traumatic etiologies with varying degrees

of resulting neurological damage. A study in Bangladesh aimed to discover life expectation of persons with SCI uncovered that, falling from height, either from trees, construction works, electric poles or roofs, was found to be the most common cause (40.30%) and falling while carrying a heavy load on the head was second most common cause (16.0%). Among the non-traumatic cases of SCI, spinal tuberculosis was found to be the most common cause, comprising 7.0%. Other causes were road traffic accidents, fall of object on back, Guillain Barre Syndrome, and Transverse Mellitus (Razzak et al., 2011).

Individuals must often cope with various physical, psychological, and social issues, after sustaining a spinal cord injury (SCI) that occurs as a result of their injuries such as poorer health as a result of the injury, reduced employment opportunities, limited social support and family role functioning, limited access to recreational and leisure activities, and a lack of accessible transportation & also some invisible and conceptual barriers that arise from the attitudes and beliefs of the individual with the SCI and from society as a whole that are affect participation (Zinman et al., 2014).

After leaving the rehabilitation hospital SCI people may have some difficulties in accessing their accommodation due to some barriers such as stairs, small bathrooms and inaccessible kitchens which in effect make them —prisoners in their own homes‡ and as a result they become —bed-blocking‡ and that’s why when patients healthy enough to go home are enforced to stay in the hospital due to unsatisfactorily accessible housing and also transportation barriers are one of the most important barriers because it’s necessary to participate in education, employment and social activities outside the home, public transport is often inaccessible to people with SCI and ramps, lifts & safety lock-down systems may be absent, poorly maintained or hazardous, and transport personnel may not be trained in the accessibility features. But the fundamental problems are systemic failures such as a discontinuation in the travel chain‡ can make wheelchair users cannot reach their destination (Wee & Paterson, 2009).

The conceptualization of barriers used three main components proposed by the ICF including: Body Function and structures, activities and participation, including components of capacity and performance, and environmental factors with measurement of barriers and facilitators (Silver et al., 2012). There are many barriers of community

reintegration such as financial resource, employment opportunities, social acceptance and support, lack of knowledge but accessibility barriers are most common one of them that identified as barriers to participants ability to cope with disability and reduce their community participation (Babamohamadi et al., 2011).

Community reintegration will depend on the extent that a person with SCI can overcome the environmental barriers. In this section, environmental barriers are explored progressively, beginning with housing to which a person who recently developed SCI will have to return after rehabilitation, then continuing with transport, which will be vital to participating in the community, and finishing with public buildings, such as schools and workplaces, where access is needed to fulfill rights to education and employment (WHO, 2013).

The accessibility of the environment influenced on the ability of participants to participate fully in the community in the way as it wished by SCI patients. Transport is essential but can be challenging. The ability to have access to appropriate transport and infrastructure was essential for people to be able to get out and about in their community. This included public and private transport, the availability of car parks and access to petrol. For those that could drive, problems with access to parking spaces that were the correct size and design, and in an appropriate location, impacted significantly on their ability to participate in the community (Barclay et al., 2016).

Among whole environment home is one of the most important in life. Accessible housing is a global problem for people with disabilities, particularly those with mobility impairments such as SCI patients. Evidence from surveys in southern Africa shows that disabled people generally live in housing that is inferior to that of nondisabled people. For adults with SCI, leaving the rehabilitation hospital may be difficult if their accommodation has barriers such as stairs, small bathrooms and inaccessible kitchens, which in effect make them prisoners in their own homes. The result may be what is often called bed-blocking, when patients fit enough to go home are forced to stay in the hospital due to insufficiently accessible housing (WHO, 2013).



Environmental barriers such as transport may prevent community participation. In accordance of Richards et al. report environmental access to be positively associated with life satisfaction (Kennedy et al., 2010). Access to transport is required to participate in education, employment and social activities outside the home. Public transport is often inaccessible to people with SCI. In developing countries, ramps, lifts and safety lock-down systems may be lacked (WHO, 2013).

In case of spinal cord injury, the treatment and rehabilitation period is long, costly and also boring whether it is complete or incomplete. As SCI rehabilitation is a long process so it requires patience and motivation of the patient and relatives. To prevent joint contractures and the loss of muscle strength, conservation of bone density, and to ensure normal functioning of the respiratory and digestive system early rehabilitation is essential (Nas et al., 2015). And also the primary goals of rehabilitation of spinal cord injury patients are to prevent the secondary complications, maximization of physical functioning, and reintegration into the community (Saulino et al, 2017).

In chronic period, the most important goal is realization of the independent mobilization for both complete and incomplete spinal cord injury patients. In chronic phase or phase to return home are ensuring the maximum independence are the most important expectations that related to the level of the patient's injury, integration of the patient to society and teaching the importance of the family's role (Nas et al., 2015).

According to Anneken, et al. (2010) individuals with acquired SCI being actively involved in Physical exercise and sports differ from physically inactive individuals. They report a comparatively better quality of life within physical, psychological, social and context field. Both the functional effects such as the increase of physical resistance, mobility and coordination, as well as social and psychological effects such as an increase in self-confidence, self-concept or mental state were identified. Their study confirmed that findings also apply to individuals with acquired SCI in Germany. The stratification of the interviewed individuals into 'actively involved in physical exercise' and 'physically inactive' demonstrated differences in the single scales that are directly correlate with the existence of physical exercise. Owing to the quality of life construct used in that study was to be expected.

Martin, et al. (2010) also assumed that the differences within the Ingle scale 'physical capacity in everyday life' and 'mobility' are possibly due directly to the effects of physical exercise. In summary, they have clearly established a statistically significant, positive relationship between physical activity and state of well-being. Cerasa and Lucia (2015), demonstrated that sports activity is, in fact, associated with better psychological status in SCI patients. However, demographic factors did not emerge as having any specific role.

Spinal cord injury is also associated with high risk of premature mortality. Most of the evidence shows that the mortality after SCI has historically focused on biographic and injury characteristics such as age, sex, race, cause of injury, level of injury, neurologic completeness of injury, ventilator dependency (Krause et al., 2011). Over the past three decades while clinical attention has increasingly focused on the prevention of secondary complications after that acute mortality rates of spinal cord injury patients have fallen. It has been proved that the people who have spinal cord injury are highly capable to medical conditions and secondary chronic conditions, such as pressure sores, urinary tract infections, diabetes, cardiovascular disease, obesity, osteoporosis and arthritis. The development of SCI treatment units, including well-trained, specialized teams for rehabilitation, and regular follow-up can decrease the mortality rate of people with spinal cord injury (Razzak et al., 2011).

The estimated lifetime economic burden per individual with SCI ranges from \$1.5 million for incomplete paraplegia to \$3.0 million for complete tetraplegia. The annual economic burden associated with 1389 new persons with SCI surviving their initial hospitalization is estimated at \$2.67 billion (Krueger et al., 2013).

SCI people generally had negative experiences of attempting to keep or find employment and organizations are not considered work environment for accessibility for wheelchair users but in Bangladesh specialized spinal cord lesion centers and general hospitals provide services for people with SCI, although the level of medical care, rehabilitation (Momin, 2005). Most of the patients are unable to walk. For this, most commonly, the alternative mode of mobility is a wheelchair. Wheelchair propulsion is more efficient than walking for people with extensive paralysis. SCI people can move any place by wheelchair (Groot et al., 2011). But in Bangladesh SCI people cannot move very easily due to lack of

accessibility. A wheelchair is principally used for short distance mobility in the SCI population (Tsai et al., 2014).

