

**THE COMMON COMPLICATIONS AMONG THE SPINAL
CORD INJURY PATIENTS AT CRP**

Md. Shah Alam

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

Session: 2006-2007

BHPI, CRP, Savar, Dhaka-1343



Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy

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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

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Submitted by **Md. Shah Alam**, for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

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DECLARATION

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistake or inaccuracy is my own. I also declare that for any publication, presentation or dissemination of information of the study. I would be bound to take written consent of my supervisor.

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Abbreviation

ASIA:	American Spinal Cord Injury Association.
BHPI:	Bangladesh Health Professions Institute.
BMRC:	Bangladesh Medical and Research Council.
CRP:	Center for the Rehabilitation of the Paralyzed.
DVT:	Deep Vein Thrombosis.
HSC:	Higher Secondary School Certificate.
RTI:	Respiratory Tract Infection.
SCI:	Spinal Cord Injury.
SPSS:	Statistical Package of Social Sciences.
SSC:	Secondary School Certificate.
WHO:	World Health Organization.

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Abstract

Purpose: The purpose of the study was to the common complications among spinal cord injury patients at CRP. *Objectives:* To explore the socio-demography information and disease condition related information, musculoskeletal related information, neurological related, cardiovascular related and others information. *Methodology:* A cross sectional study was conducted with a structure mixed questionnaire to collect information from spinal cord injury patients. Seventy-one subjects were selected through convenience sampling technique from the spinal cord unit of CRP. Data was numerically coded and captured in Microsoft excel, using an SPSS 16.0 version software program. *Results:* This study was found that, this survey showed male participants about 89% and 11% were female. Males were more affected than female. The most vulnerable age range is 15 to 30 years. Most of the SCI patients were less educated about 39.4% cannot read and write, in this study shows that 55% were paraplegia and 45% were tetraplegia. The people, who were not educated and were not aware of the risks for spinal cord injury, were more affected. 59 (83%) were in rural and 12 (17%) were in urban affected. There were chance to SCI patients who live in rural than the people who live in urban. About 71 participant were involved as sample in this study. Among them 24 (33.8%) were day labor, 17(23.9%) were farmer, 4(5.6%) were house wives, 5(7%) were businessman, 2(2.8%) were driver, 4(5.6%) were service, 9(12.6%) were student, 1(1.4%) were electrician, 4(5.6%) were unemployed. In this study found that day labor and farmer are the most vulnerable group to prone in spinal cord injuries. In the variety of complications 50.7%, had pressure sore, 80% were affected from UTI, spastic tone 62% were present, muscle atrophy were in 79%, and 44% were affected from autonomic dysreflexion. *Conclusion:* Pressure sore, urinary tract infection, spastic tone, muscle atrophy and autonomic dysreflexia are most common complications of spinal cord injury patients in Bangladesh. The victims are mostly young. So it is necessary to raise awareness and take steps to reduce the risk of developing complications.

Key words: Complication, Spinal cord injury.

1.1 Background

Spinal cord injury (SCI) is a life-changing event and about 4.6% people are disabled due to spinal cord lesions or injuries in developing country Bangladesh (Haque et al, 1999). Spinal trauma caused by injury to the spinal cord is a devastating event on a personal & family level, as well as a tremendous financial burden to society because of its attendant morbidity, expense, & prolong treatment requirements, therefore, approximately 40% of patients with spinal cord injury present with complete SCI, 40% with incomplete injury & 20% with either no cord or only root lesions (Frederick, 1997). As SCI patients require prolong time to stay for rehabilitation, there is more chance of developing severe complications, result in greater number of burden people to the society as well as they also lost their productivity (Seivoletto et al, 2003). Although SCI has a fairly low incidence (30/million/yr) compared to other diseases, its economic consequences are quite profound and these consequences include direct costs, which include acute, rehabilitative, and long-term medical care, as well as indirect costs such as lost wages which determine the average yearly health care and living expenses and the estimated lifetime costs that are directly attributable to SCI vary greatly according to severity of injury which is directly attributable to secondary medical complications (Zeyada, 2009). In the United States, the number of new cases per year is estimated at 10000, of which 65.4% are related to violence and car accidents, leading to direct costs of US\$ 7,736 billion/year (Blanes et al, 2009). Each year, about 300-400 traumatic and non-traumatic new cases of SCI patients are added to an estimated prevalence SCI population of about 9,000 in Australia (Cripps, 2006). In Qatar, the annual incidence of traumatic spinal cord injury (TSCI) is 1.25 cases per 100,000 populations per year (Quinones et al, 2002). In Jordan, the estimated incidence of TSCI is 18 per million per year, which may be an underestimate due to the relatively small population (1.4 million) and the number of patients analyzes (Otom et al, 1997). The incidence of spinal cord injury (SCI) varies according to source, however, reports considered to be most accurate indicate that the annual rate is between 30.0 and 32.1 new spinal cord injuries per million persons at risk in the U.S.A. (Stover & Fine, 1987). Approximately 253,000 persons are living with spinal cord injury (SCI) in the United States, with an annual incidence of 11,000

new cases each year and hospital-acquired infection is a common complication in persons with spinal cord injury, whether it occurs during initial hospitalization after injury or during subsequent hospitalizations for long-term care of injuries and other problems, as a result infections are a leading cause of death for persons with SCI patients; pneumonia and septicemia causing most infection-related deaths (approximately 35%) (Charlesnika et al, 2008).

1.2 Rationale

Spinal cord injury (SCI) is a catastrophic event and one of the most common causes of severe disability following trauma (Murthy, 2007). Injured and diseases affecting spinal cord are an important health problem in Bangladesh due to high morbidity and mortality rate (Haque et al, 1999). It is the one of the significant causes of physical disability in our country. The number of affecting people is increasing day by day due to lack of awareness. It is affecting a large number of individual that creates devastating affect on a family a society as well as in whole country.

It was explained broadly about the complication of the SCI patients and this is the most common scenery in the Bangladesh. The world health organization statistics that is, about 10% of the population are disabled by spinal cord injury. A large number of populations suffer from spinal cord injury. Many complications arise, due to lack of awareness of patients and family. So it should be known to everyone about the complication of SCI. If enough knowledge about the complications after SCI, It will be easy to prevent the further complications. The aim of the study is to find out the common complications of spinal cord injury patients. So it is help for our society and country in both socially and economically. This is very important for the SCI patients focusing on preventing the complications and improving quality of life for people with spinal cord injury. Finally for this study participants may be beneficial and practitioner will gain knowledge from this study.

1.3 Research question

What are the common complications among the spinal cord injury patients?

1.4 Aim

The aim of the study was to find the common complications among the spinal cord injury patients at CRP.

1.5 Objectives

1.5.1 General objective

To identify the common complications among the spinal cord injury patients at CRP.

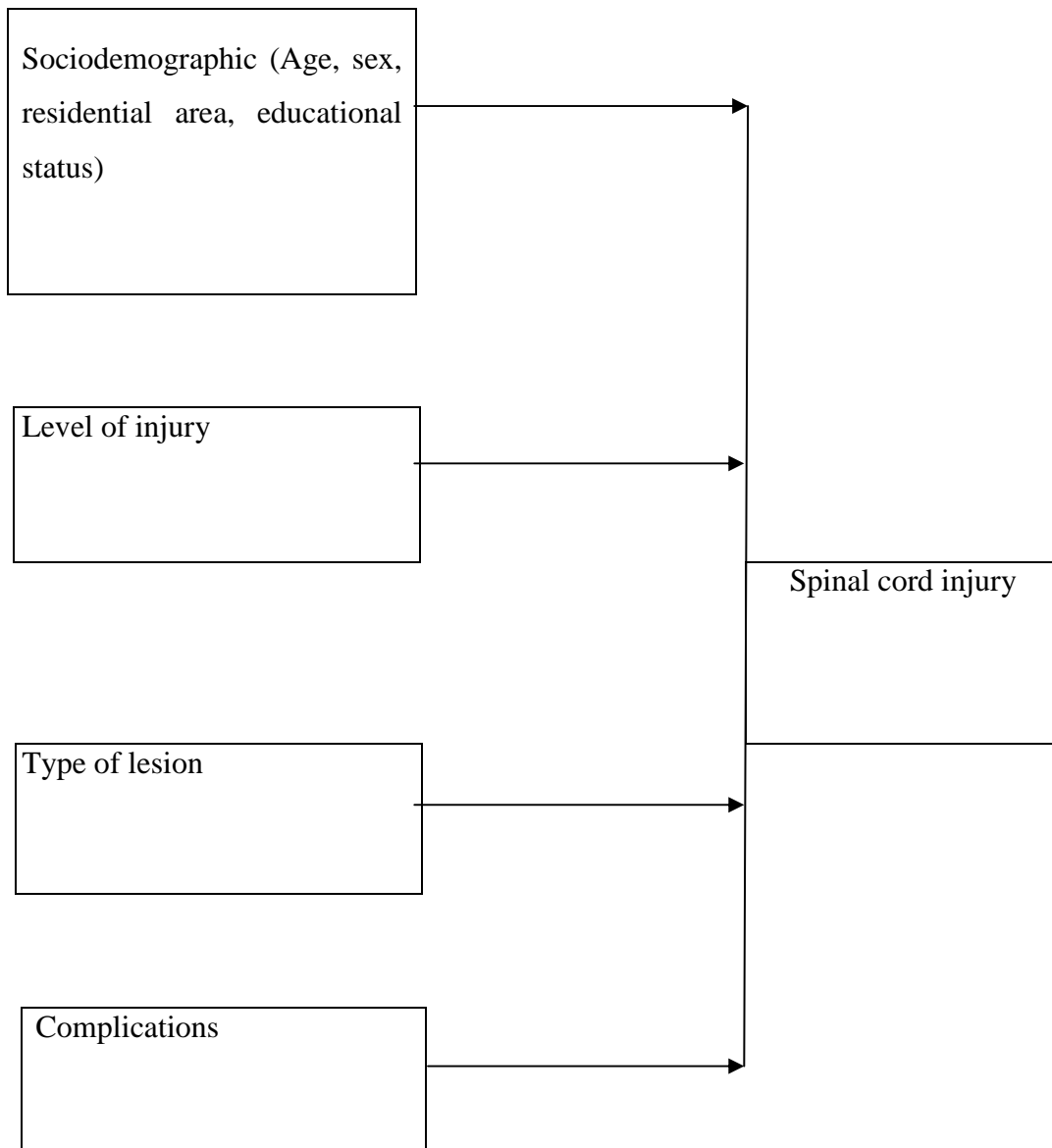
1.5.2 Specific objectives

- To determine the socio-demographical information of patient with spinal cord lesion.
- To find out the type of paralysis.
- To explore the complications after spinal cord injury.

