

**FUNCTIONAL OUTCOMES AFTER SPINAL CORD INJURY
REHABILITATION RESULTS FROM A RETROSPECTIVE STUDY
BASED ON A REHABILITATION CENTER IN BANGLADESH**

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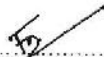
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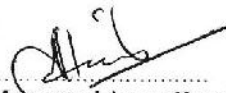
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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled
**FUNCTIONAL OUTCOMES AFTER SPINAL CORD INJURY
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BASED ON A REHABILITATION CENTER IN BANGLADESH**

Submitted by **Sazeda Akter Tania** 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 physiotherapy department of Bangladesh Health profession institute (BHPI)

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Acronyms

ASIA	American Spinal Injury Association
BHPI	Bangladesh Health professions Institute
BMRC	Bangladesh Medical Research and council
CDC	Centre for Disease Control
CRP	Centre for the Rehabilitation of the Paralysed
IRB	Institutional of Review Board
IMSOP	International Medical Society Of paraplegia
PT	Physiotherapy
ROM	Range of Motion
SPSS	Statistical Package of social science
SCIM	Spinal Cord Independence measurement
SCI	Spinal Cord Injury
SCL	Spinal Cord Lesion
US	United States
WHO	World Health Organization

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Abstract

Purpose: To find out the demographic profile of spinal cord injury patients at CRP. *Objectives:*The aim of this study was to find out the age, gender, causes, type, marital status, educational status and living area of SCI patients.*Methodology:* The study design was retrospective study. The sample size was 234 and purposive sampling technique was used for sample selection who was admitted in Centre for the Rehabilitation of the Paralyzed (CRP) in Bangladesh which is the largest spinal cord injury rehabilitation Centre in South Asia.Data was collected by a standard questionnaire and it was analyzed by SPSS software version 20. *Results:*Among 234 spinal cord injury patients, most of the patients were young. The age range are 5-70 age and male 81.7% and are predominantly higher than female 17.9% Majority of the participants were came from rural area (71.1%) and they were farmer 26.8% . Most of the patients were from low socio economic condition and low educational level.*Conclusion:* From the study it can be concluded that most of the participants were village people. So they cannot understand the preventative measure of SCI. The study may help to provide awareness among the people of Bangladesh. And also express the vulnerable cause, occupation which is responsible for the spinal cord injury. So SCI can be reduced through taking preventative measure.

1.1 Background

The disease and injury which affect the spinal cord and damage the neurological level are the important health problem in our country, so they carry high rates of morbidity and mortality (Hoque et al., 1999). The purpose of this study was to know the Scio demographic profile of the spinal cord injury in Bangladesh. In Bangladesh maximum village people were suffering from spinal cord injury. In order to develop health care and social services it is important to know the epidemiology of spinal cord injury (Dahlberg et al., 2005). Because of their high personal, both knowledge of incidence and prevalence of spinal cord injury (SCI) is important, both bio-psychological impact and of their high socio-economic consequences, it is also important to short-term as well as long-term. For improved prevention incidence rates reflect the level of control of SCI and the possible need. Alternatively, for social and personal resources prevalence rates have an impact on health care (Wyndaele & Wyndaele, 2006).

Prevention is better than cure lost spinal cord function following spinal cord injury there was still a very long way to go to restore. Spinal trauma which could have been prevented, this is the result of spinal cord injuries. The Japanese Medical Society of Paraplegia (JMSOP) which is the prevention Committee conducted the first nationwide epidemiological survey in Japan in order to obtain basic data to organize a prevention campaign for SCI and spinal injuries (Shingu et al., 1994).

Long-term disability or death is the cause of Spinal cord injury (SCI). Leading to permanent paralysis by modern man, it is one of the most catastrophic lesions. The Spinal cord injury patients, the victims who are usually young and in their most productive stage of life multiple medical, social and vocational complications affect to them. Spinal cord injury causes burden and suffering not only of the victim but also to their families, to the health care system and to the community (Maharaj, 1996). In Japan from January 1990 to December 1992 a survey of traumatic spinal cord injuries was carried out by a statistical method of the nationwide epidemiological study showed that the incidence was 40.2 per million in the annual report of spinal cord injury. More caudal SCI was 3:1 is the ratio of cervical cord injuries (Shingu et al., 1995). The prevalence of SCI at 650–900 per million American epidemiological data

approximately showed that (Genis et al., 2005). Expected data showed that the rates of adolescents with disabilities range from 108 per 100,000 in Myanmar to 6,726 per 100,000 in Canada (Groce, 1999).

The most common non-traumatic aetiologies in this study were vascular diseases, spinal degeneration and tumours (benign and malignant), which all accounted for over a quarter of non-traumatic lesions. Tumours and spinal degeneration were also a substantial category of nontraumatic SCI in other studies (20.1–36.4%^{2,8,9,12,13} and 18–29%,^{2,7,12,13} respectively). Lesions of vascular origin accounted for a smaller proportion in a study from Turkey (8%),² but for about a quarter of non-traumatic lesions in other publications.^{7,12,13} An inflammatory cause was found in 17.2% of the patients with SCI in our study, compared to 19.5% reported elsewhere.¹² Not all studies described the same categories of aetiologies, making it difficult to draw comparisons between different studies.(Jacson,2004)

Each year approximately 10000 persons in the united states incur spinal cord injury requiring hospitalization (De Vivo et al.,1999).The number of people in theUnited States who are alive in 2008 who have SCI has been estimated to be approximately 259,000 persons, with a range of 229,000 to 306,000 persons (Spinal Cord Statistics, 2009)worldwide 90 million people suffer from spinal cord injury of varying severity of injury per year. The spinal cord injury is not well not many county.It is estimated that the annual incidence ofspinal cord injury (SCI), not including those who die at the scene of the accident, is approximately 40 cases per million populations in the United State. Since there have not been any overall incidence studies of SCI in the United State since the 1970's it is not known if incidence has changed in recent years(Singh et al., 2003).

In Australia a study showed that most devastating medical conditions are Spinal cord injury (SCI) or damage. In all facets of human functioning and existence it causes life changing consequences. The incidence of Traumatic SCI a recent review reported that worldwide varied between 10-4 and 83 per million per year. About 15–17 cases per million per year over the past decade the age-adjusted incidence rate of TSCI in adults aged 15 years has remained at and older surviving to reach hospital. In currently 11.9 cases per million adults per year is the incidence in Victoria in Australia (New & Sundararajan, 2008).

The acute phase ranges from 10 to 25/million inhabitants per year which data is recently published in Europe on the incidence of SCI in survivors. Showing consistent rates between 22 and 25/100 000 inhabitants, in the Nordic countries, two register-based studies have been published (Dahlberg et al., 2005). The retrospective study of Japan showed that the annual incidence of spinal column injuries ranges from 19-88/100,000. 15-50 per million per year is the incidence of spinal cord injury. 480-813 per million is the prevalence of SCI. In Pakistan exact incidence of these injuries in this region is not known though there are few reports on demographics of spinal injuries (Qureshi et al., 2010).

Characteristics of patients with traumatic SCI found in this study resemble those found in previous studies. The male/ female ratio was slightly lower than that described in previous Dutch studies,^{3,7} but lies within the range of 2.5:1 to 5.8:1 reported in international studies.^{1,10} Mean age in this study was relatively high, but also within the range reported in the literature (31–50 years).^{1,10} The age and gender data of patients with traumatic SCI in our study seem to fit a trend of increasing age and increasing proportions of female patients

Patients who have been suffering from spinal cord injury often face life threatening complications so they need appropriate management and specialized rehabilitation. The patients of SCI are going into the different hospital for the treatment but they do not have enough facilities for their treatment. In Bangladesh there is only one non-government organization is Centre for the Rehabilitation of the Paralyzed, which has conducting a rehabilitation program for the last 32 years through which the patients can improve their life style (Islam et al., 2011).