The spinal cord is a pathway to carry impulse from brain to the body and from body to the brain (Rahman et al., 2012). The SCI is the „highway“ through which motor and sensory information travels between the brain and body via nerves which pass up and down through the spinal cord along definite pathways, When the path is broken, the message cannot get through and this occurs when there is an injury to, or disease of the spinal cord. Recent research suggests that primary nerve injury occurs due to acute injury to the spinal cord that causes secondary damage by producing inflammation, ischemia, and toxicity (Kong et al., 2013).

Spinal Cord Injuries are most often traumatic, caused by lateral bending, dislocation, rotation, axial loading, and hyper flexion or hyperextension of the cord or cauda equina and motor vehicle accidents are the most common cause of SCIs, while other causes include falls, work-related accidents, sports injuries, and penetrations such as stab or gunshot wounds, SCIs can also be of a non-traumatic origin, as in the case of cancer, infection, intervertebral disc disease, vertebral injury and spinal cord vascular disease (Van Den Berg et al., 2010). The life altering experience is spinal cord injury that affects not only the patients with SCI but also their spouses, parents, siblings and children and the significant cause of mortality and morbidity (Ali & Tawfiq, 2013).

Providing effective vocational rehabilitation (VR) services, "Supportive Employment" and inter-agency collaborations "best practices" are available (Fleming et al., 2013). The technology has improved, the life of the people has increased consistently with the SCI and it has increased the expansion of effective vocational services to maximize the economic and community population. Despite this, the employment results decreased. Both program post-spinal cord injury studies have been used as a measure of the initial results of traditional employment rates to come to work in this area investigations (Cotner et al., 2013).

Due to different cultural, economic and legislative environments, the employment rate in different country is 25% and 60% (Piccenna et al., 2015). Recent literature about Australia

people with spinal cord injury, the employment rate returns to work between 21% to 35% of the average life expectancy and 65% of the average employment participation rate (Johnston & Cameron, 2014).

These people mostly live in rural areas, and before their accidents were their primary earners (agricultural laborers, labor, construction workers, drivers, service holders) in their families. Only 18% of students and housewives were among some non-income-generated businesses. Not surprisingly, 84% of the participants did not complete secondary school education; it is understandable that they will prefer training that does not require high cognitive requirements. It was supported by these researchers that these participants had a high interest in shop management training (which required a lower level of education), and had very little interest in computer and electronics training (which required higher education). It is also found that it was more interested in male participant's new vocational training compared to women. The study results of Yasuda et al show that was related to the gender being returned to work. Most women were interested in coming back to their earlier non-refunded role without taking any new training (Yasuda et al., 2012).

The incidence of spinal cord injury lies down between 10.4 and 83 per million people affected per year (Kennedy and Chessell, 2013). The life altering experience that affects not only the patients with SCI but also their spouses, parents, siblings and children and the significant cause of mortality and morbidity (Ali & Tawfiq, 2013).

However, to enable people with disabilities to participate in their communities to the fullest extend which is their desire can be done by identifying the obstacles they faced (Scelza et al., 2015). People living with SCI face many barriers within social contexts (Newman, 2010). Existence of barriers in the environment gives rise to a sense of discrimination in people with SCI, prevents their social participation, limits their choices and foils their attempts to lead an independent life and the ability to care for themselves (Babamohamadi et al., 2011). Accessibility is one of the most common barrier, many articles specifically highlights the importance of accessibility. Accessibility underwrites the right to live independently in the community and to participate fully in all areas of life; failure to ensure accessibility can constitute discrimination (WHO, 2013).

The impact of support tasks is one of the factors for people with SCI that may make personal relationships more difficult, accessibility of social support predominantly emotional support and problem-solving support has been shown to be significant for the life fulfillment of people with SCI in the early phase of injury, in assisting revival and taking on new life roles family and friends can play very vital role, although there is a risk of over-assistance (Pearcey et al., 2011). People with SCI should not be seen simply as inactive receivers of support, but as active and independent representatives who deliberately form their affiliations and environment by using their psychological equipment such as their social skills, coping skills, strengths and resources, an Iranian study found that self-confidence, religious beliefs, social networks and positive thinking were catalysts of surviving (Babamohamadi et al., 2011).

As Bangladesh is a developing country and trying to develop health care system. If we want to give appropriate rehabilitation of spinal cord injury patients then we have to know the barriers in accessibility of community reintegration. CRP managed the patients with multi and interdisciplinary approach which emphasis on the development of community based rehabilitation programs but there has been no specific research of is conducted to identify the barriers in accessibility in community reintegration based on perspective of spinal cord injury patients in Bangladesh. Through the study the patient's experience about the barriers in accessibility of community reintegration they face in community will explore out. If the barriers are identify and generate the importance to focusing on this expect an overcoming strategy can be undertaken by the professionals so that the sufferers can reintegrate themselves successfully and can lead a better productive life as well as the working area of the physiotherapist will broaden in this spectrum.

This research was a cross sectional study design to identify the safety measure used by the spinal cord injury patients. The aims of the study was economic burden among the users of SCI patients. Questionnaire will be used as measurement tools for measuring the health and safety issue people with spinal cord injury.

### **3.1. Study Design**

A cross sectional study design is used. A cross sectional study was chosen as appropriate to achieve the aims. A cross-sectional study is a descriptive study in which disease and exposure status is measured simultaneously in a given population. Cross-sectional studies can be thought of as providing a "snapshot" of the frequency and characteristics of a disease in a population at a particular point in time (Environmental Health Investigations branch, 2009). All the measurements on each person are made at one point in time. The most important advantage of cross sectional studies is that in general they are quick and cheap. As there is no follow up, less resource are required to run the study. The quantitative methods are appropriate if the issue is known about relatively simple and unambiguous (Bailey, 1997).

### **3.2. Study Site**

The study was conduct both rural and urban area especially CRP in the Savar, Dhaka, Bangladesh area. Savar is an upzilla under Dhaka district. Spinal cord injury patients available in CRP and outside area of CRP. Many SCI patient lives in this area.

### **3.3. Study Area**

The researcher is a 4th year B.Sc in Physiotherapy student of Bangladesh Health Professions Institute (BHPI) and the research was conducted as part of the course curriculum. For this reason the researcher had to collect data within short time to maintain the contrasts of the course module time. Data was collected from SCI patients attending at

Center for the Rehabilitation of the Paralyzed, Savar, Dhaka. CRP is the biggest hospital and renowned rehabilitation centre for Spinal Cord Injury (SCI) among South Asia.

### 3.4. Study Population

Researcher select the spinal cord injury patient who has economically burden in their own community. Researcher select the tetraplegic and paraplegic including spinal cord injury patient who has economically burden.