1.6 Conceptual Framework

Independent variable

Dependent variable



1.7 Operational definition

Traumatic Spinal Cord Injury

A direct or indirect trauma to spinal cord following complete or incomplete cut off the spinal cord. Complete cut injuries defect in total loss of motor and sensory function, incomplete injuries result in the loss of some motor and sensory function.

Rehabilitation

The process of restoration and adaptation of previous skills by a person who has had an injury so as to regain maximum self-sufficiency and function.

Paraplegia

When lesion occurs in the cervical (neck) region and defect the function of upper limbs and lower limbs is called paraplegia.

Tetraplegia

Paralysis of the arms, legs and trunk of the body below the level of an associated injury to the spinal cord.

Complete injury

Loss of sensory and motor function in the lowest sacral segment resulting in bowel-bladder control.

Incomplete injury

Preservation of motor or sensory function below the neurological level of injury that included the lowest sacral segment. (Bowel-bladder function is intact.

Skeletal level

The level of vertebra where injury occurred.

Neurological level

The level of nerve root from which both motor and sensory functions are intact.

Complete-A

No motor or sensory function in the lowest sacral segment (S4-S5).

Incomplete-B

Sensory function below neurologic level and in S4-S5, no motor function below neurologic level.

Incomplete-C

Motor function is preserved below neurologic level and more than half of the key muscle groups below neurologic level have a muscle grade less than three.

Incomplete-D

Motor function is preserved below neurologic level and at least half of the key muscle groups below neurologic level have a muscle grade three.

Normal-E

Sensory and motor function is normal.

Spinal cord injury usually result from an accident that damage the central nerve cord in the neck or back, when the cord is damaged, feeling & movement in the body below the level of injury are lost or reduced (David, 1996). The spinal cord is highway through which motor & sensory information travels between brain & body via nerves which pass up & down through the spinal cord along definite pathway. When the path is broken the message cannot get through, this occurs when there is injury to, or disease of the spinal cord (Momin, 2003). When the spinal cord is damaged the nerves above the level of the injury continue to work, however, below the level of the injury communication is disrupted which can result in loss of movement, sensation (feeling), bowel and bladder control. The injury may also impact on the person's breathing, sexual function and ability to control body temperature (Zeyda, 2009).

In US, the National Spinal Cord Injury Statistical Center (NSCISC) reported that motor vehicle crashes account for (42%) of reported SCI cases. The next most common cause of SCI is falls (27.1%), followed by acts of violence (primarily gunshot wounds) (15.3%), and recreational sporting activities (7.4%). In Pakistan falling down (FD) account for (57.85%) of TSCI, followed by RTA (25.2%), and gunshot (8.4%) (Rathore, 2008). In Arabia Saudi the most common causes of TSCI are RTA (80%), fall (9.4%) and gunshot (6.4%) (Jadid, 2004). In general the most common causes of TSCI around the world are RTA and FD and incidence of the most common causes followed local factors in each area around the world. In Bangladesh, Centre for the rehabilitation of the paralyzed (CRP), the causes of the spinal cord injury reviewed retrospectively by Haque in (1999). This study shows that 75% patient were traumatic causes. There were three main causes of injury. Falling from height was the most traumatic cause of spinal cord injury in Bangladesh 43% result from a fall from height such as a tree. Second one is a carrying a heavy load on the head. 20% were associated with falling while carrying heavy load on the head. RTA are less common in Bangladesh than carrying heavy load in the head, 18% were result of a RTA. Other causes are 6% formed a very diverse group which assault, stab injury, sport injury & bull attack (Haque et al, 1999).

Traffic accidents and falls from a height were the most common causes of SCI. Diving were also a common cause, especially in younger patients. Two patients were stabbed, and one had a shotgun injury. Gymnastics and wrestling were the causes of sport injuries in 9.7% patients. It is of interest that 20.3% of males and 9.3% of females were found to be under the influence of alcohol at the time of their injury (Silbersteinl & Rabinovich, 1995).

The worldwide annual incidence of TSCI has been reported to be 15 to 40 cases per million individuals. Daily US accidents result annually in over 20,000 cases of TSCI associated with complete and permanent paraplegias and quadriplegias (Zeyada, 2009). In Qatar, it is estimated that the annual incidence of TSCI is 1.25 cases per 100,000 population per year (Quinones, 2002). In Jordan, the estimated incidence of TSCI is 18 per million per year, which may be an underestimate due to the relatively small population (1.4 million) and the number of patients analyzes (Otom et al,1997). The incidence of spinal cord injuries (SCI) in Novosibirsk is 29.7 per million per year. Almost all of these SCI patients (94.3%) are hospitalized to our clinic. Over the past 5 years. SCI were distributed as follows: cervical, 96 patients (49.0%); thoracic, 54 (27.5%); and lumbar, 46 (23.5%) (Silbersteinl & Rabinovich, 1995). The incidence of SCI in Novosibirsk is comparable to that in other countries. Although it is slightly lower than in Florida, FRG or Japan, this difference can be due to the relatively small population (1.4 million) and the number of patients analysed in this study. The male / female ratio is 3.5:1, and this is also a common finding (Shingu et al, 1994).

The incidence of spinal cord injury (SCI) varies according to source, however, reports considered to be most accurate indicate that the annual rate is between 30.0 and 32.1 new spinal cord injuries per million persons at risk in the U.S.A. used the mathematical relationship between incidence and duration to re-estimate the prevalence of SCI, calculating the rate to be approximately 906 per million. This figure is nearly 50° greater than that estimated by who based his calculations on the length of median post-injury survival; a less precise statistic in light of that which is known today (Stover & Fine, 1987).

In the U.S.A, SCIs occur most frequently in persons between 15 and 20 years of age. According to the National SCI Database maintained by the Department of

Rehabilitation Medicine at the University of Alabama at Birmingham, the mean age at injury is 29.7 years, the median age is 25 years and the mode (i.e. the most frequent age at injury) is 19 years (Stover & Fine, 1987). An epidemiologic study in Russia, there was (78.1 %) males and (21.9%) females. The number of males was 3.5 times greater than the females. The mean age was 34. 7 years in the males and 32.3 in the females. The age distribution showed a peak in the age group of 20-29 years (Silbersteinl & Rabinovich, 1995).

Depending on the level of injury in the spinal cord, a person may become paraplegic or tetraplegic. Paraplegia is a partial or complete paralysis of both lower limbs & all part of the trunk as a result of damage to the thoracic or lumbar spinal cord or to the sacral roots. Tetraplegia is a partial or complete paralysis of all four limbs & the trunk, including the respiratory muscle as a result damage to the cervical spinal cord (Bromely, 1991). This term refers to impairment or loss of motor and/or sensory function in the cervical segments of the spinal cord due to damage of neural elements within the spinal canal. Tetraplegia results in impairment of function in the arms as well as in the trunk, legs and pelvic organs. This term refers to impairment or loss of motor and/or sensory function in the thoracic, lumbar or sacral (but not cervical) segments of the spinal cord, secondary to damage of neural elements within the spinal canal (Maynard et al, 1997).

The neurologic level and completeness of injury are important factors that assist in predicting neurologic recovery and, therefore, functional outcome after SCI. American Spinal Injury Association (ASIA) standards for assessing and classifying SCI are used to facilitate more accurate communication between clinicians and investigators. The ASIA neurological examination consists of sensory and motor examinations, which are used to determine the neurological levels as well as the completeness of the SCI (Umphred, 1995).

The ASIA Impairment Scale classifies the completeness of SCI as follows:-

A- Complete; no sacral motor or sensory sensation in segments S4-5.

B- Sensory incomplete; preservation of sensation below the level of injury, extending through sacral segments S4-5.

C- Motor incomplete; voluntary anal sphincter contraction or sensory sacral sparing with sparing of motor function distal to 3 levels below the motor level of injury, with the majority of key muscles having a strength grade of less than 3.

D- Motor incomplete; voluntary anal sphincter contraction or sensory sacral sparing with sparing of motor function distal to 3 levels below the motor level of injury, with the majority of key muscles having a strength grade of 3 or greater.

E- Normal; normal motor and sensory recovery (Maynard et al, 1997).

Comprehensive medical treatment for the patient with SCI begins at the scene of the injury. Increase recognition of the potential for further cord injury has led to use of immediate spine immobilization.. This is the most likely explanation for the decreased percentage of complete SCIs seen by the early 1980s. The objects of SCI management are to prevent further spinal cord damage by appropriate reduction and stabilization of the spine, to prevent secondary neural injury and to prevent medical complications (Grundy & Swain, 2002). There are mainly two approaches to the management of SCI, non-operative and surgical

The emergency medical care system is the patient's point of entry in the medical care system. The goal during this period is for SCI patient is to immobilize the spine to prevent further damage to the spinal cord prior to reaching the emergency room. Maintenance of an adequate airway, cardiopulmonary resuscitation, & fluid management are required to ensure survival & limit secondary damage. The acute management of traumatic spinal cord injury is unique & requires specialized medical training. In acute spinal cord injury, it is considered slandered of care to implement high doses of intravenous (IV) steroids (methylprednisolone), which has been scientifically shown to decrease the swelling in the spinal cord after a traumatic insult. The protocol is administered within the first eight hours of injury & is completed within 24 hours (Frederick, 1997).