Patients with traumatic SCI showed more improvement of functional status during inpatient rehabilitation than patients with non-traumatic SCI. However, patients with nontraumatic SCI showed better functional outcomes, and, because LOS was much shorter in this group, more functional gain for each day of admission. In the regression analysis, etiology was not an independent determinant of functional outcome. The bivariate association of etiology with functional outcome in this study can therefore be ascribed to differences between both groups regarding lesions characteristics, functional status on admission and age. Previous studies reporting relationships between etiology and rehabilitation outcomes did not use multivariate analysis to control for demographic and injury characteristics.^{2,9} The independent influence of age on functional outcome may be based on a reduced ability to recover and the effect of

co-morbidity in elderly Patients with non-traumatic SCI formed a majority in the Dutch and Flemish SCI population and showed a more even gender distribution, a more advanced age and less severe lesion characteristics than the group of patients with traumatic SCI. This is the first study in which relationships of etiology (traumatic versus non-traumatic) with LOS and functional outcome were tested using regression analyses. Etiology was a weak independent determinant of LOS, but was not an independent determinant of functional outcome.

The functional independence of persons with spinal cord injury (SCI) is significantly lower than that of the population in general. SCI usually causes severe locomotor disability, due to paralysis of the muscles. Depending on the level and completeness of the lesion, a person with SCI can be completely independent or need total assistance in all the activities of daily living (ADL). Other consequences of SCI, such as sensory alterations, spasticity, pain and neurogenic bladder, also influence the degree of the disability and reduce functional independence (Dahlberg et al., 2003). Following the definitions set down by the World Health Organization in 1980, the philosophy of rehabilitation is to reduce disabilities and handicaps resulting from impairments caused by trauma or disease (WHO, 1980). Patients with spinal cord injuries (SCI) are confronted with motor and sensory deficits and dysfunction of the bladder and bowel, leading to disabilities in daily activities (Ditunno et al., 1997). The aim of rehabilitation is to treat patients with SCI in order to achieve optimal independence and a satisfying lifestyle in their own community. Fortunately, most patients return home after rehabilitation with a significant achievement in functional independence. In recent years, much attention has been paid to the neurological outcomes after SCI. In several studies, motor and sensory recovery following traumatic SCI has been quantified, based on the initial level of injury. Most motor recovery occurs within the first six months after injury. It is generally accepted that the more distal the spinal cord lesion, the greater the degree of functional independence. The level of functional independence ultimately achieved by an individual will also be influenced by a variety of medical and non-medical factors, such as age, body size and weight, associated injuries, severity of spasticity, motivation, family support, living environment, pre-morbid lifestyle, vocation,

The nongovernmental special organization, CRP managed the patients with multi and inters disciplinary approach which emphasis on the development of community based Rehabilitation programs. There are sufficient stuffs that work there sincerely and supported by short term volunteers from home to abroad (Hoque et al., 1999).For developing effective program and polices the study will help to further enhancing our knowledge about SCI in Bangladesh. In developing countries, advance care ICU and proper, accurate and long term management and rehabilitation have the survival rate and life expectancy which is available only in the non-government organization (Islam et al., 2011).

1.2 Rationale

Now a day Spinal cord Injury is most commonly occurring disabling condition in all developing and developed countries in the world and it will increase day by day due to lack of awareness. Injuries that are affecting the spinal cord and complicated by physical damage are an important health problem in Bangladesh as they carry a high rate of morbidity and mortality. Demography of spinal cord injury is important to know as Bangladesh is a developing country and trying to develop health care system. It is generate exact information considering detail about which causes, occupation, age, gender, diagnosis, residential area, educational level and economic level were responsible for that injury. It is also help to raise awareness among the population and will help full to get information about spinal cord injury. And indicate that the spinal cord injury patient who needs a specialized and comprehensive rehabilitation services to continue their activities of daily living in the community. In our country we are not conscious about spinal cord injury. Spinal cord injury can destroy of one's life and his whole family. The patient can survive with full struggle. Life is so much challenging to him. In some area people think that spinal cord injury is the curse by Allah. It is just an accident which destroys the whole life. So it is very important to aware about the incidence so that we can prevent the injury. In SCI patient's rehabilitation program or long time management is major treatment, where physiotherapy is essential. So the study enhances the knowledge about SCI and its nature such as type, extent etc. The preventative measure may help about SCI. As if we concern about road traffic accident the injury rate may reduce. If people from all corner of the Bangladesh are aware about the cause of SCI then it can help to lowering the rate of injury.

1.3 Research question

What is the functional outcome of spinal cord injury (SCI) patient at the time of discharge?

1.4 Objectives

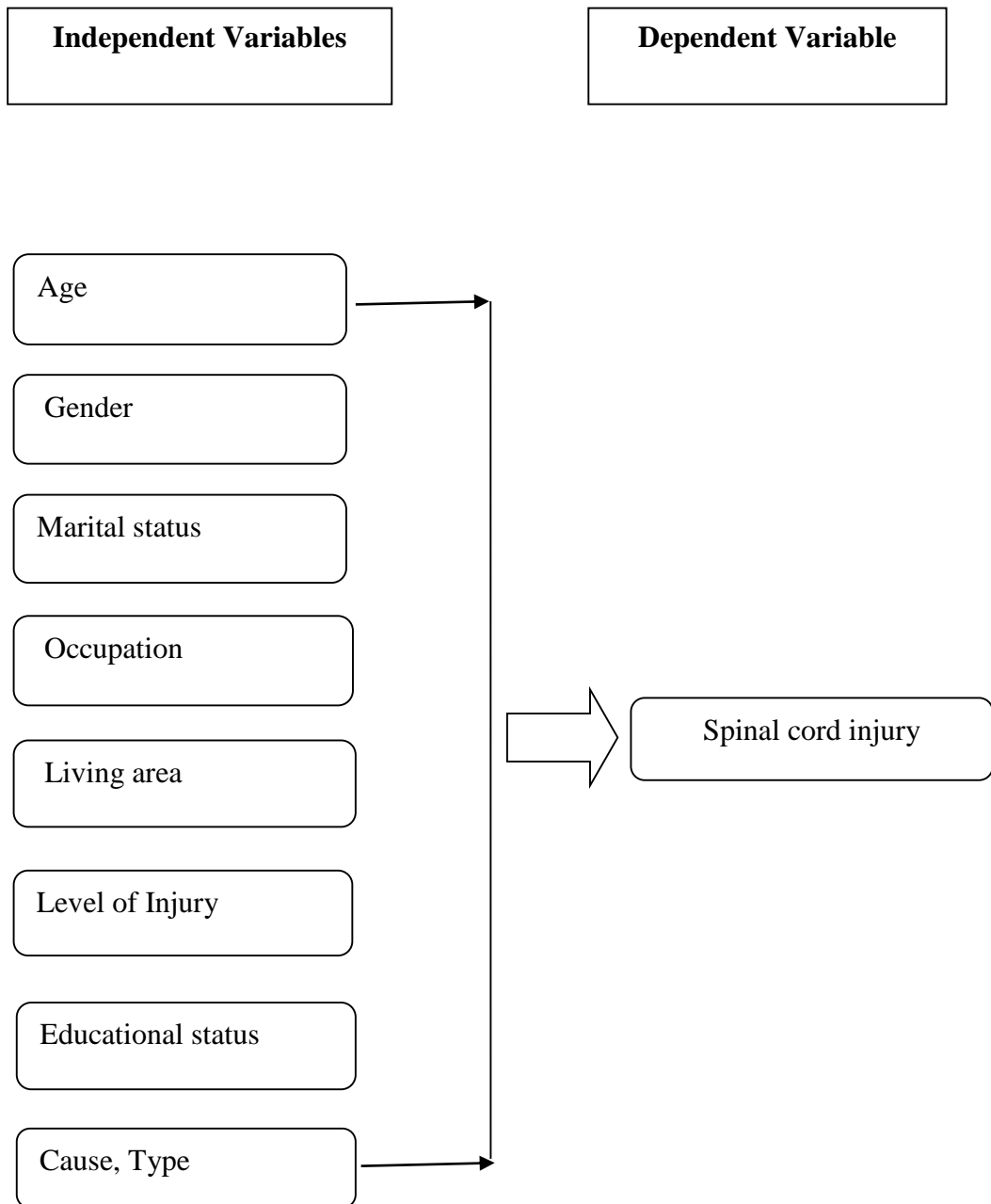
a. General objective

To assess the functional outcomes of spinal cord injury (SCI) patients in CRP

b. Specific objectives

1. To find out the socio-demographic characteristics of spinal cord injury (SCI) patients.
2. To find out functional outcomes of spinal cord injury (SCI) patient by Spinal cord independent measurement scale.
3. To assess the functional outcomes of spinal cord injury (SCI) patients among before and after the rehabilitation program.
4. To find out functional outcomes among the spinal cord injury (SCI) patient during admission and after discharge.