### 3.5. Sample Size

Sampling procedure for cross sectional study done by following equation:

$$n = \frac{Z^2 P(1 - p)}{d^2}$$
$$= \frac{(1.96)^2 \times 0.37 \times (1 - 0.37)}{(0.05)^2}$$
$$= 358$$

Here,

Z (confidence interval) = 1.96

P (prevalence) = 0.37 (Murthy et al., 2014)

d = 0.05

Calculating sample is 358

As it is academic thesis, self-founding and data was collected from a single specialized hospital by considering the feasibility and time limitation 60 sample were selected conveniently.

### **3.6. Sampling Technique**

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

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



### **3.7. Inclusion criteria**

- Spinal cord injury patient
- Economical barrier
- Wheelchairs user
- Paraplegic spinal cord injury patient
- Urban area
- Rural area
- Hospital admitted patients
- Post-operative SCI patients

### **3.8. Exclusion Criteria**

- Spinal cord injury patient who doesn't use wheelchair
- Who has cognitive problem
- Economical stable
- Unconscious patient
- Unwilling to participants

### **3.9. Data Processing**

#### **3.9.1 Data Collection Tools**

Data was collected using structural questioner, Papers, Pen, Pencil, Diary, Computer and pen drive.

#### **3.9.2 Data management and analysis**

The data was collected using structural questioner. And for the analysis of data descriptive statistics was used. Use the graph technique for analyzing data, calculated as percentages, and presented this using bar, column, table and pie charts by SPSS software version 20.0. SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analysis. To find out statistically significant of this study researcher done Chi-square test.

### **3.10. Informed Consent**

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

### **3.11. Ethical consideration**

A research proposal was submitted to the physiotherapy department of BHPI for approval and the proposal was approved by the faculty members. Beginning the data collection, permission was obtained from the concerned authorities ensuring the safety of the participants. The formal permission was taken from the head of the physiotherapy Dept. to check patient file and collect the data. Data collection was started and completed within the allocate time frame. All information was kept in secure. World Health Organization (WHO) and Bangladesh Medical and Research Council (BMRC) rules were followed to conduct the study.

**4.1 Socio-demographic Information****4.1.1 Age of the participants**

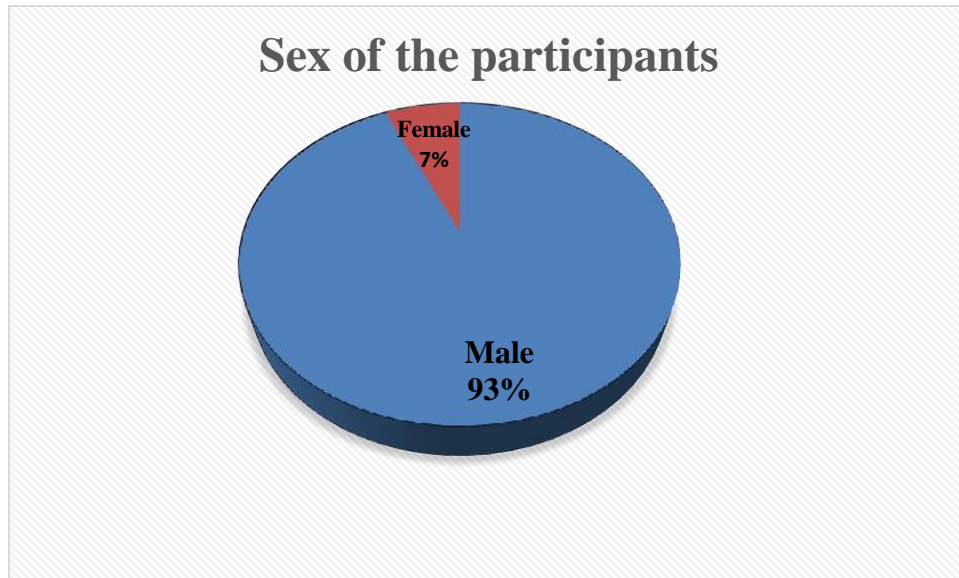
Among the total participants (n=60) most of the participants belong in the age group 16-25 (n=21). This indicates that young aged people were vulnerable for spinal cord injury & they stayed in the society with disability.

**Table 1: Age of the participants**

<b>Age Group</b>	<b>Number</b>	<b>Percent</b>
6-15	4	6.7
16-25	21	35.0
26-35	17	28.3
36-45	8	13.3
46-55	8	13.3
56-65	2	3.3
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.1.2 Sex of the participants

According to this study male (n=56) were more likely to have experience of spinal cord injury .Male have more risk of SCI due to working environment.



**Figure 1: Sex of Participants**

### 4.1.3 Earning members in the family

During conducting this study we found that of the family (n=44) has only single member for maintain their family. That was burden for a family maintain overall cost for their livelihood. That was focus economic burden of SCI patients.

**Table 2: Earning members in the family**

<b>Family Earning Member</b>	<b>Number</b>	<b>Percent</b>
One	44	73.3
Two	13	21.7
Three	3	5
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.1.3.1 Person who contribute in main family income

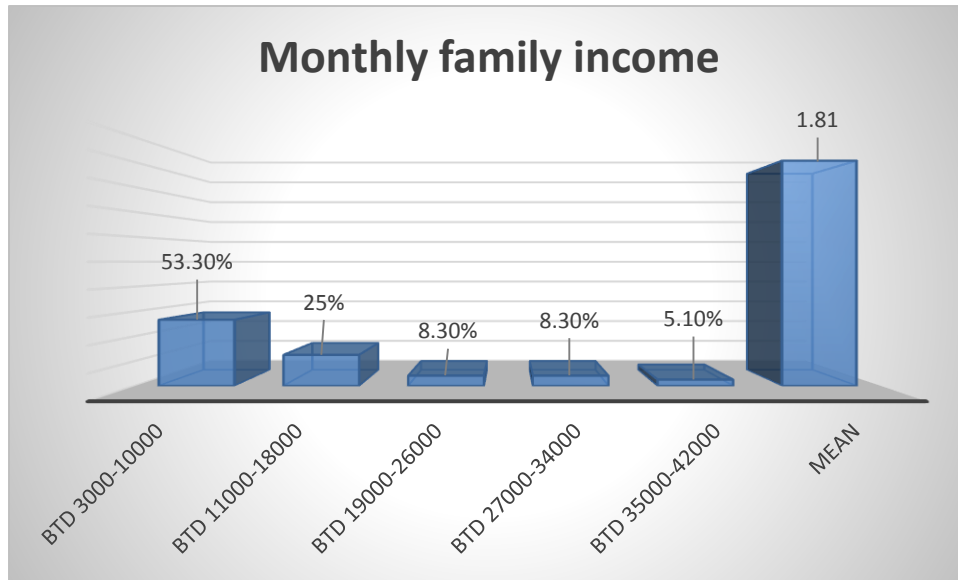
In this study we saw that most of the family patient (n=41) contribute in main family income. Whole family suffered due to lack of family income and increased of family monthly expenditure.

**Table 3: Person who contribute in main family income**

<b>Earning Member Group</b>	<b>Number</b>	<b>Percent</b>
Patient	41	68.3
Father	14	23.3
Other	5	8.3
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.1.3.2 Monthly family income

Most of the family of this study belonging in a low socio economic status (53.30%). It was difficult to family member to maintain their family as well as treatment expenditure.