Surgical intervention for SCI aims to decompress, realign and stabilize. The surgery is for the most part not on the actual spinal cord but rather the bony and ligamentous structures surrounding the cord. Cord compression is alleviated and potential cord injury is prevented. In addition to the immediate benefits of decompression and possible reduction in the magnitude and impact of secondary injury mechanisms,

surgery may also prevent the morbidity associated with deformity and inadequate decompression (Ball & Sekhon, 2006).

Patients with SCI are confronted with motor and sensory deficits and dysfunction of bladder and bowel, leading to a fundamental change of life. Until the Second World War the majority of patients with SCI died due to complications, often leading to fatal infection. As time goes by, the major risk is the occurrence of secondary complications, often causes of morbidity and death, leading to an increase in the number of re-hospitalizations, an increase in direct and indirect costs and a general worsening in the person's quality of life (Zeyda, 2009).

Spinal cord injury (SCI) is often followed by complications, which add to the detrimental effect that loss of motor, sensory and autonomic function have on a person's health, social participation and quality of life (Janneke et al, 2007). Spinal cord injury (SCI) typically induces devastating damages leading to a permanent loss of sensory and voluntary motor functions. In recent years, associated conditions or so-called secondary complications have received increasing attention from clinicians and scientists. It is now generally recognized that many SCI patients will develop important and often life-threatening complications several months to several years post-trauma. For instance, muscle wasting, osteoporosis, cardiovascular problems, immune deficiencies, hormonal imbalance, skin ulcers, anemia and urinary tract infections are among the problems typically encountered by chronic TSCI individuals (Rouleau et al, 2011).

Urinary tract complications can be divided into lower urinary tract complications and upper urinary tract complications. These complications may interfere with early rehabilitation, but are not usually life-threatening; the major concern is that lower urinary complications may lead to upper urinary tract complications, which can cause renal failure and renal death (Amie and Jackson, 2003). UTI is responsible for major morbidity and mortality in SCI patients. Several factors appear to be responsible for an increased risk of infection in the bladder. Incomplete voiding, elevated intravisceral pressure and catheter use contribute to an increased risk of symptomatic urinary tract infection. Bladder distention spasms and catheter irrigation are the

primary causes of autonomic dysreflexia. These are followed by bowel impaction and rectal stimulation (Umphred, 2001).

Respiratory complications and infection predominate as post-SCI complications. When the injury involves the upper thorax, the normal breathing pattern is permanently altered. Pneumonia is one of the most common complications of acute spinal cord injury (Spinal Cord Injury: Possible Complication 2011). Respiratory dysfunction is a major cause of morbidity and mortality in SCI, which causes impairment of respiratory muscles, reduced vital capacity, ineffective cough, reduction in lung and chest wall compliance, and excess oxygen cost of breathing due to distortion of the respiratory system. A research article summary, demonstrated that eighty percent of deaths in patients hospitalized with cervical SCI are secondary to pulmonary dysfunction, with pneumonia the cause in 50% of the cases. The number of respiratory complications during the acute hospital stay contributes significantly to the length of hospital stay and cost. Four factors (use of mechanical ventilation, pneumonia, the need for surgery, and use of tracheotomy explain nearly 60% of hospital costs and may be as important a predictor of hospital cost as level of injury. Atelectasis (36.4%), pneumonia (31.4%), and ventilator failure (22.6%) are the most common complications during the first 5 days after injury (Richards, 2005).

Postural hypotension, also known as orthostatic hypotension, is a situation which results in a decrease in blood pressure (a drop of 20mm of Hg in systolic and 10 mm of Hg in diastolic within three minutes) when the person changes position from horizontal to vertical. Mobilization of the legs and careful use of ant embolism stockings may help to prevent Deep vein thrombosis, DVT (Tharion et al, 2009).

The commonest complication after spinal cord injury is the occurrence of pressure sores. There is a direct relationship between the amount of pressure and time of the pressure over a bony prominence that leads to the development of pressure ulcers (Amie & Jackson, 2003). In the United Kingdom (UK) Thirty-two per cent of patients already had pressure ulcers on admission to the spinal injuries unit (SIU), while a total of 56% experienced an ulcer at some stage between injury and discharge from the SIU (Ash, 2002).

Contractures develop very quickly in persons with SCI. The common contractures are flexion contractures which develop in the elbow, fingers (in tetraplegia) and hip, knee and ankle. Shoulder adductor contractures add on to disability to the upper limb, Shoulder involvement can lead to pain and stiffness in fingers known as shoulder hand syndrome (Tharion et al, 2009).

Lower motor neuron lesion results in flaccid paralysis with no spinal reflex activity below the lesion. This occurs most often at injuries at L1 and below. Flaccidity can cause the following problem: joint hypermobility or instability, muscle imbalance, muscle atrophy, poor postural control, and dependent edema. There are two types of flaccidity, transient and permanent flaccidity. Transient flaccidity usually occur following spinal shock stage. Permanent flaccidity can occur following lower motor neuron lesion (Umphred, 1995).

After spinal cord injury the nerve cells below the level of injury become disconnected from the brain. Spasticity is an exaggeration of the normal reflexes that occur when the body is stimulated in certain ways. Spasticity is a form of increased muscle tone causing resistance to passive motion of joints and stretching of muscles. It is a fairly frequent problem in persons with spinal cord injury that has upper motor neuron lesions. Severe spasticity is also often accompanied by muscle spasms (Amie & Jackson, 2003).

Two to three months post-injury the cord-injured person with a lesion level above the fifth thoracic segment may develop AD, characterised by sympathetically mediated vasoconstriction in muscular, skin, renal and presumably gastrointestinal vascular beds induced by an afferent peripheral stimulation below lesion level. The reaction might cause cerebrovascular complications and has effects on metabolism. Some of the autonomic disturbances are transient and a new balance is reached months post-injury, while others persist for life (Karlsson, 2006).

When people sustain SCI they need prolonged meticulous care that starts with hospitalization and extend long after discharge. The predominant approach that underpins health care for SCI persons is rehabilitation (Magenuka, 2006). In SCI, the goals of rehabilitation include, optimizing physical function, facilitating social

independence, minimizing medical complications, enhancing emotional adaptation, and promoting reintegration into the community (Inman, 1999). Rehabilitation involves the combined & coordinated use of medical, social, educational & vocational measures for training & retraining the individuals to the highest possible level of functional activity (Momin, 2003). Rehabilitation has been defined by the World Health Organization as a progressive, dynamic, goal-oriented and often time-limited process, which enables an individual with an impairment to identify and reach his/her optimal mental, physical, cognitive and social functional level (Zeyda, 2009).

Patients need to be transferred to specialist units for SCI at the earliest opportunity so that they can achieve the greatest degree of functional independence possible, for it appears that delay causes more medical complications prolonging rehabilitation. Concluded that optimal rehabilitation care, with regard to the prevention of complications during the acute phase, entails early admission to a specialized multidisciplinary facility (Inman, 1999).

3.1 Study design

It was used a quantitative cross sectional research model to extract the common complications of spinal cord injury patients. A quantitative research design was used so that there were used large number of participants and therefore to collect data. The cross sectional survey study carried out among patients who were suffering from spinal cord injury Centre for the Rehabilitation of the Paralyzed (CRP) at SCI unit.

3.2 Study area

Data were collected from the spinal cord injury unit of Centre for the Rehabilitation of the Paralyzed (CRP) which is the largest rehabilitation centre for the SCI patients in the Bangladesh.

3.3 Study sampling and population

The study populations were spinal cord injury patients who admitted in CRP for treatment. The sample was chosen convenience sampling. There was developed a structural mixed type questionnaire for identifying the common complications.

3.4 Sample size

Generally survey needs large sample that will represent whole population. Due to limited set of time frame the number of the sample of the study was seventy-one.

3.5 Inclusion criteria

- Both male and female were included.
- Patient age range was between 15-60 years.

3.6 Exclusion criteria

- Patients who were medically unstable.
- Participants who had speaking and hearing problem.

3.7 Sampling technique

Seventy-one participants with spinal cord injury were selected through convenience sampling technique due to the time limitation and as it was the one of the easiest, cheapest and quicker method of the sample selection. Data was collected from spinal cord injury unit of CRP. Data was collected data from the patients who were admitted at CRP to take physiotherapy treatment or continuing their treatment.

3.8 Data collection method and tools

Data was collected by using a structural mixed type questionnaire paper set, developed by the investigators and validated by a jury of experts involved in the management of spinal cord injury (clinical physiotherapists), by conducting to interview to collect information. The questionnaire sought information on identification demographic information and musculoskeletal related questions, neurological related questions and cardio-respiratory related questions. The tools used in collecting data were pen and pencils, paper, approved forms and consent forms, reflex stick, and a bag for storing theses tools.

3.9 Data collection procedure

There was a questionnaire for acquiring the participant's demographic information including age, sex, marital status, educational status, occupation, history including types of occupation, disease condition related information such as musculoskeletal related information, neurological related, cardiovascular related and others information. The questionnaire was provided to responsible physiotherapists for patients and also direct to the patients for finding the answers to the questions given in the questionnaire.

3.10 Questionnaire

The questionnaire was structural mixed type for collecting the date for the findings of the study.

3.11 Data Analysis

Descriptive quantitative data was analyzed by using SPSS 16 software. The coded responses on the questionnaire were then entered on the computer general coding forms. They were analyzed using Statistical Package for the Social Science (SPSS)

windows version 16.0. The results were presented with the use of simple percentage (%). The collected data was illustrated with tables, bar charts and pie charts also.

3.12 Ethical issues

The proposal regarding this study was submitted to the Ethical Review Board (ERB) and this was checked by this board. The study followed the guidelines given by local ethical review board according to rules and guidelines of WHO and BMRC. There was explained to the participants and for those who were willingly interested to participate in this study.