1.5 List of Variables



1.6 Operational definition

Paralysis

Injury or disease to the nervous system can affect the ability to move a particular part of the body. This reduced motor ability is called paralysis

Neurological level

Up to the level where both sensory and motor function is remains intact.

Paraplegia

The term paraplegia means impairment of motor and/ or sensory function in the thoracic, lumber and sacral segments of the spinal cord which is secondary to the damage of neural elements within the spinal canal. Paralysis occurs of lower portion of the body and of both legs.

Tetraplegia

Injury of the spinal cord in the cervical region, with associated loss of muscle strength in all 4 extremities is called tetraplegia. Paralysis of both legs and both arms, it is also called quadriplegia.

Complete lesion

Absence of sensory and motor functions in the lowest sacral segments is called complete lesion.

Incomplete lesion

An incomplete lesion is the term used to describe partial damage to the spinal cord. With an incomplete lesion, some sensory and/or motor function remains at the lowest sacral segments. Including the lowest sacral segments preservation of sensory or motor function below the level of injury is called incomplete lesion.

The spinal cord injury causes serious injuries and permanent impairments due to incomplete documentation and transfers to tertiary institutions and creates a life threatening situation (Phalkey et al., 2011). On the neurological examination by the completeness of the injury the severity of spinal cord trauma is clinically determined. In prognosis associated with recovery the classification of injury which completely assists to the clinician. Those with incomplete injuries have a less favorable recovery potential than patients with complete injuries persisting after the initial acute injury phase. Common two definitions of complete spinal cord injury (SCI) are used in more common (Waters et al., 1991). According to Wyndaele and Wyndaele (2006), worldwide prevalence has been estimated to range between 223 and 755 per million people and because of improved survival rates, SCI prevalence is increasing. On the basis of a national data base of 30,822 SCI people in the United States, life expectancy of persons with SCI has been shown to increase over the past 30 years, with mortality rates reducing by approximately 40% in the first 2 years after the injury (Strausset *al.* 2006). According to NSCISC (2013), it is estimated that the annual incidence of SCI, not including those who die at the scene of the accident, is approximately 40 cases per million population in the U. S. or approximately 12,000 new cases each year. The prevalence SCI according to NSCISC (2013) in the United States who are alive with SCI has been estimated to be approximately 273,000 persons, with a range of 238,000 to 332,000 persons.

In Bangladesh the mean life expectancy of the people with SCI was found in a study 5.36 years. Overall, 56.4% of persons admitted with SCI died within 5 years and 43.6% survived 5 years or more after injury. A study shows in Bangladesh at CRP, the most vulnerable age groups were 20-40 years, covering 55.6% of persons. Frequency of SCI was less in those below 20 and above 50 years of age. In the 158 persons, 86.1% had injuries of traumatic and 13.9% of non-traumatic origin, leading to 79.75% with paraplegia and only 20.25% with tetraplegia (Razzak, 2011). In Bangladesh, 63% of SCI is caused by falling from a height (Hoque, Grangeon and Reed, 1999). Another common cause (18%), in Bangladesh Falling while carrying a heavy load on the head, usually resulting in tetraplegia (Razzak, 2011).

The cause of spinal cord injury may be traumatic or non-traumatic. Auto crash, including jeep, truck and bus, fall: including jumping and being pushed accidentally (not as an act of violence), gunshot wound motorcycle crash: 2-wheeled, diving, medical/surgical complications: impairment of spinal cord function resulting from adverse effects of medical, surgical or diagnostic procedures and treatment, bicycle, tricycles, Pedestrian, including falling/jumping into the path of a vehicle, auto racing, glider kite, slide, swimming, bungee jumping, scuba diving, lightning, kicked by an animal, machinery accidents, tractor, bulldozer, go-cart, steamroller, train, road grader, forklift, sledding, snow tubing, tobogganing, playing ice hockey, snowboarding. Personal contact, including being hit with a blunt object, falls as a result of being pushed. Football and other penetrating wounds: stabbing, impalement, boat and parachuting, para-sailing, etc. gymnastic activities other than trampoline baseball/softball, water skiing, basketball/volleyball, high jump, bomb, grenade, dynamite and gasoline. These are traumatic cause. The non-traumatic cause is spinal tumor, TB spine, transverse myelitis, physical assault, physical weakness etc. (Chen et al., 2013).

The leading causes of spinal cord injuries are the auto and motorcycle accidents. In USA a study showed that more than 40 percent spinal cord injuries occur in each year. According to the National Institute of Neurological Disorders and Stroke 1.5 percent of spinal cord injuries resulting from violent encounters, gunshot and knife wounds. Caused by fall is most common among the old age about 65. One-quarter of spinal cord injuries occurs by falls. About 8 percent of spinal cord injuries occur by the athletic activities, such as impact sports and diving in shallow water. About 1 out of every 4 spinal cord injuries occurs by using of alcohol. Spinal cord injuries also caused by cancer, arthritis, osteoporosis and inflammation of the spinal cord may cause (Coppla & Marlin, 2013).

Spinal tumors which cause rare cancers reduce the quality and quantity of life and present an enormous challenge to patients and their physicians. The low incidence of these tumors that might defines the disease more clearly and identifies effective therapies. Consequently, progress in the treatment of rare tumors often proceeds slowly and typically which need for better treatments. Spinal cord tumors can affect the morbidity and mortality in children and adults (Claus et al., 2010). Tentorial spinal cord compression injuries are easily produced using forceps; however the primary trauma varies as a function of compression rate and duration. The amount of major trauma also

is expected to vary function. The spinal cord that is compressed and the size of compression across the ventral-most part of the spinal cord (Popovich et al., 2012).

A five scale subdivision was used: A = complete motor and sensory function disorder; B = motor complete and sensory incomplete function disorder; C = motor and sensory incomplete function disorder; D = useful motor function with or without auxiliary means; E = no motor or sensory function disorder which is the modified by Frankel and known as Frankel score (Capaul et al., 1994). The epidemiological study in Japan showed that no survivors with complete tetraplegia, mostly paraplegics (89%), a significant pediatric population (17%), predominant female victims (ratio of 1:1.3) (Rathore et al., 2007).

In South African society the Frankel classification was used to assess neurological recovery. Defined the recovery was as improvement from Frankel group A, B or C to Frankel group D or E during the period of rehabilitation (Hart & Williams, 1994). National Database is overall cumulative survival rate of the entire population is 10 years. The statistical the database of the patients, probability of dying was determined declining somewhat thereafter to be greatest during the first post-injury year (Stover & Fine, 1987).

Spinal cord injury is two types such as complete and incomplete. A person loses all ability to feel and voluntarily move below the neurological level of the injury which occurs in a complete injury, on the other hand there is some functioning below the level of the injury which occurs in an incomplete injury (WebMD, 2011). Complete loss of function below the level of the injury when complete spinal cord injuries occur, while incomplete spinal cord injuries are those that result in some sensation and feeling below the point of injury. The way in which the spinal cord has been damaged it dependent upon the level and degree of function in incomplete injuries is highly individual (Brain and Spinal Cord.org, 2012).