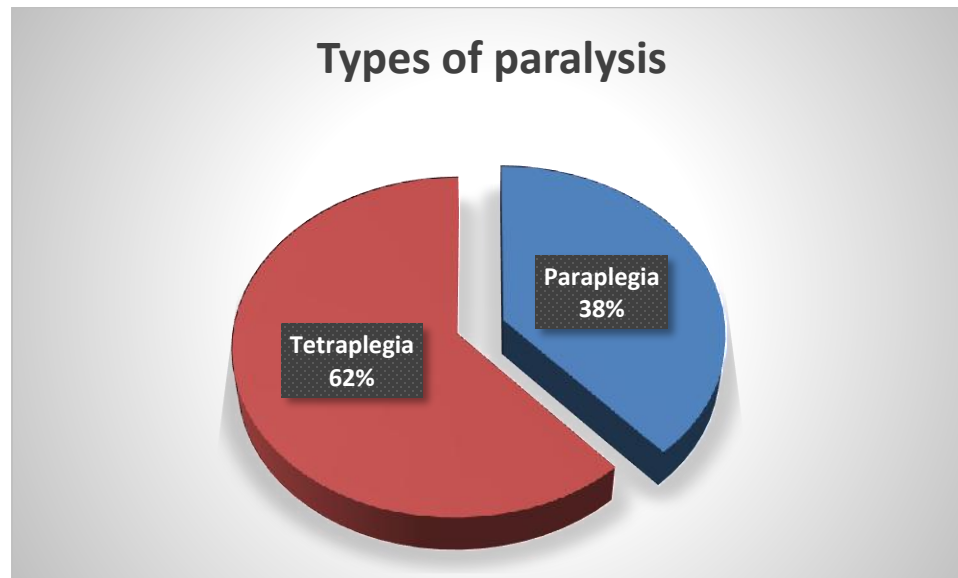


**Figure 2: Monthly family income**



## 4.2 Types of Paralysis

Among the total spinal cord injury patients of this study most of them were tetraplegia (n=37).



**Figure 3: Types of paralysis**

### 4.3 Neurological level according to ASIA scale

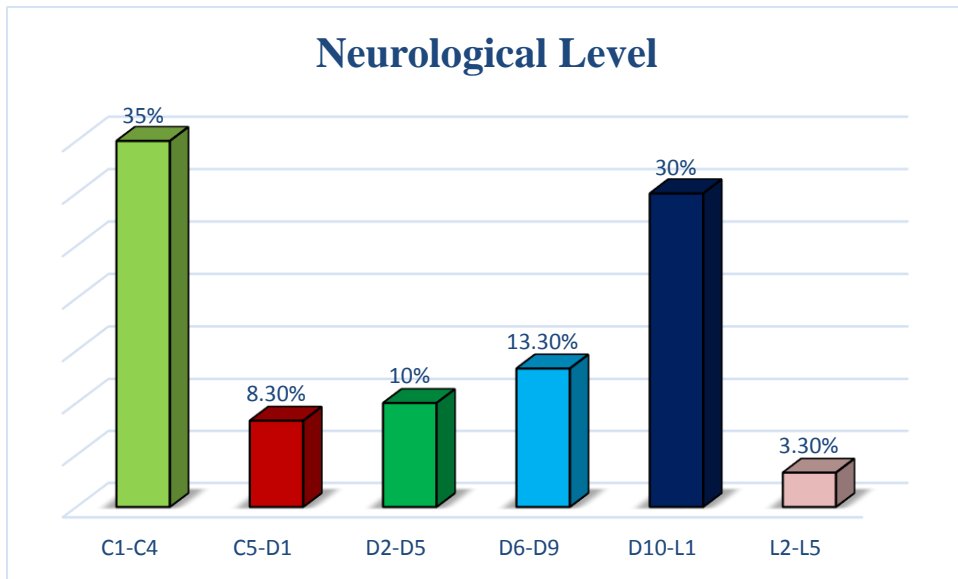
Among the total participants of this study 71.7 % (n=43) was complete-A injury according to ASIA scale. So they would be dependent on the family. This will hamper their economic status in the society.

**Table 4: Neurological level according to ASIA scale**

<b>ASIA Scale Group</b>	<b>Number</b>	<b>Percent</b>
Complete A	43	71.7
Incomplete B	12	20
Incomplete C	4	6.7
Incomplete D	1	1.7
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.4 Neurological level of injury

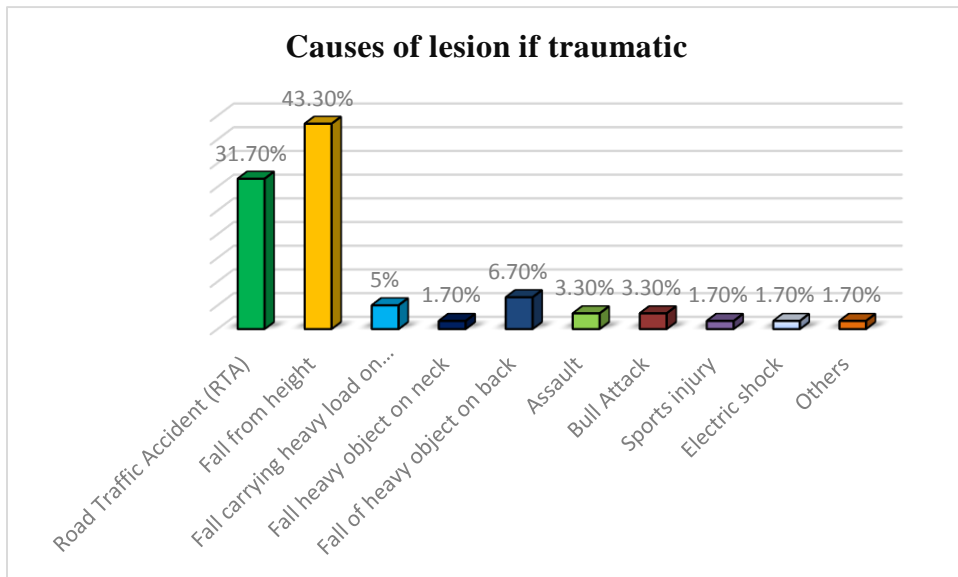
According to SCI assessment of the participants was in neurological level C1-C4 (35%).3.3% was neurological level L2-L5.This indicate the rate of dependent is higher in the family.



**Figure 4: Neurological level of injury**

#### 4.5 Causes of traumatic lesion

Bangladesh is a developing country. Road traffic accident is daily issue in this country. Many people are died everyday due to RTA and many of the live with lifelong disability. In this study we also see the same result. Among the total participants many of them were injured through RTA (n=19). Another most common cause of injury was fall from height (n=26). Most of the SCI patients live in village. They have common intention to travel in the tree. So fall from tree was the common cause among the participants.



**Figure 5: Causes of traumatic lesion**

#### 4.6 Pressure sore existed at admission to CRP

Pressure sore was also a burden for SCI injury patient. This had more time and money to maintain a pressure sore patient. In this study in found 15% patients has (n=9) has pressure sore.