3.13 Informed consent

Written consent was given to all participants to completion of the questionnaire. It was explained to the participants about his or her role in this study and collected a written consent form from every participant with 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 that the study would not be harmful to 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 get benefit from it. The participants had the rights to withdraw consent and discontinue participation at any time without prejudice to present or future treatment at the spinal cord injury (SCI) unit of CRP. Information from this study was anonymously coded to ensure confidentiality and was not personally identified in any publication containing the result of this study.

3.14 Rigor

This study was conducted in systemic way. All the steps of research were followed by a sequent during data collection and analysis there was avoided influencing the whole process by own perspectives values and biases. When conducting the study it took help from the supervisors and physiotherapists. There was never influenced the participants by personal perception during data collection. A trustful relationship with participants was always maintained and the documents were kept confidential. During data analysis biasness was avoided.

3.15 Limitation of the study

Each and every thesis paper has some limitations and some limitations may exist. Regarding this study, there were some limitations or barriers to consider the result of the study as listed below:

- The first limitation of this study was sample size. It was taken seventy-one (71) samples.
- There was a few research completed in Bangladesh, so there was little evidence to support the result of this project.
- Another major limitation was time. The period was very limited to conduct the research project on this topic. As the study period short so the adequate number of sample could not arrange for the study.
- As the study was conducted at Centre for the Rehabilitation of the paralyzed (CRP) which may not represent the whole country.

4.1 Age group

In this study ages were grouped into three categories that found in this study such as 15-30 were 52% (36) and 31-45 were 31% (22), 46-60 were 17% (13).

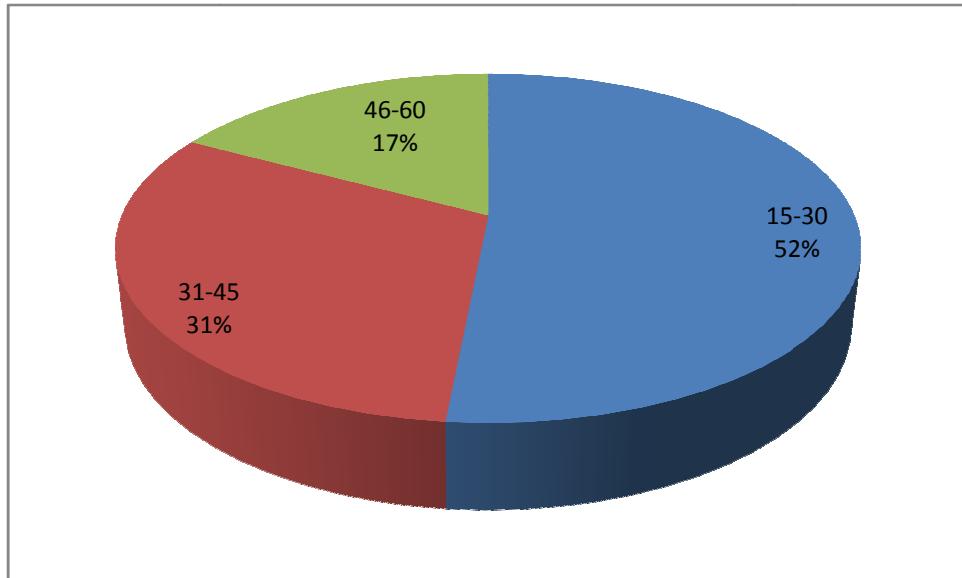


Figure-1: Age group

4.2 Sex of the participants

Among the participants female were 11% (8) and male were 89% (63). Result shows that male were more vulnerable than female.

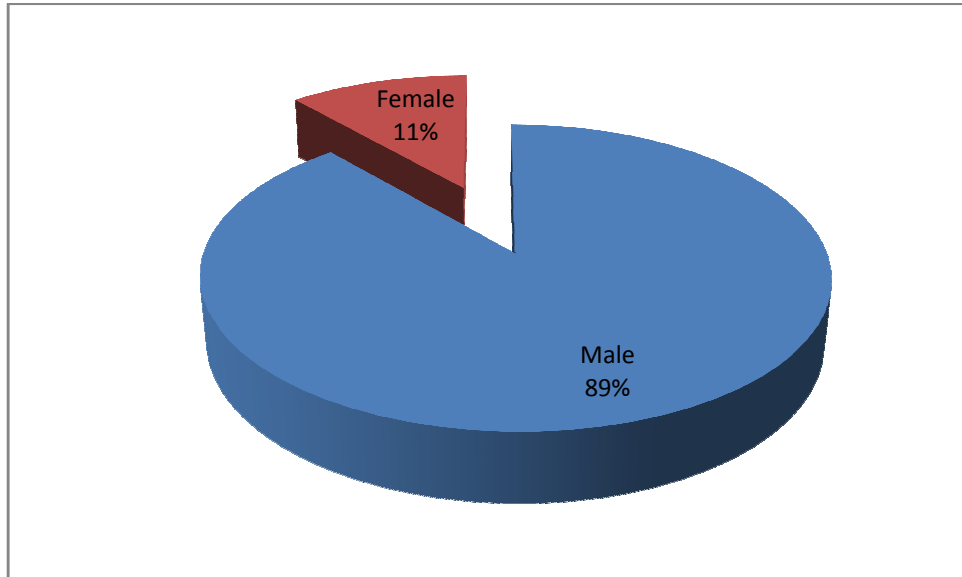


Figure-2: Sex of the participants

4.3 Educational level

The bar graph shows that, among 71 participants in this study 28(39.4%) cannot read and write, 6(8.5%) can read and write; 12(16.9%) were in primary level; 17(23.9%) passed SSC level, and 8 (11.3%) were completed HSC and above.

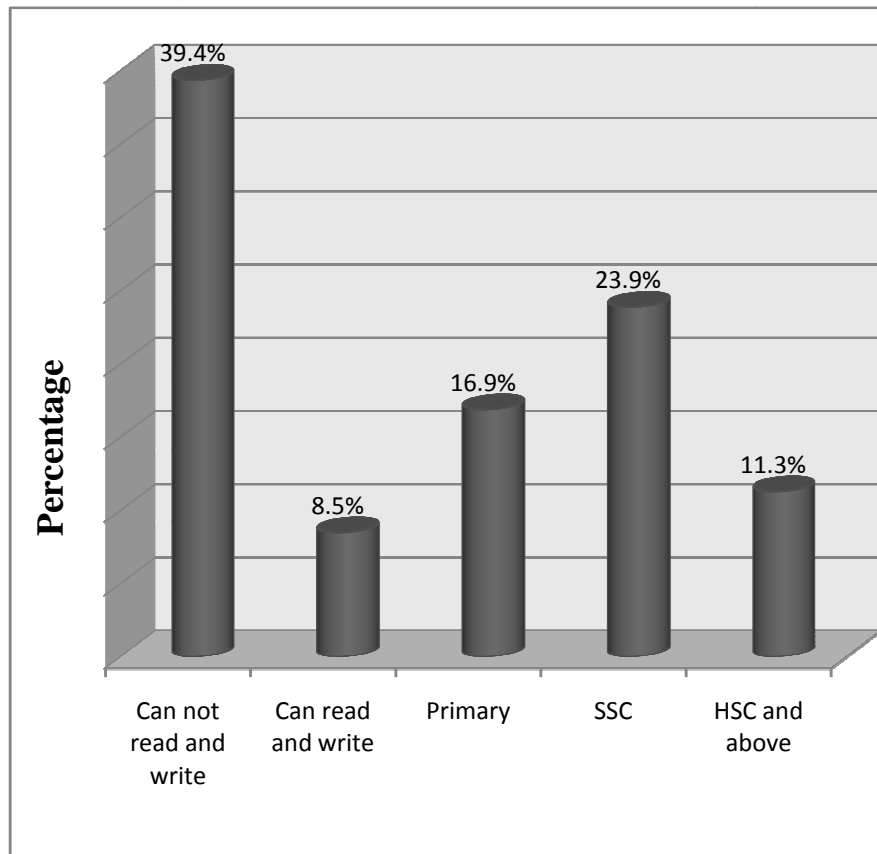


Figure-3: Educational level

4.4 Residential Area

In this study, the people, who lived in rural, were more affected than the people who lived in urban. Among these 59(83%) were in Rural and 12(17%) were in urban region.

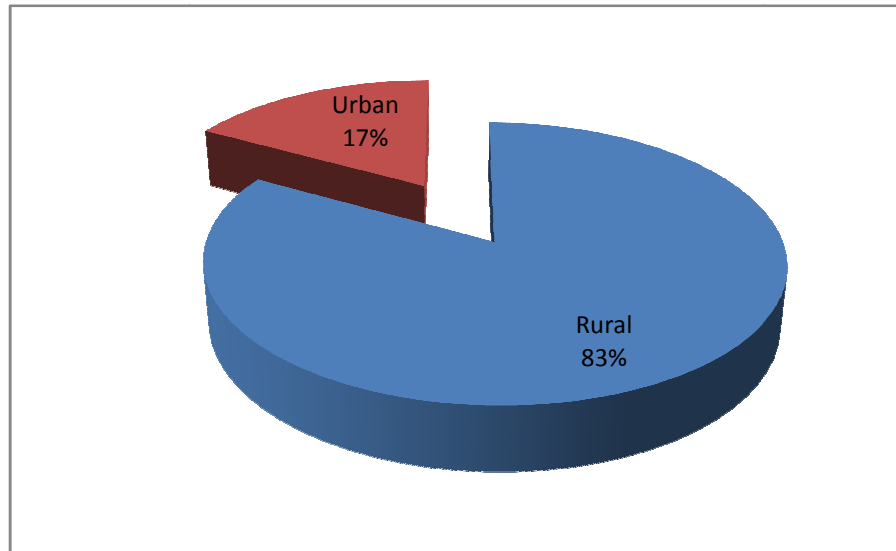


Figure -4: Residential area

4.5 Occupation

About 71 participant were involved as sample in this study. Among them 24 (33.8%) were day labor, 17(23.9%) were farmer, 4(5.6%) were house wives, 5(7%) were businessman, 2(2.8%) were driver, 4(5.6%) were service,9(12.6%) were student, 1(1.4%) were electrician, 4(5.6%) were unemployed. In this study found that day labor and farmer are the most vulnerable group to prone in spinal cord injuries.