A person with traumatic or non-traumatic SCI the potential changes are similar regarding their ability to feel, move, control their bladder and bowel and other possible problems. Traumatic SCI are at higher risk than those with non-traumatic SCI. Non-traumatic SCI patients have a better recovery in affected areas and stay for shorter periods in hospital compared with those with a traumatic SCI who have worse prognosis and long durations. A specialized team of health care professionals it is best to have

periodic reviews for anyone with SCI. Prevent and treat SCI complications help to achieve the best possible outcomes for health and well-being (Spinal Hub, 2010).

Loss of function is the symptom of spinal cord injury. Impaired functioning occurs by spinal cord injury. Severe headache, backache, tingling or loss of sensation in the hand, fingers, feet, or toes, feeling of pain or pressure in the neck, partial or complete loss of control over any part of the body, impaired breathing after injury, urinary or bowel incontinence, or retention, difficulty with balance and walking, unusual lumps on the head or spine (Medtronic, 2013).

The term “Paraplegia” refers to impairment or loss of motor and/or sensory function in the thoracic, lumbar or sacral (but not cervical) segment of the spinal cord, secondary damage of neural elements within the spinal canal. With paraplegia, arm functioning is spared, but, depending on the level of injury, the trunk, legs and pelvic organs may be involved. The term is used in referring to cauda equina and conus medullaris injuries, but not to lumbosacral plexus lesions or injury to peripheral nerves outside the neural canal (Krishblum et al 2011: 536).

According to the Asian Spinal Injury Association (ASIA), the spinal injuries are classified in general terms of being neurologically “complete” or “incomplete” based upon the sacral sparing definition. “Sacral Sparing” refers to the presence of sensory or motor function in the most caudal sacral segments as determined by the examination (i.e. preservation of light touch or pin prick sensation at the S4-5 dermatome, Deep Anal Pressure or voluntary anal sphincter contraction). A complete injury is defined as the absence of sacral sparing (i.e. sensory and motor function in the lowest sacral segments, S4-5), whereas an incomplete injury is defined as the presence of sacral sparing (i.e. some preservation of sensory and/or motor function at S4-5) (Krishblum et al 2011)

In addition to the paralysis, a variety of complications can result from SCI. The person with SCI might have the complications like skin breakdown or pressure sore, bowel and bladder complexities, respiratory complications, and autonomic dysreflexia (Somers: 29-31). As discussed by Adler (2006), there are some other complications like, deep vein thrombosis, decreased vital capacity, osteoporosis, postural hypotension, spasticity and heterotopic ossification. From the practical observation at CRP, it has been seen that the most common complication is pressure sore followed by urinary tract infection, bowel & bladder problem, fever, autonomic dysreflexia, diarrhea, abdominal distension, psychosocial distress etc. One of the common complications of tetraplegic patient is respiratory distress or chest complication. These can be developed at any time

after the injury, i.e. while the patient is in the rehabilitation center and sometimes the complications develop while the patient is inhome after discharge or etc. Patient education plays a great role in preventing these complications. Continuous treatment and care can minimize these complications depending on the extent of its injury.

As discussed by Adler (2006), the prognosis for significant recovery of neuromuscular function after SCI depends on whether the lesion is complete or incomplete. If there is no sensation or return of motor function below the level of lesion within 24 to 48 hours after the injury, motor function is less likely to return. Most neurological recovery occurs within the first two months after injury although recovery may continue for up to 1 year and occasionally after this. However, patients with complete lesions often regain one neurological level in the months after injury, i.e. an individual presenting with C5 tetraplegia at the time of injury may present with C6 tetraplegia 3 months later. Motor recovery following an incomplete lesion is common.

It is difficult to predict patient's ability to walk at the time of injury but the best estimates indicate that very few patients with ASIA A (complete) lesions at the time of injury ultimately ambulate with or without assistance, 30-45% of patients with ASIA B (Sensory incomplete) lesion ambulate for at least short distances and most patients with ASIA C (Motor incomplete but more than half of the key muscles below the neurological level has muscle grade less than 3 in oxford manual muscle strength test) and D (Motor incomplete but more than half of the key muscles below the neurological level has muscle grade greater than 3 in oxford manual muscle strength test) lesions become community ambulatory (Harvey 2008: 12).

80% of spinal cord injuries occurred in men, 16 to 30—more than half of spinal cord injuries occur in young adults, they are the high risk of Spinal cord injury. Diving into shallow water or playing sports without proper safety gear or precautions, they are in risky. Arthritis, osteoporosis or any other joint disorder are also caused of Spinal cord injury (Medtronic, 2013).The literature of an excellent review of and comprehensive study of SCI describes the changes over the past 20 years in survival and causes of death where using data from the US Spinal Cord Injury Model Systems. A populationbased sample of SCI survivors in Great Britain to examine long-term survival which is the aims of that study, explore trends in cause of death identify and risk factors contributing to deaths. 50 years of spinal cord injury experience, the investigation which is covering, and

the longest follow-up SCI survival study to date. Any results of SCI mortality data were compared with from the United States (Frankel et al., 1998).

Without radiographic abnormality the epidemiology of spinal cord injury is less frequently reported in adults as compared with children. Epidemiological characteristics, such as injury origin, injury level or severity, neurological scale and MRI feature were acquired. As the young adult population increases, it is very important to set up an individualized evaluation system based on a nationally scaled epidemiological database (Guo et al., 2012). Long-term impact on physical and mental health with paralysis is common causes of spinal cord injury. Secondary complications may focus sometime and the complications are the main cause of life changing effect (Bellon et al., 2013). The prolong period of spinal cord injury (SCI) on the health care system imposes a need for greater efficiency in the use of resources and the management of care. Access Care of Training project is part of a broader vision to create a methodological framework to evaluate clinical practices, and in particular to develop a certification process for SCI Programs (Noonan et al., 2012).

Acute hospital care is needed after immediately following a SCI where all medical and surgical treatment is completed. After complete acute care, they should be considered for rehabilitation. Rehabilitation care is the most effective for traumatic or non-traumatic events. A research showed that specialist spinal rehabilitation unit has great outcomes for people with a SCI. Specialist rehabilitation unit are better than a general rehabilitation unit (Spinal Hub, 2010).

Breathing and the heart is beating is the first step of management of a suspected spinal cord injury patient. A loss of control of normal breathing is the cause in spinal cord injury when injury occurs in upper neck. Use of a ventilator or breathing tube may require placement. Immobilization is the treatment spinal cord injury after complete previous treatment. A cervical collar or on a backboard prevent the spine from moving in emergency condition. Further damage may occur if the patient moves vigorously after spinal cord injury (Medicine net.com, 2009).

Patient care is centered on a multi-disciplinary team consist by the Model Regional Spinal Cord Injury Center's approach where several medical specialists headed by the attending physiatrist, and personnel from the disciplines of rehabilitation nursing, physical therapy,

occupational therapy, psychology and social service. A statistics has been analyzed a set of data which captures medical, demographic, social and psychological information (Fine et al., 1980).

During the rehabilitation program in South African Society the commonest complications were pressure sores, developed in a further 23 patients which were present in 47 cases at the time of arrival in the rehabilitation unit. In 43 cases (7%), severe spasticity occurred, in 18 cases (3%) urological complications and debilitating pain in 12 (2%). 7.4% was the overall mortality rate. Analysis of the causes of death as autopsies were not performed routinely could not be included in this study (Hart & Williams, 1994).

A spinal cord injury (SCI) is a devastating event that, depend on the level and severity. The affected area mark for rehabilitative interventions is the regaining of independence and thus a good quality of life. It is now widely accepted that the central nervous system is able to recover following incomplete SCI with functional training (Hubli& Dietz, 2013).