**Table 5: Pressure sore existed at admission to CRP**

<b>Existence of Pressure Sore</b>	<b>Number</b>	<b>Percent</b>
Yes	9	15.0
No	51	85.0
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.7 Carer after SCI injury

Carer plays an important role in SCI injury patient. Most of the participants had carer (n=25) after injury. This would also increase their expenditure for treatment & would be burden for this family.

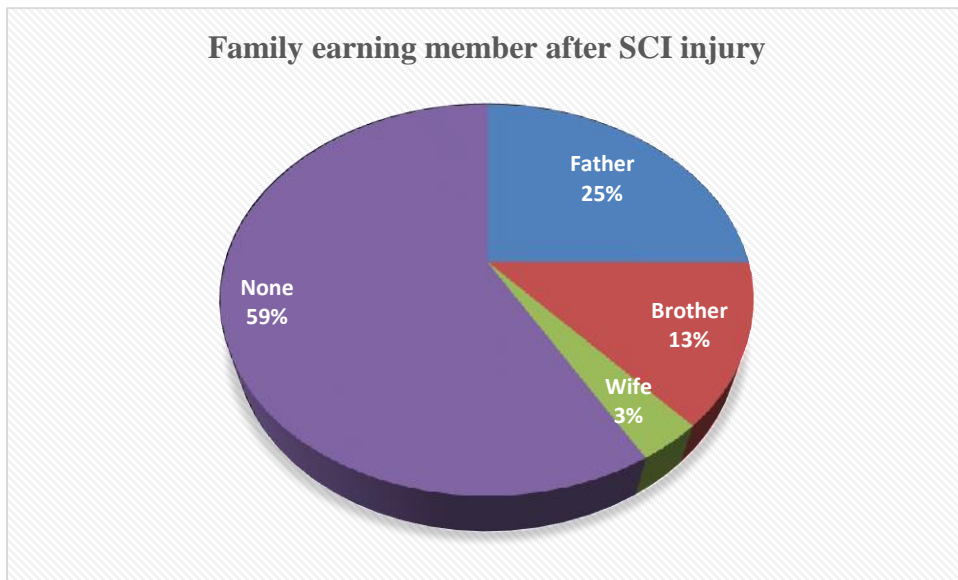
**Table 6: Carer after SCI injury**

<b>Carer Group</b>	<b>Number</b>	<b>Percent</b>
Wife	16	26.7
Son	3	5.0
Daughter	2	3.3
others	25	41.7
None	14	23.3
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.8 Family economical status after SCI injury

##### 4.8.1 Family earning member after SCI injury

In this study we found that patients was the main earning person of the family. In this study we see that after SCI injury many of family (59%) there is no earning person in the family.25% family has main earning member of family is patient father.13% family in maintain by patients brother and 3% is maintain by patient wife.



**Figure 6: Family earning member after SCI injury**

#### 4.8.2 Money spent for treatment after injury

Total participant of this study was 60. All of them was admitted in hospital. So they need money for maintain health and treatment. Most of the patients (n=45) require about BDT 1-5 lakhs for their treatment. 15% family spent 6-10 lakhs for treatment purpose. 5% family spent more than 20 lakhs for treatment of SCI patient.

**Table 7: Money spent for treatment after injury**

<b>Treatment cost</b>	<b>Number</b>	<b>Percent</b>
6 to 10 lakhs	9	15
1 to 5 lakhs	45	75
11 to 15 lakhs	3	5
More than 20 lakhs	3	5
<b>Total</b>	<b>60</b>	<b>100</b>



### 4.8.3 Source of Treatment expenditure spent by

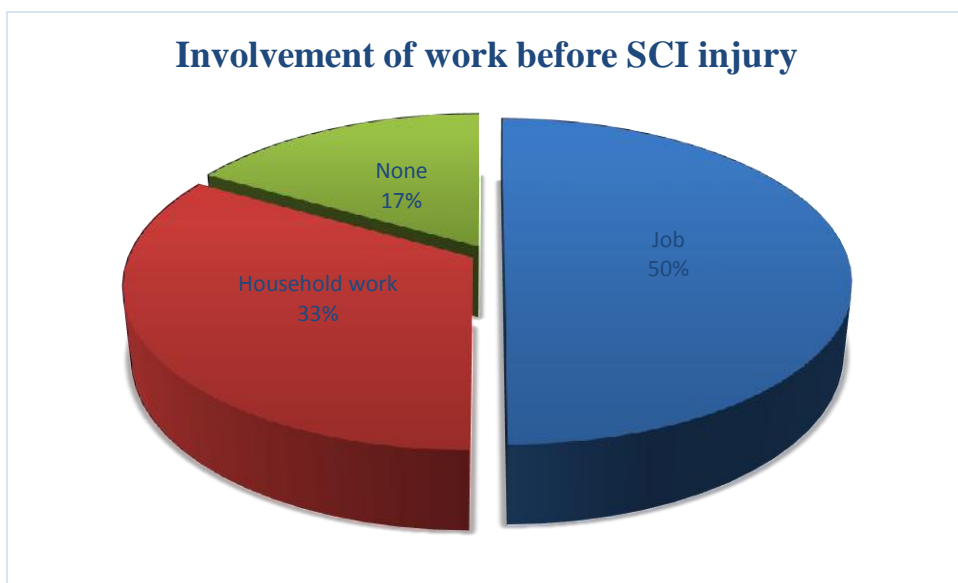
Most of the SCI patients live in a low socioeconomic family. Full family would suffer to maintain treatment cost of SCI family. In this study among the total participants most of the family maintain their treatment cost by their personal saving (n=19).Majority was maintain this cost by selling their property (n=13) and taking loans from bank (n=12).

**Table 8: Treatment expenditure spent by**

<b>Expenditure Group</b>	<b>Number</b>	<b>Percent</b>
Personal Savings	19	31.7
Family support	6	10
Support from job place	1	1.7
Support from friends	1	1.7
Support from government or other organization	6	10
Selling property or other things	13	21.7
Loans	12	20
Support from mother/relatives	2	3.3
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.8.4 Involvement of work before SCI injury

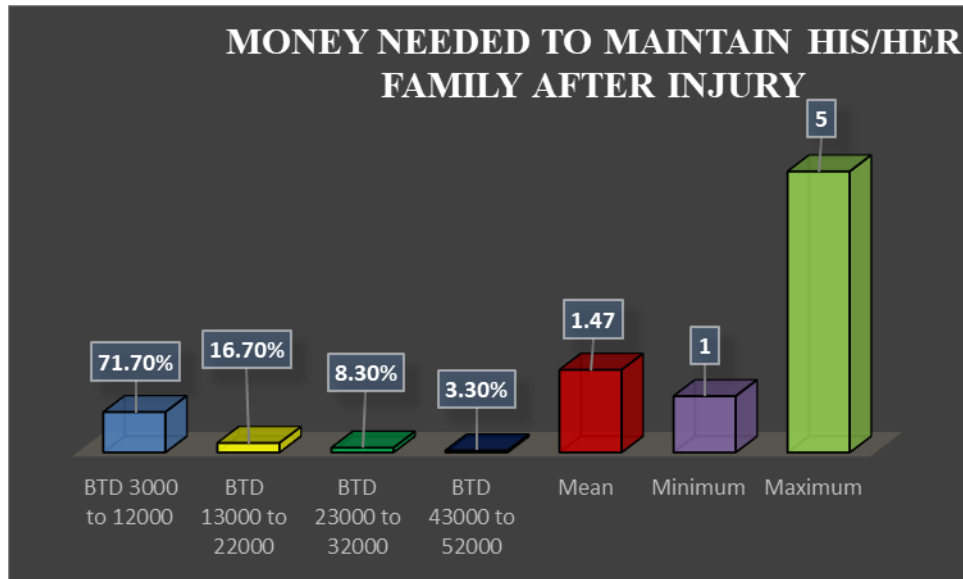
We could make the disable people productive through proper training. In is study we saw that most of the SCI injury patient involved in job (n=30) after complete their rehabilitation. Majority of them were involved in household activity (n=20) and 16.7% were not involved in any type of productive work.