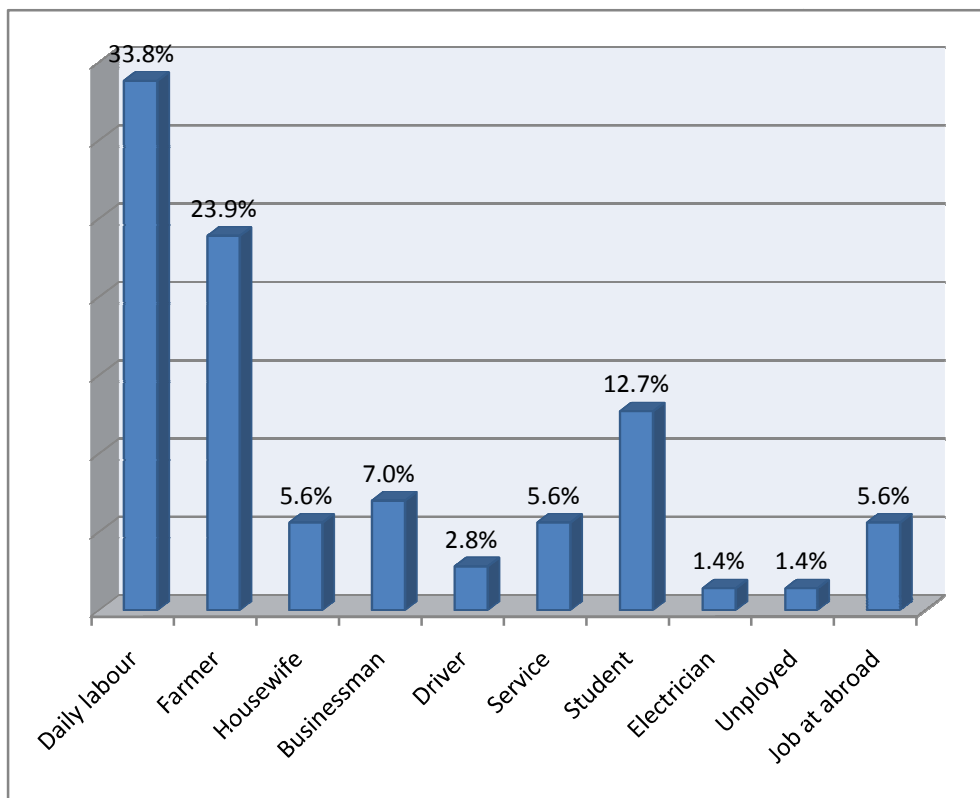


Figure-5: Occupation

4.6 Types of paralysis

Among the participants 39(55%) were paraplegia and 32 (45%) were tetraplegia.

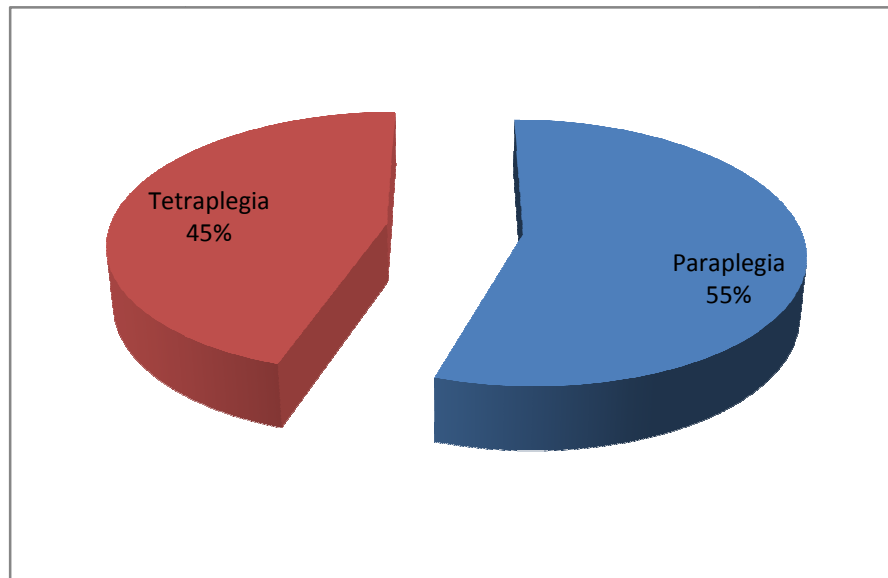


Figure-6: Type of paralysis

4.7 ASIA Scale

Among 71 participants 50(70.4%) were complete-A; 12(16.9%) were incomplete-B; 5(7%) were incomplete-C; 1(1.4%) were incomplete-D and 3(4.2%) were normal-E.

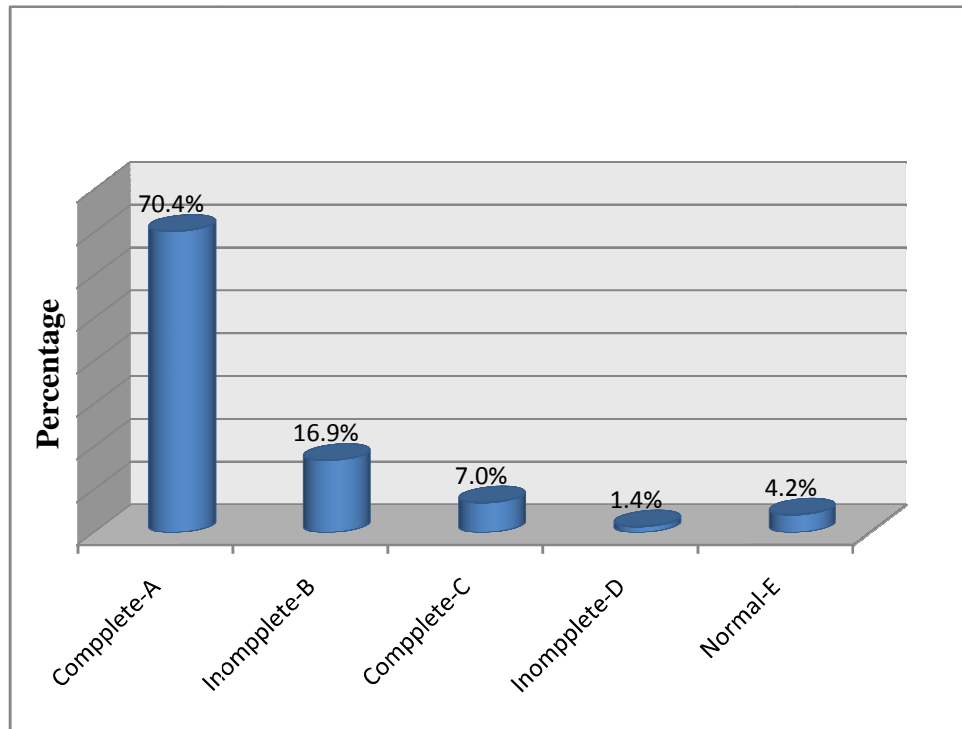


Figure-7: ASIA Scale

4.8 Skeletal level of injury at admission

The present research shows that 32(45%) occurred in cervical, 22(31%) in thoracic and 17(24%) in lumbar region.

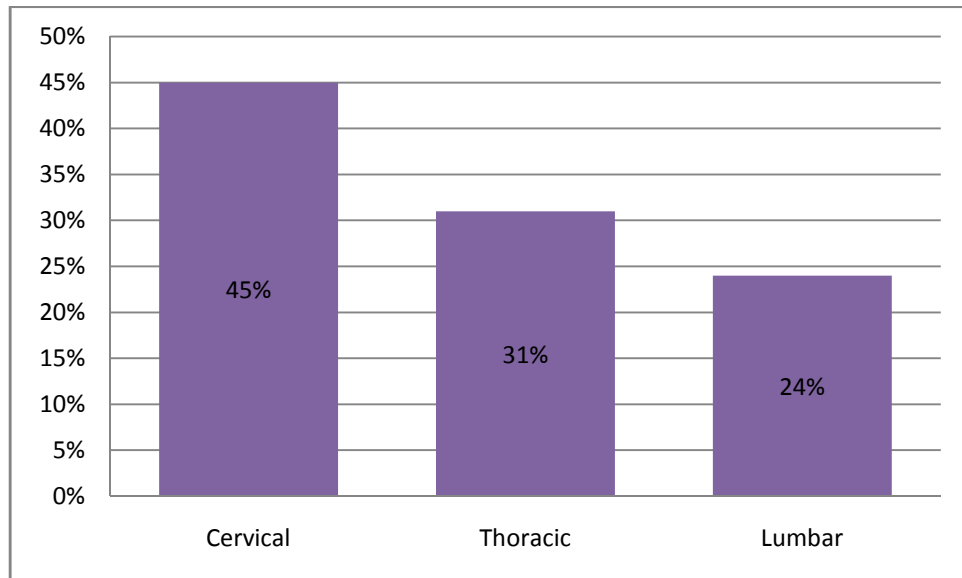


Figure-8: Skeletal level of injury

4.9 Complications after admission at CRP

The most common complications detected at admission were muscle atrophy, which present in 56 (79%), bladder function problem was 73% (out of 71 participants, 19 (27%) participants had normal bladder function and 52 (73%) subjects management needed or catheterization). Flaccidity was 62% (56% of the flaccidity were in lower limbs, about 6% in upper limbs), 40 (56%) patients were affected from postural hypotension during his/her stay at CRP. Pressure sore which were in 51% (pressure sore were in 23% in gluteal region, 24% of the pressure sore were multi areas involvement- gluteal and hip 7%; gluteal and heel were 6%; scapula, gluteal and heel were 4.2%), autonomic dysreflexia and hyperthermia were 44%, leg swelling 41%, hypothermia were 37%. Heterotrophic ossification which present in 10(14%).