A functional outcome or evaluation investigation what a parson is capable of doing how much assistance he/she needs and what equipment have to need to perform his/her activities. The major thrust of the physiotherapy components of rehabilitation is to increase functional capability; this part of evaluation is very important. The therapeutic program measures according to the evaluation of the functional gain. Documentation of functional abilities must be accurate as all other areas of the evaluation (Somers, 1992).

Trauma care requires to be singled out by the availability of rehabilitative care, prosthetic devices, and age appropriate and culturally sensitive because of significant problems world-wide. The most important medical need identified is the continuing lack of rehabilitation services for adolescents and youth with disabilities. Who have to rehabilitation any sort of care only 5 per cent receives in the United Nations estimates that of those worldwide. Often in urban areas rehabilitative services tend to be intense and are very expensive. Often unavailable programs that require long-term residency are also to girls in societies where females are not permitted to travel or live on their own. Growing young person would need frequent replacements where prosthetic devices are often difficult and expensive to acquire. Appropriate physical and psychological support developmentally services are often unavailable. At the side of infants and pre-school

children unlike their non-disabled peers, adolescents and youth who receive medical care are often served in clinics (Groce, 1999).

The concept of a multidisciplinary team in Pakistan was generally equated with 'physiotherapy', is best treatment rather than the medical specialty of Physical Medicine and Rehabilitation. So, SCI unit and disaster planning did not include disability management despite neurosurgical departments in nearly all major teaching hospitals, there existed no. The Armed Forces Institute of Rehabilitation Medicine (AFIRM) only one dedicated rehabilitation medicine institute was functioning at the time of the disaster, providing rehabilitation services to persons with SCI, stroke, amputation, musculoskeletal disabilities, and pediatric disabilities (Rathere et al., 2007).

Traumatic spinal cord injury (TSCI) is one of the most devastating types of injury, and causes paralysis, sensory loss, and bladder/bowel dysfunction. The epidemiological understanding is important for preventative measures and planning clinical services. In Asia the purpose of epidemiological characteristics of TSCI in orders to increase prevention and creates awareness. Thus we create social and worldwide awareness about spinal cord injury (Ning et al., 2012). The common principal end-point of the trial on treatment of traumatic spinal cord injury (SCI) is the degree of impairment. Motor function and pin-prick and light-touch sensory function are widely used which is allowed by The American Spinal Injury Association (ASIA) (Furlan et al., 2011).

Depending on the level of the spinal cord injury, whatever sparing the patient has is optimized. Bed mobility, transfers, wheelchair mobility skills, and performing other activities of daily living (ADLs) are just a few of the interventions that physical therapists can help the patient with spinal cord injury. ADLs can be difficult for an individual with a spinal cord injury. However, through the rehabilitation process individuals with SCI may be able to live independently in the community with or without full-time attendant care, depending on the level of their injury (Radomski and Latham, 2008)

The primary causes of death were pneumonia, accidents and suicides. Septicemia, pneumonia and pulmonary emboli are the highest ratios of actual to expected deaths where pneumonia was the leading cause of death. The secondary causes of death were accidents and suicides. Both accidents and suicides were the leading cause of death. Actual-to-expected deaths Septicemia had the main ratio. The principal causes of death among

paraplegics' accidents, suicides and cancer were major where pneumonia was the leading cause of death among quadriplegics. Until the mid-1970s overall leading cause(s) of death were traditionally known renal failure and other urinary tract complications, which decline in their role in recent data, reflect a significant as the primary killer of SCI patients (Stover & Fine, 1987). Rehabilitation techniques can greatly improve patients' health and quality of life by helping them learn to use their remaining abilities. They start by setting functional goals. Functional goals are a realistic expectation of activities that a person with SCI after spinal injury many people are not immediately treated and a person acquiring a spinal cord injury stays at home and wants to a traditional treatment. So, many people face medical complications such as urine infections and bedsores. In other hand, the other hospital refers the patient to a specialized hospital or medical college hospital or to CRP for further treatment although there are no specialized government hospitals for the treatment and rehabilitation of people with SCL. Most of the patients come from the rural area and their career is also illiterate as a result they cannot know about the lesion of spinal cord. So they think the patient will be recovering by day to day. The patient believes that he will come back his normal life and provide support to his/her family. CRP has enhanced a full and average system to provide services for people with SCL. CRP is all-time ready to play a vital contribution to the rehabilitation of paralyzed people. A social worker or a Community Based Rehabilitation (CBR) worker visits the patient's home, because after rehabilitation they need some necessary things which they supplied. CRP wants to give the fully support to people with SC, so the people can lead a normal, happy and peaceful life (Momin, 2005).

Social isolation and discrimination in society is the major and common problem. For the non-disabled majority must be undertaken and legal guarantees time honors and compulsory to improve the lives of those with disabilities, education. People with disabilities with some cultures are more tolerant than others. Believe to be the cause of disability (for example, bad blood, divine displeasure or punishment for actions in a previous life) by the people of a society's attitude towards disability is created in nature. Always such beliefs are not negative. For example, God often gives children with a disability to couples who are able to show them special compassion and care influences the

way the surrounding community responds to these children in northern Mexico that the belief. The manner in which families and communities, how people expect individuals with disabilities to contribute to society also shapes respond to children and youth with disabilities (Groce,1999).

Physical rehabilitation is a common form of restoring process. It may often be utilized after a major surgery, an accident or any event that reduce the mobility or function of an individual. This form of rehabilitation pairs the patient with the trained personnel who help him/her to recover as much of his/her previous physical powers as possible (Greek, 2010).

Rehabilitation techniques can greatly improve patients' health and quality of life by helping them learn to use their remaining abilities. They start by setting functional goals. Functional goals are a realistic expectation of activities that a person with SCI eventually should be able to do with a particular level of injury. These goals are set during rehabilitation with the medical team. They help the patient with SCI learn new ways to manage his/her daily activities and stay healthy. The SCI units include kitchens and laundryfacilities, vocational training center and other equipment so that patients can learn independent living skills, such as cooking meals or ironing clothes (Nesathurai and Shanker, 2000). A spinal cord injury can also affect the nerves and muscles and can cause bowel and bladder problems and skin problems. Special care is needed for the children, especially for teenagers. Parents of spinal cord injured children also need to learn how to take care of their spinal-cord injured child. Having a spinal cord injury does not mean that children have to stop participating in games and enjoyableactivities. Most SCI units have recreational therapists on staff to show kids how to playwheelchairbasketball, volleyball, and tennis, as well as specially adapted games (Somers, 1992).

A rehabilitation team includes physician, physiotherapist, occupational therapists, recreational therapist, rehabilitation nurse, rehabilitation psychologist, counselor, social workers, nutritionists and other specialists. A case-worker or program manager coordinates care. Physiotherapists focus both upper and lower extremity function and on difficulties with mobility (National Institute of Neurological Disorders and Stroke, 2010). Physiotherapists also help to remain clear the airway of those who has excess secretion in

the chest. Occupational therapists addressed upper extremity dysfunction and difficulties in activities of daily living. Rehabilitation nurses are concerned with the issues of bowel and bladder dysfunction and the management of pressure ulcers. Psychologists deal with emotional and behavioral concerns of the newly injured patient and with any potential cognitive dysfunction. Case manager and social workers are the primary interface among the rehabilitation team, the patient and his/her family (Saulino, 2009).

The spinal cord is situated within the spinal column; it extends down from the brain to the L1–L2 vertebral level, ending in the conus medullaris. Continuing from the end of the spinal cord, in the spinal canal, is the cauda equine (or “horse’s tail”). The spinal cord itself has neurological segmental levels that correspond to the nerve roots that exit the spinal column between each of the vertebrae. There are 31 pairs of spinal nerve roots: 8 cervical, 12 thoracic, 5 lumbar, 5 sacral and 1 coccygeal. Owing to the difference in length between the spinal column and the spinal cord, the neurological levels do not necessarily correspond to the vertebral segments (International perspective of spinal cord injury, 2013).