**Figure 7: Involvement of work after SCI injury**

#### 4.8.5 Money needed to maintain his/her family after injury

In this study we saw that most of the family require BDT 3000 to 12000 (n=maintain their family).16.7% required BDT 13000 to 22000.



**Figure 8: Money needed to maintain his/her family after injury**

#### 4.8.6 Using wheelchair has become a financial burden

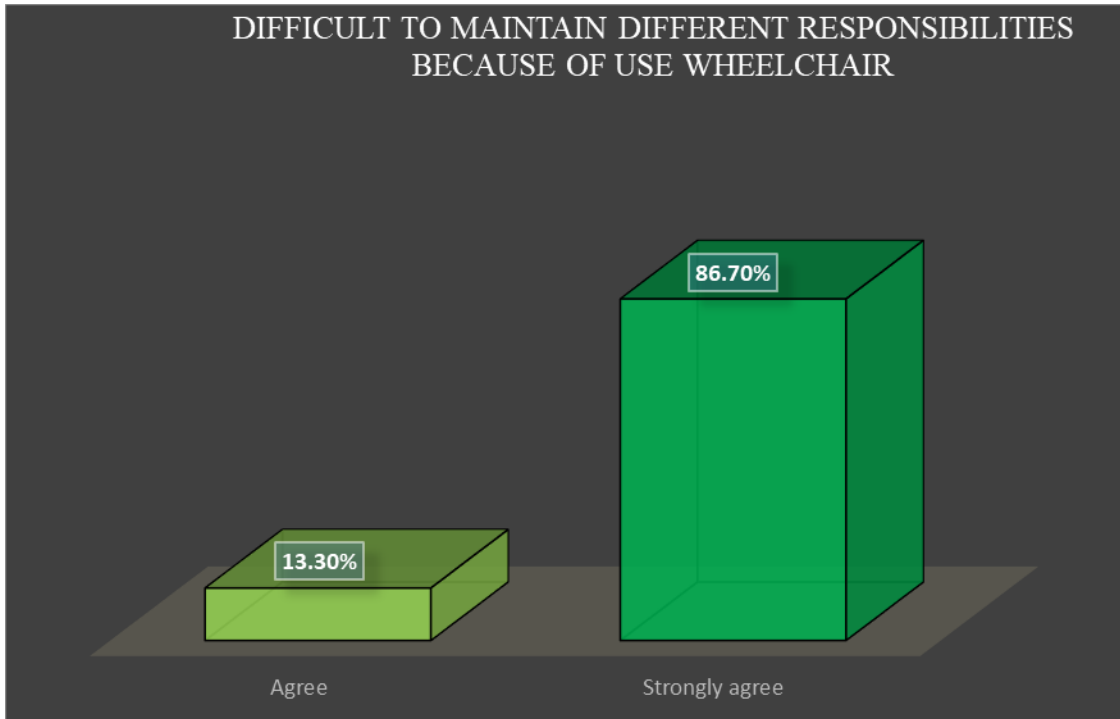
Most of the participants (n=42) think that using wheelchair had become a financial burden in the society.

**Table 9: Using wheelchair has become a financial burden**

<b>Decision</b>	<b>Number</b>	<b>Percent</b>
Undecided	1	1.7
Agree	42	70
Strongly agree	17	28.3
<b>Total</b>	<b>60</b>	<b>100</b>

#### 4.8.7 Difficult to maintain different responsibilities because of use wheelchair

Wheelchair bounded for society. Most of them think that maintain responsibilities for patients who used wheelchair.



**Figure 9: Difficult to maintain different responsibilities because of using wheelchair**

**4.9.1 Association between main earning member of the family and age of the participants.**

This observed Chi-square value was 0.001 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.

<b>Main earning member of the family</b>					
<b>Age Group</b>	<b>Patients</b>	<b>Fathers</b>	<b>Others</b>	<b>Total</b>	<b>Chi-Square</b>
6-35 Years	24	13	5	42	0.001
36-65 Years	17	1	0	18	
<b>Total</b>	<b>41</b>	<b>14</b>	<b>5</b>	<b>60</b>	

**4.9.2 Association between involved any work and age of the participants.**

This observed Chi-square value was 0.001 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.

<b>He Or She involved any work</b>					
<b>Age Group</b>	<b>Job</b>	<b>Household work</b>	<b>None</b>	<b>Total</b>	<b>Chi-Square</b>
6-35 Years	23	10	9	42	0.001
36-65 Years	7	10	1	18	
<b>Total</b>	<b>30</b>	<b>20</b>	<b>10</b>	<b>60</b>	

**4.9.3 Association between using wheelchair has been a financial burden and age of the participants.**

This observed Chi-square value was 0.009 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.

<b>Using wheelchair has been a financial burden?</b>					
<b>Age Group</b>	<b>Undecided</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Total</b>	<b>Chi-Square</b>
6-35 Years	1	30	11	42	0.009
36-65 Years	0	12	6	18	
<b>Total</b>	<b>1</b>	<b>42</b>	<b>17</b>	<b>60</b>	

#### 4.9.4 Association between among sex & causes of traumatic lesion of the participants.

This observed Chi-square value was 0.032 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.

Causes of traumatic lesion												
Sex	Road Traffic Accident (RTA)	Fall from height	Fall carrying heavy load on head	Fall heavy object on neck	Fall of heavy object on back	Assault	Bull Attack	Sports injury	Electric shock	Others	Total	Chi-Square
<b>M</b>	19	24	3	1	3	2	2	1	1	0	56	0.032
<b>F</b>	0	2	0	0	1	0	0	0	0	1	4	
<b>Total</b>	<b>19</b>	<b>26</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>60</b>	

#### 4.9.5 Association between neurological conditions according to ASIA scale with sex of the participants.

This observed Chi-square value was 0.002 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.

Neurological condition according to ASIA scale						
Sex	Complete A	Incomplete B	Incomplete C	Incomplete D	Total	Chi-Square
Male	41	11	4	0	56	0.002
Female	2	1	0	1	4	
<b>Total</b>	<b>43</b>	<b>12</b>	<b>4</b>	<b>1</b>	<b>60</b>	

#### 4.9.6 Association between main earning members of the family with sex of the participants.

This observed Chi-square value was 0.01 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.

Main earning member of the family						
Sex	Patients	Fathers	Relatives	Neighbor	Total	Chi-Square
Male	41	11	4		56	0.01
Female	0	3	1		4	
<b>Total</b>	<b>41</b>	<b>14</b>	<b>5</b>		<b>60</b>	

#### 4.9.7 Association between carer & money spent for treatment after injury of the participants.

This observed Chi-square value was 0.010 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.