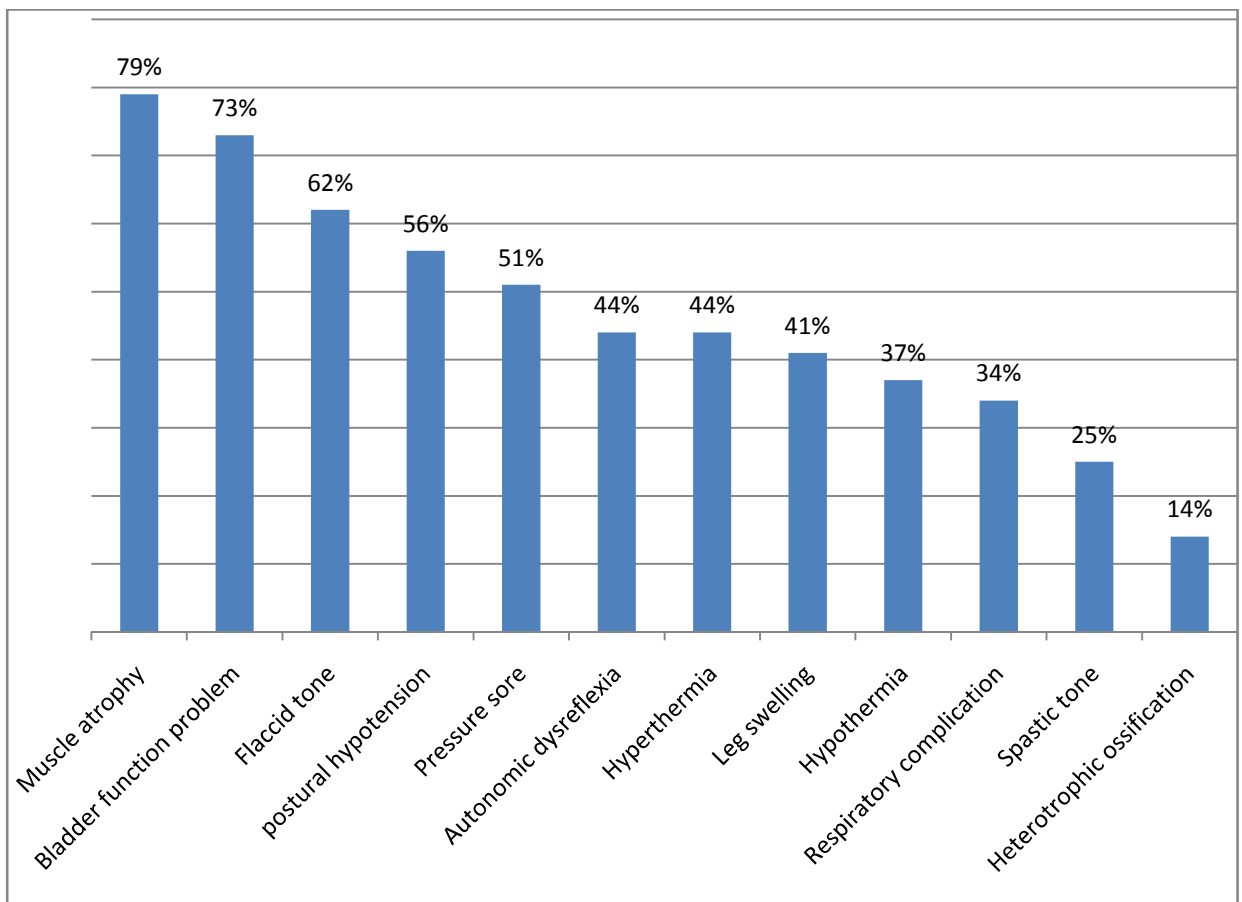


Figure-9: Complications after admission at CRP

4.10 Muscle atrophy

Out of 71 traumatic SCI patients, 56 (79%) patients developed muscle atrophy and 15 (21%) did not develop muscle atrophy.

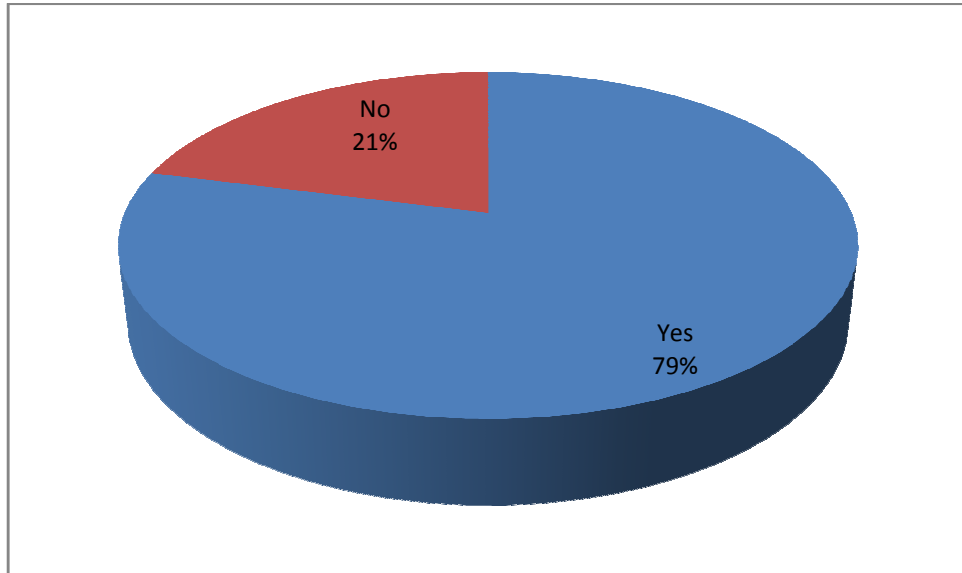


Figure-10: Muscle atrophy

4.11 Bladder function

Figure-16 shows that out of 71 participants, 19 (27%) patients had normal bladder function; on the other hand 52 (73%) patients were needed bladder management or catheterization.

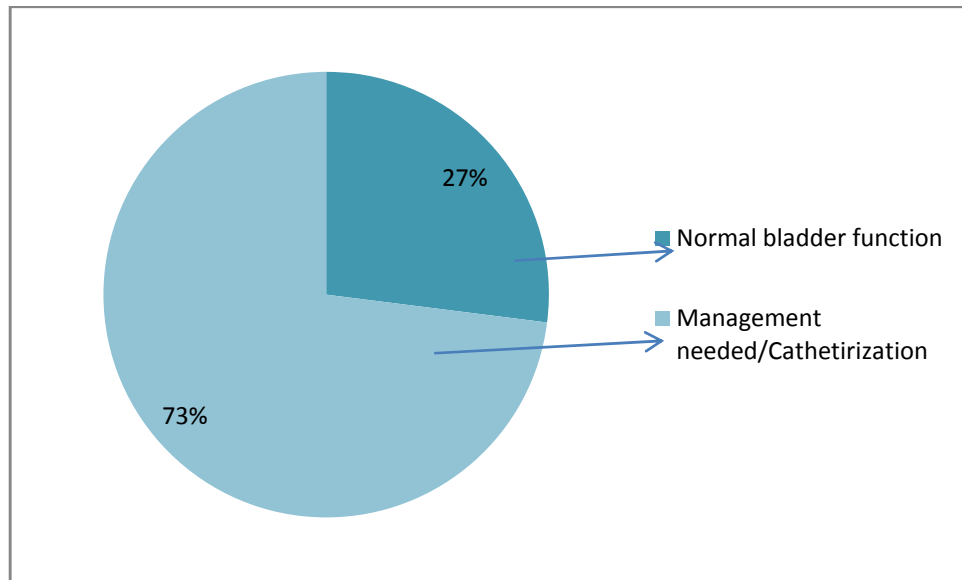


Figure-11: Bladder function

4.12 Flaccid tone

This study shows that among 71 participants, 18(25.4%) participants developed flaccid tone and 53(76.8%) participants did not develop flaccid tone.

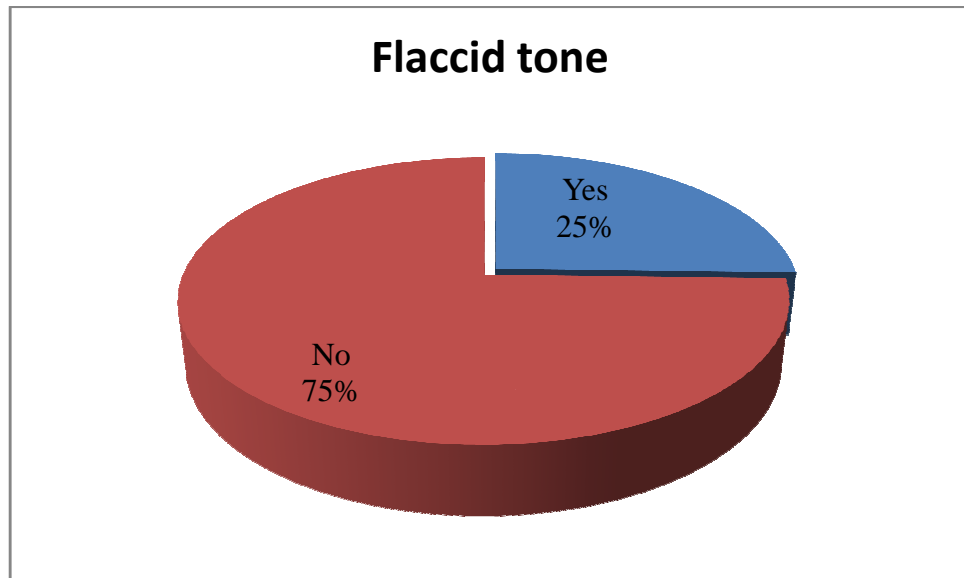


Figure-12: Flaccid tone

4.13 Postural hypotension

In this study, among 71 SCI patients there were 40(56%) patients with postural hypotension and 31(44%) patients without postural hypotension.