According to Furlan *et al.* (2013) traumatic SCI can result in motor, sensory and autonomic dysfunction, all of which can be devastating for the individual, both socially and economically. Paraplegia affects the lower extremities of the body. It refers to motor and sensory impairment at the thoracic, lumbar, or sacral segments of the cord. Paraplegia results in sparing of arm function and, depending on the level of the lesion, impairment in the trunk, legs, and pelvic organs (Radomski and Latham, 2008). Tetraplegia affects all extremities of the body. It results in functional impairment in the arms, trunks, legs, pelvic organs. The term tetraplegia which has defined as impairment in motor and/ or sensory function in the cervical segments of the spinal cord (Radomski and Latham, 2008). SCI, either traumatic or non-traumatic in origin, and the disabilities that follow are of great concern to the medical world, to the person affected, their family and society as whole (Berget *et al.* 2010). The injury usually results in permanent paralysis of voluntary muscles and loss of sensation below the lesion, which is associated with reduced mobility and functional independence, impairment of social and vocational activities, as well as negative influences on the person's health and well-being (Middleton, Tran and Craig, 2007). Angel, Kirkevold and Pedersen (2009) they found in their study, SCI makes it difficult to get on with life

because of the devastating and persistent nature of the physical impairments, the losses and the associated reduced the quality of life.

SCIM scale

The Spinal Cord Independence Measure (SCIM) is a new disability scale developed specifically for patients with spinal cord lesions in order to make the functional assessments of patients with paraplegia or tetraplegia more sensitive to changes. The SCIM includes the following areas of function: self-care (sub-score (0-20), respiration and sphincter management (0-40) and mobility (0-40). Each area is scored according to its proportional weight in these patients' general activity. The final score ranges from 0 to 100. The SCIM was more sensitive than the FIM to changes in function of spinal cord lesion patients: the SCIM detected all the functional changes detected by the FIM total scoring, but the FIM missed 26% of the changes detected by the SCIM total scoring. The mean difference between consecutive scores was higher for the SCIM ($P < 0.01$). We conclude that the SCIM is a reliable disability scale and is more sensitive to changes in function in spinal cord lesion patients than the FIM. The SCIM when administered by a multidisciplinary team, may be a useful instrument for assessing changes in everyday performance in patients with spinal cord injury patient.

Study design

A retrospective study was selected as appropriate to achieve the aims.

Study site

The SCI registered unit of physiotherapy department of at the Centre for the Rehabilitation of the Paralyzed (CRP) in Bangladesh which is the largest spinal cord injury rehabilitation Centre for the patient with spinal cord injury in Bangladesh was selected. At first the standard questionnaire was developed and then collected data from SCI registered unit.

Study area

Spinal Cord Injury (SCI) Unit of CRP was selected for data collection.

Study population and Sampling

The target population was the patient with Spinal Cord Injury who was admitted at CRP spinal cord injury unit, Savar, Dhaka. The target population was about 500.

3.6 Sampling technique

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

Inclusion criteria

Spinal cord injury patients admitted into CRP.

- The assessment which has diagnosed.
- The complete and well fill out assessment (assessment form and discharge summary) for the necessary information.

Exclusion criteria

- Incomplete document due to lack of information
- Patients without spinal cord injury
- SCI with speech problem
- People who had SCI with psychological disorders

Data collection tools

Data was collected by using Papers, Pen, Pencil, Diary, Computer and pen drive, file.

Data analysis

The data that was collected is descriptive data. The graph technique was used for analyzing data, calculated as percentages and presented this using bar and pie charts by SPSS (Statistical Package of Social Science) software version 20. SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics and conduct complex statistical analyses.

Ethical consideration

The permission was initially taken from the supervisor of the research project and from the course coordinator before conducting the study. The necessary information has been approved by the ethical committee of CRP and was permitted to do this research. 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 department 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.

Age and Gender

1. Socio demographic information of participants.

Information about 234 participants was collected and these patients were admitted at CPR between July 2012 and 30 June 2015. Most of the participants were male. The detail description of participants are given in table 1.

Variables	categories	Frequency	Percentage
Age	5-15	24	10.2
	16-30	107	45.5
	31-45	71	30.2
	46-60	27	11.5
Gender	Male	192	81.7
	female	42	17.9
Marital status	Married	150	63.8
	unmarried	83	35.3
Education	illiterate	58	24.7
	primary	76	32.3
	secondary	69	29.4
	Higher secondary	18	7.7
	Graduation	10	4.3

Resident	Urban	63	26.8
	Rural	167	71.1
Profession	student	53	22.6
	teacher	3	1.3
	Private job	29	12.3
	Self- business	30	12.8
	Gov. job	3	1.3
	Farmer	40	17.0
	House wife	21	8.9
	Garments worker	2	.9
	Day labor Unemployed	49	20.9

Table 1: Sociodemographic information of participants Age, Gender and Occupation,education of the participants

Age of the participants

Among the age of the participants, 5-15 years were 24 people, 16-30 years were 107 people, 31-45 years were 71 people, 46-60 years were 27 people and above 60 years were 5 people.

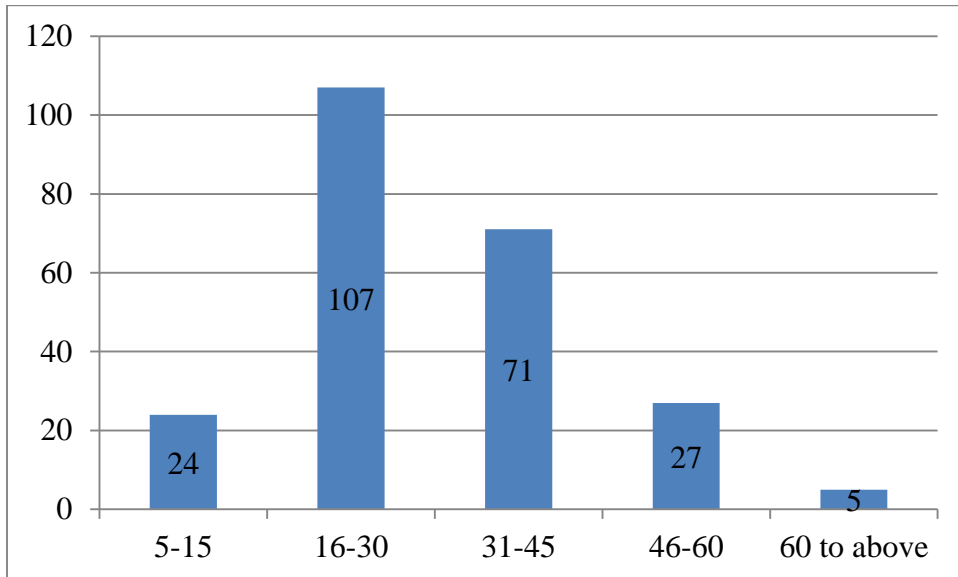


Chart I: Age of the participants

Area of the participants

Among the all participants 73% people lived in rural area and 27% people lived in urban area.

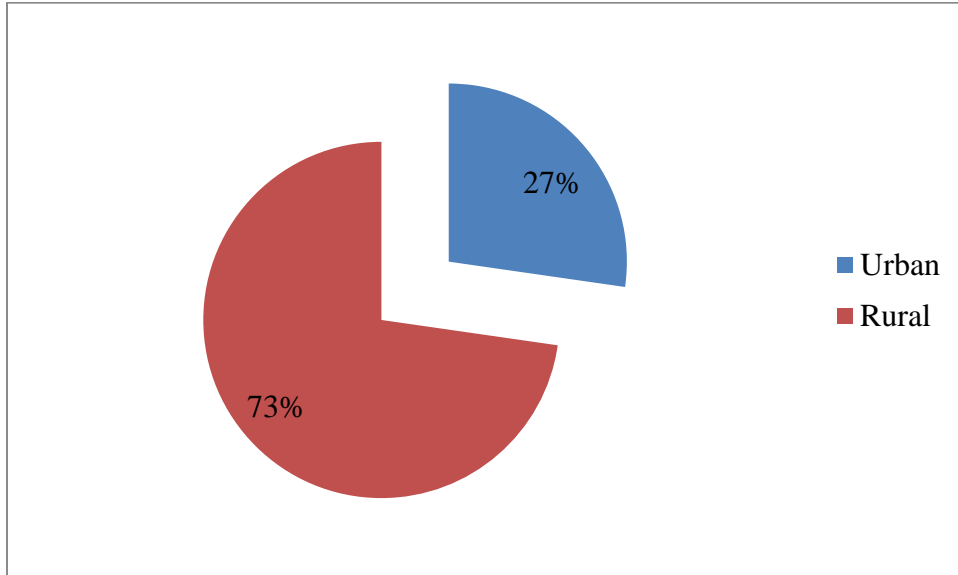


Chart II: Area of the participants

History of past illness and personal History

Among the 234 participants there have no record of History of past illness .