<b>Money spent for treatment after injury</b>						
<b>Carer</b>	<b>1 to 5 lakhs</b>	<b>6 to 10 lakhs</b>	<b>11 to 15 lakhs</b>	<b>More than 20 lakhs</b>	<b>Total</b>	<b>Chi-Square</b>
Wife	13	3	0	0	16	0.010
Son	2	0	0	1	4	
Daughter	2	0	0	0	2	
others	17	6	0	2	25	
None	11	0	2	1	0	
<b>Total</b>	<b>45</b>	<b>9</b>	<b>2</b>	<b>4</b>	<b>60</b>	

#### **4.9.8 Association between carer & main earning member of the family of the participants.**

This observed Chi-square value was 0.007 this interval does not include 1, so Null hypothesis is rejected at the 5% level of significance and accepted alternative hypothesis. So association between main earning member of the family and age of the participants is statistically significant.

<b>Main earning member of the family</b>					
<b>Carer</b>	<b>Patients</b>	<b>Fathers</b>	<b>Relatives</b>	<b>Total</b>	<b>Chi-Square</b>
Wife	16	0	0	16	0.007
Son	2	1	0	3	
Daughter	1	1	0	2	
Relatives	10	10	5	25	
None	12	2	0	14	
<b>Total</b>	<b>41</b>	<b>14</b>	<b>5</b>	<b>60</b>	

The investigator used a cross sectional study to find out the economic burden of people with spinal cord injury in their own community. The result of this study showed that a majority of the persons with SCI perceived their participation to be sufficient in most of the activities addressed. Still most of the persons perceived themselves to have problems with several aspects of their participation, even if these problems in most cases were minor except education and training cases were major around 27 (67.5%). In case of autonomy indoor majority being sufficient except 21 (52.5%) faces difficulty to going to toilet & not being sufficient 22 (55%) in getting washed and dressed the way they wish & getting up and going to bed. Lund et al., (2005) reported that their autonomy indoors, measured in terms of several items related to self-care and mobility, was sufficient.

Skeletal level among 394 participants shows that Cervical was the most common site for injury that is 32% (n=126) and second most common site of injury was identified thoracic that is 27% (n=107). Whereas lumbar was the third most common that is 22% (n=88) and rest of the participants 19% (n=73) were not identifiable. Out of 394 participants, most common skeletal level of injury were identified for cervical.

In this study it was found that among the participants in the domains family role, work & education and social life & relationships were insufficient, poor and very poor participation were mostly found in items in the domains of family role, work & education and social life & relationships. Especially helping or supporting other people around 31 (77.5%) faces barrier in domains of social life & relationships, 25 (62.5%) faces difficulty in minor repairs and maintenance work done in domains of family role and 33 (82.5%) faces barrier to getting the education or training in domains of work and education. At Lund university hospital in Sweden a cross sectional study about perceptions of participation and predictors of perceived problems with participation in persons with spinal cord injury by Nordlund et al., (2005) reported that insufficient, poor or very poor participation were mostly found in items in the domains of family life, autonomy outdoors, work and education. More restrictions in participation were perceived in the domains of family role

and autonomy outdoors than in autonomy indoors, social relations and in work and education.

About 3% (n=12) of the participants were intact neurological level. Another finding in Israel, 46 SCL patients among them spinal cord lesion complete neurological injuries 28 (61%) which also support this study (Asher et al., 2005). Out of 396 participants, most of the participants did not have pressure ulcer during their admission at the Centre for the Rehabilitation of the Paralyzed (CRP) that was about 69% (n=273) which rest of the participants had pressure ulcer that is 31% (n=123). Pressure sores are a major complication associated with spinal cord injury. They occur as a result of excessive pressure, primarily over the bones of the buttock (particularly the ischial tuberosities and the trochanters at the hip). Morbidity during the acute rehabilitation phase (which follows the initial acute hospitalization) includes pressure ulceration, which occurs in about 25% of patients treated in Model Systems centers in the United States (Saulino, 2009). Our study also reveals that pressure ulcer was the most common complications for hospital admission.

The need to have adequate financial resources to enable community reintegration was identified by most of the participants. In this study eight participants reported for poverty is the barrier in accessibility of community reintegration, six participants said that lack of employment opportunities is a barrier to access in the community, four participants with SCI in the community has employment opportunities among them two willingly unemployed. Only one participant have economical solvency.

In the reflection of question, “Is it (financial problem) a barrier in accessibility in the community reintegration after disability?” One participant said that-“Of Crouse. Because I have no income. There is no people who can help me with money. At present it is about impossible for me to maintain my family because of this financial problem. When I was able to income I could go tea stall with others but now I can’t, because I have no income. If I want to drink tea I need to spend money but I don’t have that money. How can I go anyplace, how can I drink tea without money? May be any one invite me in marriage ceremony, if I want to go there I need to spend around 500tk but I have no that money to spend. For that I can’t go any ceremony in the community”.

In accordance of literature, when a family is fully depending on the spinal cord injury persons who was the main source of income then there is a serious economic hardship experienced by the family (Hansen et al., 2007).

**Limitations:**

100% accuracy is not be possible in any research so that some limitation may exist.

Regarding this study, there might be some limitations or barriers to consider the result of the study as below:

- a. The main limitation of this study was its short duration.
- b. The main limitation was unable to develop a sampling frame to which the study lacks external validity.
- c. As samples were collected only from Savar area which is not represent the whole Bangladesh.
- d. In addition, the study was conducted with 60 patients of spinal cord injury, which was a very small number of samples in compare with the real world prevalence.

This study focus the economic burden of SCI patients in their own community. Economic status play an important role in the social development. In this study we see that most of the SCI patients come from rural area. Most of them are live with lifelong disability. The economic condition of their family was very poor. Most of the participants was the only income source of their family. Whole family fall in a great miseries. They have spent huge amount of money for the treatment of the victim. Most of them sell their own property for treatment purpose. SCI is one of the foremost causes of morbidity, mortality and a socioeconomic challenge. This is particularly true for developing countries like Bangladesh, where health support system including the rehabilitation system is not within the reach of ordinary people. It is crystal clear that, this devastating condition not only affects the patient but also their family. Accessibility is a major important issue in SCI people. It tends to require for every person in activities of daily living especially for people with disability like tSCI people require very much. Literature showed that 30%-72% tSCI people faces barrier in ADL. The prevalence and consequences of barriers is higher in the working group in comparison with the non-working population and most of them were males. From this study, it was found that among the participants in the domains family role, work & education and social life & relationships were insufficient, poor and very poor participation were mostly found in items in the domains of family role, work & education and social life & relationships. Identification of these barriers will help to give emphasize on designing the overcoming strategy of these challenges and will increase the level of community reintegration and also increase the community participation. In accordance of the participants, bowel-bladder issues and pain impedes them a lot in accessibility of community reintegration. Poverty and unemployment also acts as major economic barriers in accessibility of community reintegration. Most of the tSCI patients live in a low socioeconomic family. Full family will suffer to maintain treatment cost of tSCI family. In this study among the total participants most of the family maintain their treatment cost by their personal saving. So the others member of the society fall in a great measures. So SCI injury can causes economical burden for the participants as well as their family.