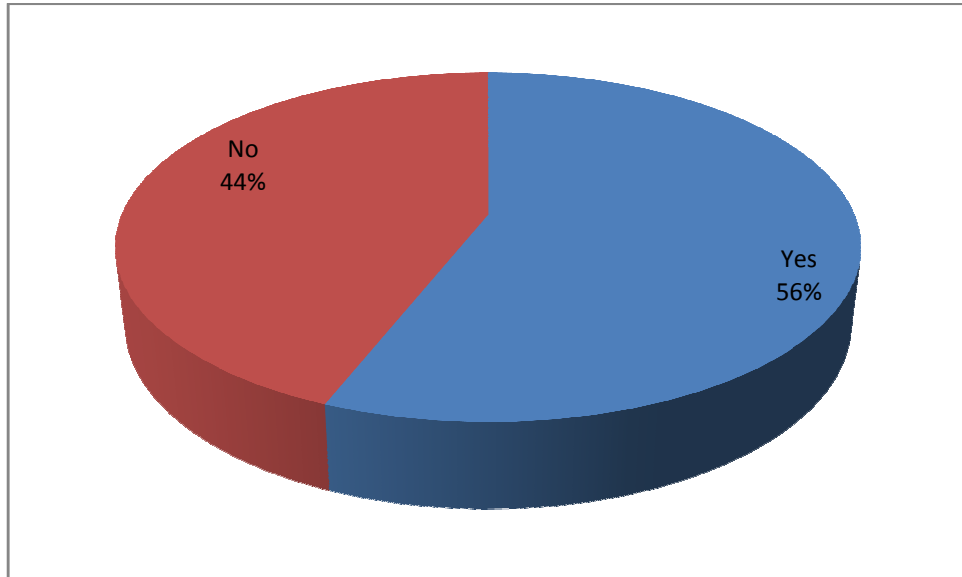


Figure-13: Postural hypotension

4.14 Pressure sore

In this study it was found that 36(51%) respondent developed pressure sore and 35(49%) did not develop pressure sore.

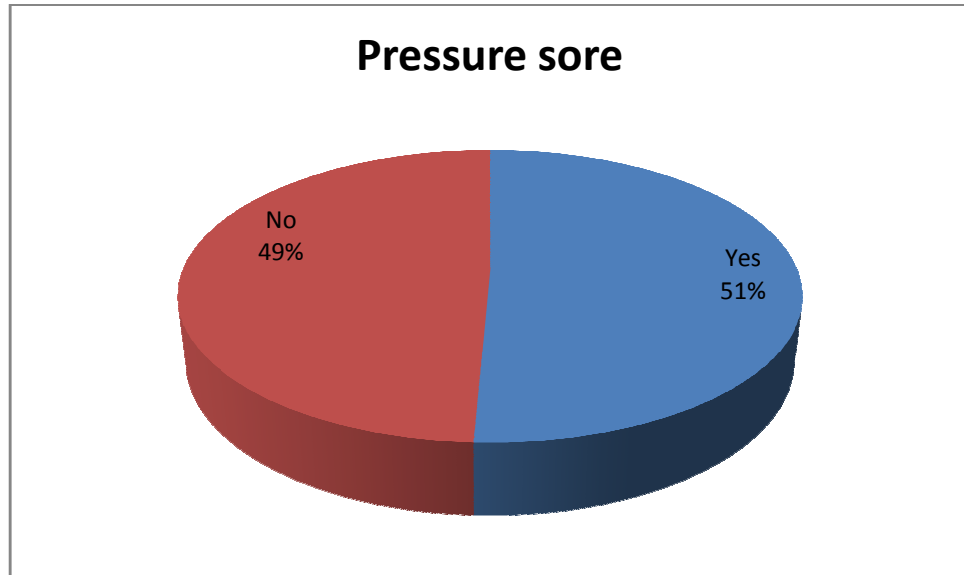


Figure-14: Pressure sore

4.15 Multi area involvement with pressure sore

Out of 71 patients, 17(24%) were affected from multi area pressure sore and 54(76%) were not affected from multi area pressure sore.

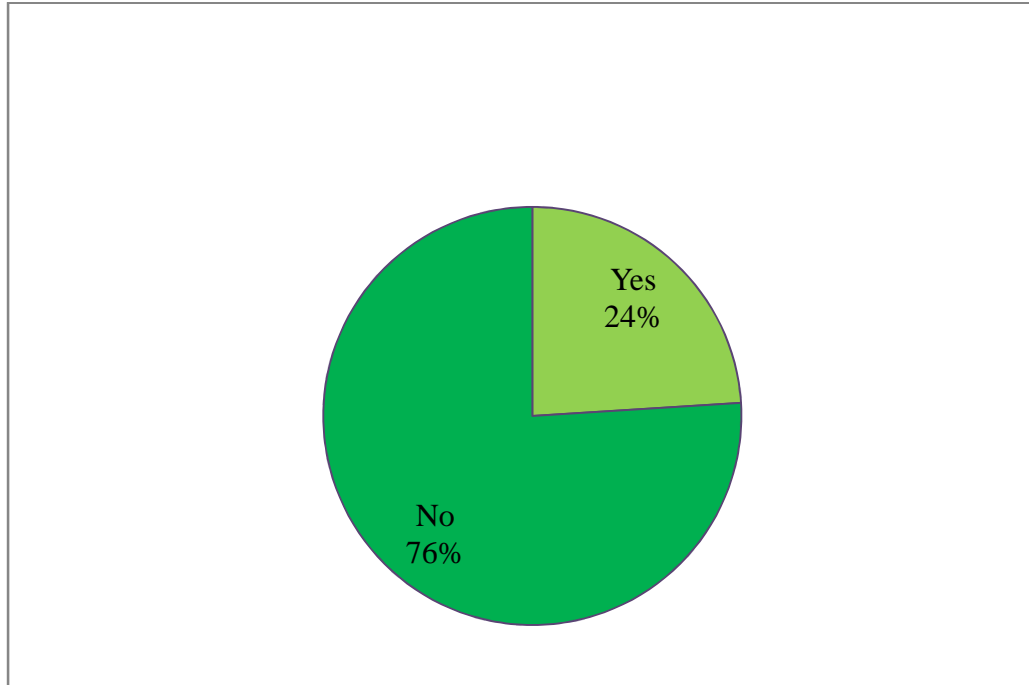


Figure-15: Multi area involvement with pressure sore

4.16 Autonomic dysreflexia

This study shows that 31(44%) patients developed autonomic dysreflexia and 40(56%) patients did not develop autonomic dysreflexia among 71 participants.

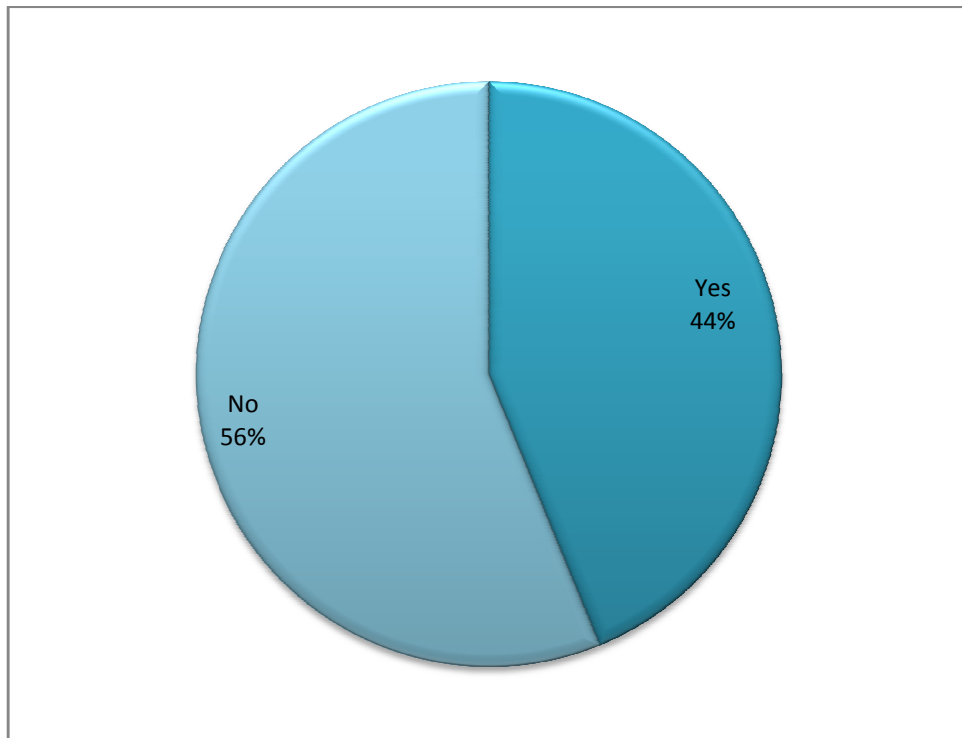


Figure-16: Autonomic dysreflexia

4.17 Leg swelling

From the data of the present study, the researcher was found that about 29(41%) patients developed leg swelling and 42(59%) patients did not develop leg swelling among 71 participants.

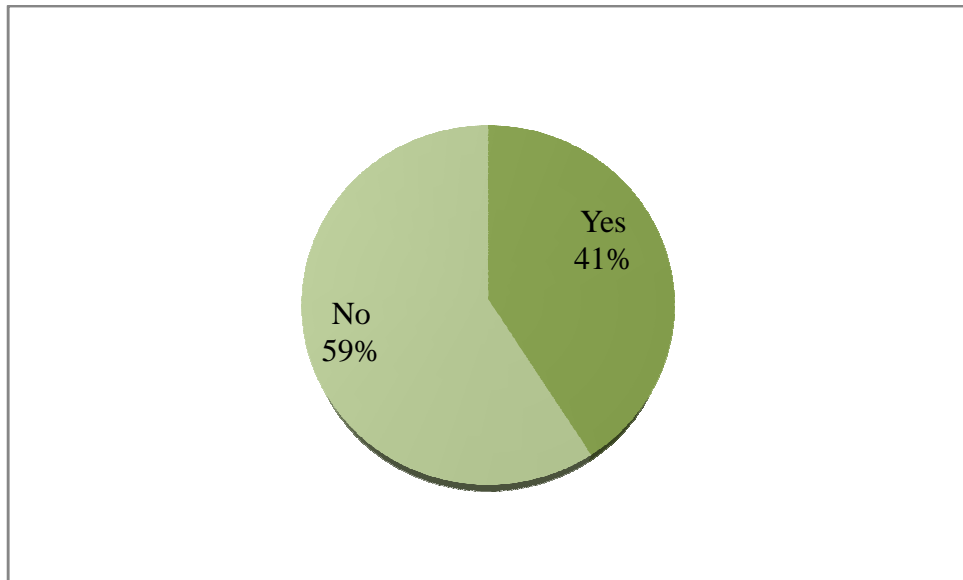


Figure-17: Leg swelling

4.18 Respiratory complication after SCI

Among 71 participants 24(38%) affected from respiratory complication and 47(66%) did not develop respiratory complication after SCI.