Variable	Categories	Frequency	percentage
Personal history	Not applicable	233	99.6
Cause of injury	Traumatic	222	94.5

Table 2: Cause of injury personal history and history of past illness

ASIA Scale at admission and Discharge:

Out of 234 patients the impairment grading in ASIA scale A were 140(59.6%), ASIA scale B were 45(19.1%), ASIA scale C were 32(13.6%), ASIA scale D were 13 (5.5%).

At discharge ASIA Scale A were 109(46.4%), ASIA scale B were 25(10.6%),ASIA scale C were 26(11.1%),ASIA scale D were 57(24.3%)

categories	frequency of admission	frequency of discharge	percentage			
Complete A	140	109	46.4			
Incomplete B	45	25	10.6			
Incomplete C	32	26	11.1			
incomplete D	13	57	24.3			

Table 3: ASIA scale at admission and discharge

SCIM score admission and discharge:

Among the 234 participants were at admission SCIM scores minimum(.00),

And maximum (84) And at discharge SCIM Scores minimum(10), maximum(182)

Variable	categories	Range	Minimum	Maximum
SCIM scores	At admission	84	.00	84
	At discharge	227	10	182

Table 4: SCIM score admission and discharge

Types of injury	Frequency	Percent
RTA	59	26
Fall from high	123	54.2
Fall on heavy object	27	11.9
Violent attack	5	2.2
Physical assault	5	2.2
Bullet injury	1	.4
Electric shock	1	.4
Fall on ground	4	1.7
Sharp object	1	.4
Sports injury	1	.4

Table 5 : Types of injury

The aim of the study was to find out the demography of the spinal cord injury patient who admitted into CRP from January-December, 2012. Even it is not possible to know the total number of patient of spinal cord injury in Bangladesh. Currently there is lack of survey information on spinal cord injury in CRP. In this study there was about 234 samples was taken.

In this study the mean ages was 31.01 years, in other study conduct in Brazil the mean age was 30.3 ± 1.1 years (Paz et al., 1992). Another study showed that the mean age was 40.8 ± 14.1 years (Groot et al., 2006). In USA a study showed that the mean age was 29.7 years (Stover & Fine, 1987). In Pakistan mean age 28.3 ± 12.4 years (Rathore et al., 2007). In India another study showed that the mean age was 34.3 years (Chhabra & Arora, 2012).

In the study there was 81.7% male and 42% female and the male female ratio was 7.2:1. In Brazile male female ratio was 3.9:1 (Paz et al., 1992). In USA male female ratio was 4:1 (Stover & Fine, 1987). In Fijians male female ratio was 35:6 and in India the ratio was 7:2 (Maharaj, 1996). Majority of victims 57.2% were women in Pakistan (Rathore et al., 2007).

The married person was 63.8% and the unmarried person was 35.3% in this study. Another study showed that 59.3% were married person and 37.1% were unmarried person in Fiji (Maharaj, 1996). In Pakistan a study showed that the married person was 65% (Rathore et al., 2007).

The study showed that primary level completed person were 32.3%, SSC level completed were 29.4% and 4.3% was graduation level completed. The majority of the patients in Fiji there were 61.4% had only primary level, 28.6% had SSC level and 10.4% had graduation level completed (Maharaj, 1996).

Here the students were 22.6%, farmer 17.0%, private job 12.3% and others 7.5%. In Fiji student's were 17.1% and service holder were 30.0% (Maharaj, 1996). In China a study

showed that farmer was 57.2%, labor was 13.3%, student 2.6%, service holder 3.4% and others 12.4% (Wang et al., 2013). In Nigeria showed that students was 20%, farmers 12.9%, service holders 14% (Nwankwo&Uche, 2013).

The research showed that most of the patients were village people. The rural patients were 71.1% where as the urban patients were 26.8%.The Indian research showed that 53.95% were from rural areas and 40.51% from the urban areas (Chhabra & Arora, 2012).

In this Study according to the grading scale ASIA A were 74.2%, ASIA B were 5.4%, ASIA C were 5.9% and ASIA D were 13.4%. In Pakistan there was no case of ASIA A, 46% were in ASIA B, 41% were ASIA C and 8% were ASIA D (Rathore et al., 2007).

Here the complete paraplegia patients were 32.4%, incomplete paraplegia patients were 24.9%, complete tetraplegia patients were 23.7% and incomplete tetraplegia patients were 19%. In Turkey 85.12% was complete paraplegia,6.85% were incomplete paraplegia, complete tetraplegia were 4.84% and incomplete tetraplegia were 3.19% (Dincer et al., 1992). In Pakistan 46% patients had incomplete paraplegia, 43.3% had complete paraplegia, 4.8% had incomplete tetraplegia, and 5.9% had no neurological deficit (Rathore et al., 2007). In Istanbul Turkey 33% patients were tetraplegic and 67% patients were paraplegic (Karamehmetoglu et al., 1995).

In the study the traumatic cause was 94.5% and non-traumatic cause was 4.7%. Other hand in Netherland traumatic cause was 75% (Groot et al., 2006). In Fiji there were 53.6% traumatic cause and 46.4% non-traumatic cause (Maharaj, 1996). The study showed that road traffic accident was 24.2%, fall from height was 43.7% and gunshot injury was 0.7%. In Australia traffic accident was 48.7%, for falls 26.6%, 5.8% gunshot injury. In America traffic accident was 42.8%, for fall 19.2%, for gunshot injury 12.3%. In England traffic accident was 46.8%, for fall 25.7% and 0% for gunshot injury (Dincer et al 1992). In Nigeria a study showed that road traffic accident was 55.3%, fall from height 23.5%, assault 7.1%, and gunshot injury was 8.2% (Nwankwo&Uche, 2013). Motor vehicle collisions were 56.4%; individuals were involved in a collision with a motorized vehicle, including drivers, passengers, pedestrians and bicyclists.86 (19.1%) were the second most

common cause of injury was fall. Falls from height, stairs, roofs or ladders, slipping or tripping were another cause. In Canada a research showed that the third most common cause of SCI is head injuries, including hemo- or pneumothorax and multisystem trauma (Dryden et al., 2003).

Limitations

Complete accuracy is not being possible in any research so that some limitations may exist. Regarding this study, there were some limitations or barriers to consider the result of the study as below:

The first limitation of this study was small sample size. The data was taken only in four year.

As the study was conducted at Centre for the Rehabilitation of the paralyzed (CRP) which may not represent the whole country.

The study was only the demography of the spinal cord injury patients, in further study would be carry out the other sectors of the Spinal cord injury.