## **Recommendation**

It is recommended to do further research on large group of people in quantitative approach and also find out the economic burden of people with spinal cord injury in own their community. Besides these awareness program should arrange the community people as well as the service providers who were directly and indirectly related with the SCI patients in their community.

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## Appendix

### Permission Letter of Data Collection

#### Permission letter

January 21, 2019

The Head of Department

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP),

Chapain, Savar, Dhaka-1343.

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

**Subject:** Seeking permission for data collection of 4<sup>th</sup> year physiotherapy research project.

Dear Sir,

With due respect and humble submission to state that I am Mithun Adhikari student of 4<sup>th</sup> Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). The ethical committee has approved my research project entitled on "The Economical burden of people with spinal cord injury in the hospital patients". Under the supervision of Md. Shofiqul Islam, Assistant Professor of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343, Bangladesh. Conducting this research project is partial fulfillment of the requirement for the degree of B.Sc in physiotherapy. I want to collect data for my research project from the patients of CRP. So I need permission for data collection from the Spinal Cord Injury unit of Physiotherapy department of CRP, Savar. I would like to assure that anything of my study will not be harmful for the participants.

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

Sincerely,

Mithun Adhikari

Mithun Adhikari 21.1.19

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

Roll: 30, Session: 2013-14

Bangladesh Health Professions Institute (BHPI)

(An academic Institute of CRP)

CRP, Chapain, Savar, Dhaka-1343.

Forwarded to Dept. for  
Kind consideration.  
Susmi  
21-01-2019

Approved  
22/1/19  
Mohammad Anwar Hossain  
Associate Professor & Head  
Physiotherapy Dept., CRP  
CRP-Chapain, Savar, Dhaka-1343

## Ethical Approval



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)  
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)  
(The Academic Institute of CRP)  
CRP-Chapain, Savar, Dhaka-1343. Tel: 02-7745464-5, 7741404

Ref: CRP-BHPI/IRB/09/19/1351

Date: 22/09/2019

To  
Mithun Adhikari  
B.Sc. in Physiotherapy  
Session: 2013-14, Student ID:112130224  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

**Subject:** Approval of the thesis proposal “**Economical burden of people with spinal cord injury in the hospital patients**” by ethics committee.

Dear Mithun Adhikari,  
Congratulations.

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

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

The study involves use of a questionnaire to explore economical burden of people with spinal cord injury in the hospital patients that may take 15 to 20 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 10 AM on 11<sup>th</sup> August 2018 at BHPI.

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

# Consent Form (English)

## Consent Form (English)

Assalamunlaikum/Namasker,

My name is Mithun Adhikari. I am conducting this study for a B.Sc. in Physiotherapy project study dissertation titled “**Economical burden of people with spinal cord injury in the hospital patients**” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding Economical burden of SCI patient. You have to answer some questions which are mention in the attached form. This will take approximately 20 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 a particular question that you don't like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with me, and/or Md. Shofiqul Islam, Assistant Professor department of physiotherapy, BHPI, CRP, Savar, Dhaka.

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 \_\_\_\_\_

# English Questionnaire

## Questionnaire

**Title:** Economical burden of people with spinal cord injury in the hospital patients

<b>Part- I: Patient's Socio-demographic Information (This information collected from the hospital record)</b>	
1.1	Patient Name:
1.2	Mobile Number:
1.3	a. Identification Number : _____
1.4	Age Yrs: _____
1.5	Sex: 1= Male 2= Female

1.6	Home District: _____
<b>Part-II: Disease Condition related Information (To be collected from hospital Record)</b>	
2.1	<b>Date of Admission CRP:</b> Day/ Month/Year: ____/____/____.
2.2	<b>Date of Injury:</b> Day/ Month/Year: ____/____/____.
2.3	<b>Length of time between date of injury and admission at CRP</b> _____(Days)
2.4	<b>Date of Discharge:</b> Day/ Month/Year: ____/____/____.
2.5	<b>Length of hospital stay between date of admission and date of discharge from CRP</b> _____(Days)

2.6	<p><b>Causes of lesion:</b></p> <p>1= Traumatic</p> <p>2= Non-traumatic</p>
2.7	<p><b>Causes of lesion if Traumatic:</b></p> <p>1= Road Traffic Accident (RTA)</p> <p>2= Fall from height</p> <p>3= Fall carrying heavy load on head</p> <p>4= Fall of heavy object on neck</p> <p>5= Fall of heavy object on back</p> <p>6= Diving in shallow water</p> <p>7= Assault</p> <p>8= Bull Attack</p> <p>9= Bullet injury</p> <p>10= Sports injury</p> <p>11= Electric shock</p> <p>12= Fall from Bi-cycle</p> <p>13= Stab Injury</p> <p>14= Others (specify) _____</p>



2.8	<p><b>Causes of lesion if Non-traumatic/ Diseases:</b></p> <p>1= TB spine</p> <p>2= Transverse myelitis</p> <p>3= Spinal tumor</p> <p>4= Guillain Barre Syndrome (GBS)</p> <p>5= Polyneuropathy</p> <p>6= Others (Specify) ____</p>
2.9	<p><b>Type of Paralysis:</b></p> <p>1= Paraplegia</p> <p>2= Tetraplegia</p>
2.10	<p><b>Carer:</b></p> <p>1.Hausband</p> <p>2.Wife</p> <p>3.Son</p> <p>4.Daughter</p>

2.11	<b>Skeletal level of injury at admission:</b>
2.12	<b>Neurological condition according to ASIA Scale at discharge:</b> 1= Complete A 2= Incomplete B 3= Incomplete C 4= Incomplete D 5= Normal E
2.13	<b>Neurological level at discharge</b>
2.14	<b>Pressure sore existed at admission to CRP</b> 1= Yes 2= No

**Financial information:**

1	Earning members in the family	1.one 2.two 3.three 4.four	
2	Treatment expenditure spent by ....	1.Cash 2.Land sell 3.Bank loan 4.Donation	
3	Monthly earning of main members	.....BDT	
4	Main earning member of the family	Patients Father..... Mother..... Others .....	01 02 03 04
5	If multi members contribute then total	.....BDT	
6	How much money spent for your treatment after injury?	.....BDT	
7	Does he/she involved any work	1.Job 2.Household work	
8	Sources of money for your treatment	Personal savings ..... Family support..... Support from job place ..... Support from friends ..... Support from government (who are not government employees) or other organization.....	01 02 03 04 05

		Selling property or other things.....	06
		Loans .....	07
		Support from mother relatives	
		....	
9	<b>Main earning member after injury</b>	.....	
10	<b>How much money needed to maintain his/her family after injury?</b>	.....BDT	
11	<b>Using wheelchair has been a financial burden</b>	Strongly disagree .....	01
		Disagree .....	02
		Undecided.....	03
		Agree.....	04
		Strongly agree .....	05
12	<b>It is difficult to maintain different responsibilities because of use wheelchair</b>	Strongly disagree .....	01
		Disagree .....	02
		Undecided.....	03
		Agree.....	04
		Strongly agree .....	05

END