Conclusion

Spinal cord injury (SCI) is an insult to the spinal cord resulting in a change, either temporary or permanent, in its normal motor, sensory, or autonomic function. In Bangladesh the number of spinal cord injury patient is increasing day by day. Spinal cord injury (SCI) is one of the most destructive conditions known to mankind. Although spinal cord injury is one of the most serious injuries that a person can survive, it is possible to return to a healthy, happy and productive life after even the most severe of cord injuries. In Bangladesh many of people in every year face Spinal Cord Injury and there is lack of much information. And paraplegia is more common than tetraplegia. This study was aimed to find out the demography of the Spinal Cord Injury patient. For the fulfillment of the study, I was designed a quantitative and retrospective study design and collected 426 data from the samples through a standard questionnaire from the registered unit of Spinal Cord Injury. From the data base, it was found that the age range between 5-70 years is more vulnerable to have spinal cord injury (SCI). Male are predominantly more affected than female. The educational level were very poor in most the patients, and most of them are from rural areas who live with low economic level. It is difficult to stop the responsible cause of Spinal Cord Injury. Spinal Cord Injury management and rehabilitation is a long time process so it is important to create awareness and receive proper step to reduce the risk of Spinal Cord Injury.

Recommendations

The aim of the study was to find out the functional outcome of the spinal cord injury in Bangladesh. I recommended the following things:

Should take more samples for generating the result and try to make more valid and reliable.

Should take more samples for pilot study to establish the accuracy of the questionnaire.

Should take more time.

Sample should collect from the only rehabilitative institute in Bangladesh.

But research would need to be carried out considering proof of hypothesis; the method should be changed from cross sectional to case control.

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Annexure

1. IRB
2. Permission Letter
3. Consent Form (English Version)
4. Questionnaire (English Version)



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

Ref.

Date: 22/11/2018

CRP-BIIP/IRB/10/18/1257

To
Sazeda Akter Tania
B.Sc. in Physiotherapy
Session: 2013-2014 Student ID:112130210
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "Functional outcome after spinal cord injury Rehabilitation Result from a retrospective study Rehabilitation center in Bangladesh" by ethics committee.

Dear Sazeda Akter Tania,
Congratulations,

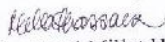
The Institutional Review Board (IRB) of BIPI has reviewed and discussed your application to conduct the above mentioned dissertation, with yourself, as the Principal investigator. The following documents have been reviewed and approved:

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

The purpose of the study is to find functional outcome after spinal cord injury Rehabilitation Result from a retrospective study Rehabilitation center in Bangladesh. The study involves use of SCIM and questionnaire DRAFT to find out the gross motor function and functional limitation that may take 20 to 25 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 11 AM on 24th January, 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

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন : ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ডায়াগ্রাম : ৭৭৪৫০৬৯

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org



পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্র (সিআরপি)
Centre for the Rehabilitation of the Paralysed (CRP)
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Ref:

Date:

CRP-R&E-0401- 2016

07.01.2016

To
Firoz Ahmed Mamin
Muzaffor Hossain
Dr.Sayeed Uddin Helal
Kazi Imdadul Haque Shoyeb
Farzana Taoheed
Centre for the Rehabilitation of the Paralysed (CRP)

Ref: Study Title 'Functional Outcomes after Spinal Cord Injury Rehabilitation- Results from a Retrospective Study Based on a Rehabilitation Center in Bangladesh'.

Sub: Approval of documents for Study 'Functional Outcomes after Spinal Cord Injury Rehabilitation- Results from a Retrospective Study Based on a Rehabilitation Center in Bangladesh'.

Dear All,

The CRP Ethics Committee reviewed and discussed your application to conduct the study entitled 'Functional Outcomes after Spinal Cord Injury Rehabilitation- Results from a Retrospective Study Based on a Rehabilitation Center in Bangladesh'.

The following documents were reviewed:

Sl. No	Documents	Version	Dated	Copy
1	Research Proposal		10.12.16	1
2	Data Collection tool		10.12.16	1

The following members of the ethics committee review the proposal

S. No.	Name	Role in EC	Affiliation with Institute(Yes/No) If yes, Specify.....
1	Dr. Mohammad Alamgir Kabir	Chairman of CRPEC	No
2	Schrab Hossain	Member of CRPEC	Yes, Head of Programs of CRP

CRP-Mirpur, Dhaka, Plot A/5 Block A, Section- 14, Mirpur, Dhaka- 1206, Tel: 02 9026362-4 Fax: 02 9025561, Email: dgm-mirpur@crp-bangladesh.org. CRP-Ganakbari, PO Dhamsena P.S. Ashulia, Savar, Dhaka, Tel: 02 7789227, Email: ganakbari@crp-bangladesh.org. AK Khan CRP- Chittagong, Kalurghat, Mohra, Chaugan, Chittagong, Tel: 031- 2573412, Email: chittagong@crp-bangladesh.org. Afsar Hussain CRP- Rajshahi, House no. 11, Monishbathan, Rajshahi Court Rajpara, Rajshahi, Tel: 0321 711700, Email: rajshahi@crp-bangladesh.org. CAPSA Foundation, CRP Barisal, 12 Gourpara Barisal Sadar, Barisal, Phone: 0831 71556, Email:



পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্র (সিআরপি)

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Ref:

Date:

3	Roksana Hloque	Member Secretary	Yes, Research, Monitoring & Evaluation Officer
4	Md. Nasirul Islam	Executive Member	Yes, Principal of BIPI
4	Julker Nayan	Executive Member	Yes, Head of Occupational Therapy Dpt.
5	Sharmin Hasnat	Executive Member	Yes, Sr. SLT & Acting Head and Lecturer, Speech and Language Therapy Department.
6	Md Obaidur Rahman	Executive Member	No
7	Nayma Nazneen	Executive Member	Yes, customers care officer, Inclusive Job Centre.

We confirm that neither you nor your study team members participated in the deliberations of the Ethics Committee & did not vote on the proposal for this study.

We approve the research to be conducted in its presented form at Centre for Rehabilitation of the Paralysed Ethics Committee (CRPEC)

The CRP Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information / informed consent and asks to be provided a copy of the final report.

Please submit to the EC the status report of the study as per EC SOP's.

The EC is organized & operates according to the requirements of Declaration of Helsinki and ICH-GCP, local regulatory requirements and guidelines.

Yours sincerely,

Chair of CRPEC

DRAFT

**Functional Outcomes after Spinal Cord Injury Rehabilitation
Results from a retrospective study based on a rehabilitation center in Bangladesh
Data Collection Form**

Please write necessary information and give tick mark on appropriate place.

• **Sociodemographic information**

Code	Variables	Information					
V1	Name						
V2	Mobile No						
V3	Registration No						
V4	Age						
V5	Sex	1. Male			2. Female		
V6	Marital Status	1. Married	2. Unmarried	3. Divorced	4. Separated	5. Others	
V7	Education	1. Illiterate	2. Primary	3. Secondary	4. Higher secondary	5. Graduation	6. Professionals
V8	Resident	1. Urban		2. Rural	3. Semi rural		
V9	Family member						
V10	Role in family						
V11	Profession/Occupation						
V12	Date of injury						
V13	Date of admission at CRP						
V14	Date of Discharge from CRP						
V15	Length of stay at CRP						
V16	Cause of injury (H/O present illness)	Traumatic			Nontraumatic		
V17	History of past illness (Co-morbid D seases)	1. DM	2. HTN	3. Asthma	4. TB	5. Angina	6. (Please write the condition)
V18	Personal History	1. Smoking		2. Alcohol	3. Drug Addiction	4. Others	

DRAFT

• Functional Assessment

Code	Variables	Admission					Discharge				
V 19	Neurological Level										
V 20	Skeletal Level										
V 21	Complete or Incomplete	Complete		Incomplete			Complete		Incomplete		
V 22	ASIA impairment scale	A	B	C	D	E	A	B	C	D	E
V 23	Pressure sore	Yes		No			Yes		No		
SCIM Spinal cord independent measure (0-100)											
V 24	Self care (0-20)										
V 25	Respiration and Sphincter management (0-40)										
V 26	Mobility (0-40)										
V 27	Total SCIM score (0-100)										
V 28	Surgery for SCI	1. Yes..... >		Pressure sore.....			Spinal fixation.....		Others.....		
		2. No.....									
V 29	Mobility aids during discharge	1. Yes.....		3.If Yes (Name)							
		2. No.....									

.....

Signature of data collector

Date:.....