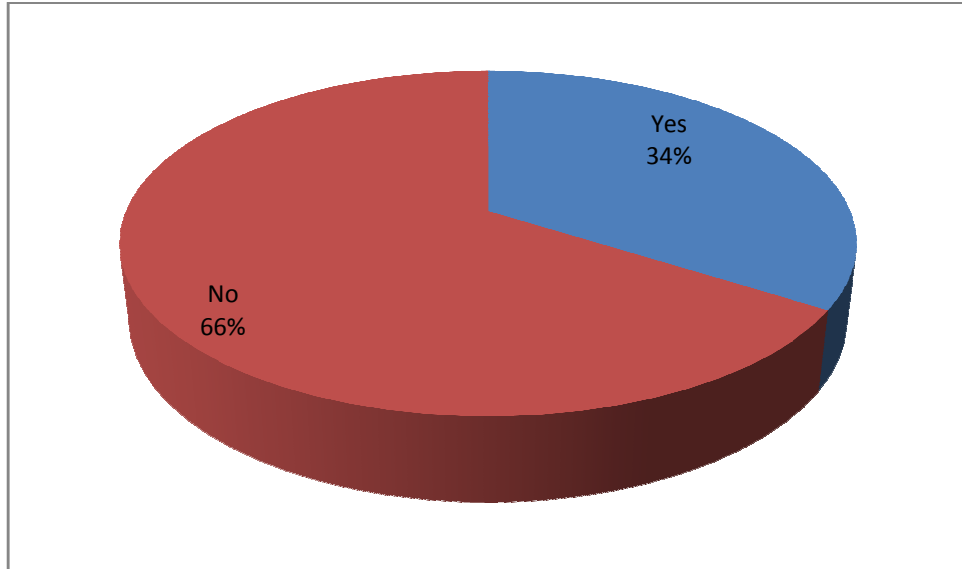


Figure-18: Respiratory complication after SCI

4.19 Spastic tone

This study shows that among 71 participants, 44 (62%) participants developed spastic tone and 27 (38%) participants did not develop spastic tone.

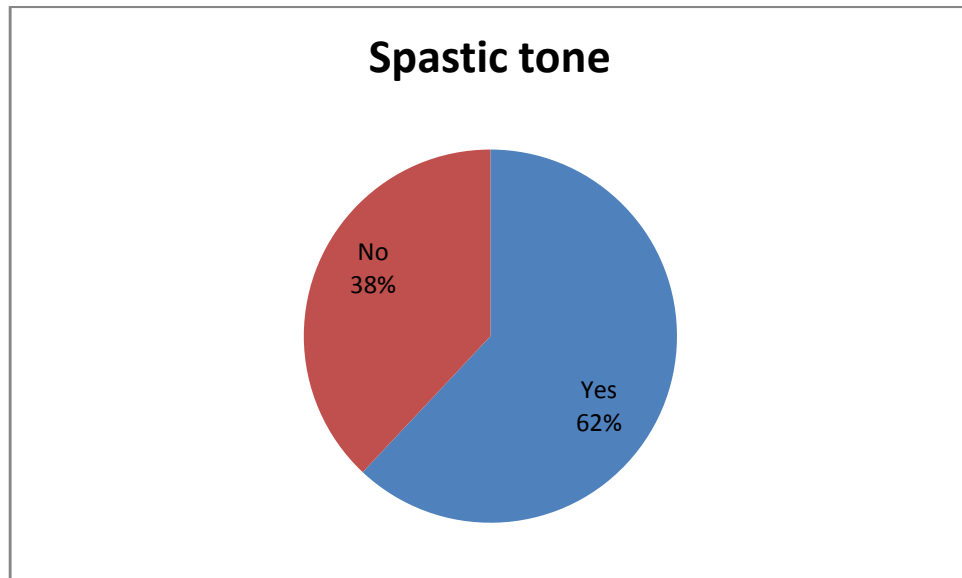


Figure-19: Spastic tone

4.20 Heterotrophic ossification

Among 71 patients, 10(14%) developed Heterotrophic ossification and 61(86%) did not develop Heterotrophic ossification.

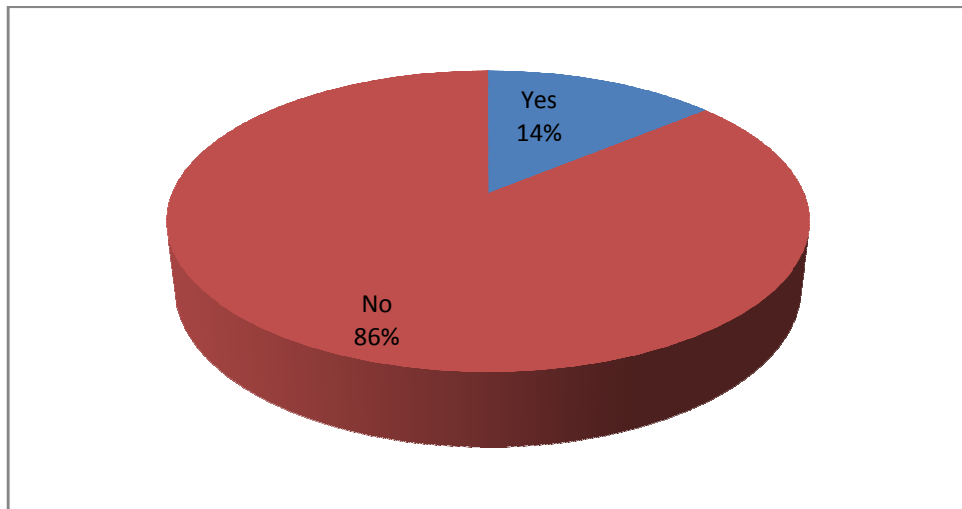


Figure-20: Heterotrophic ossification

4.21 Area of developing heterotrophic ossification

In this study 10 patients developed heterotrophic ossification from 71 and among 10, patient 3(30%) were Quadriceps; 1(10%) was hamstrings; 2(20%) were Biceps; 4(40%) were quadriceps, Hamstrings & calf muscle

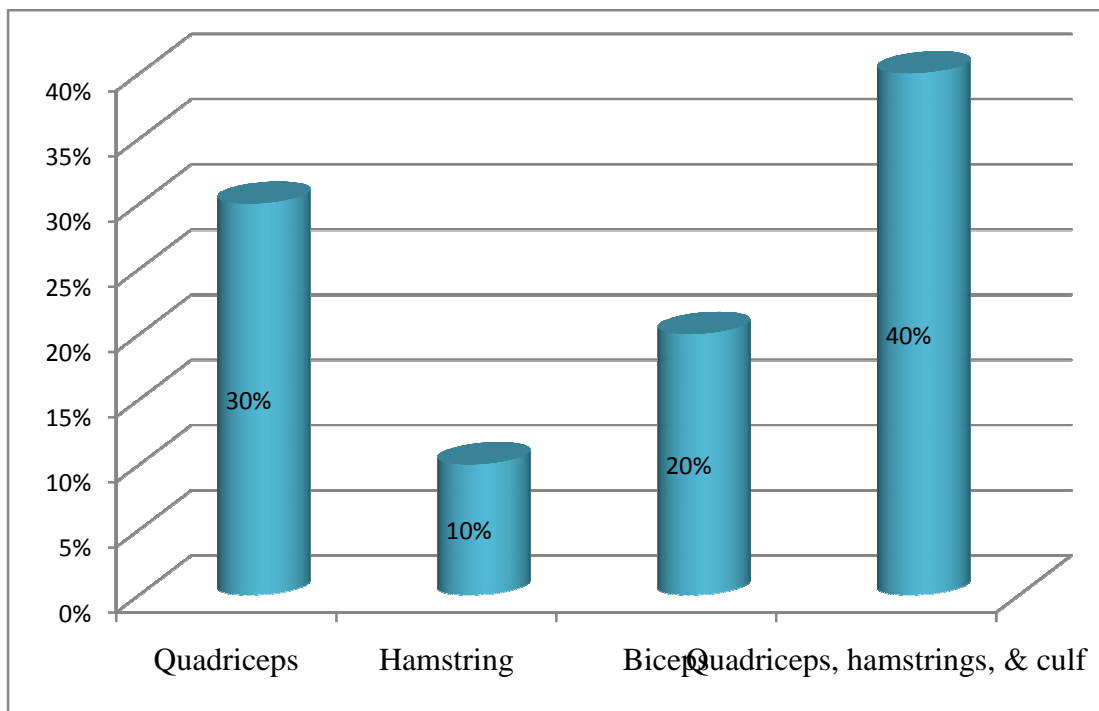


Figure-21: Area of developing heterotrophic ossification

The objective of the study was to find the common complications among spinal cord injury patients. Currently there is lack of information on spinal cord injury in Bangladesh, In this study 71 participants were taken who had spinal cord injury where male were 63(89%) and female were 8(11%). In an epidemiological study it has been found that 41% of SCI patients were male where 15.5% were female (Karamehmetog et al, 1997). In this study it was found that male, female ratio is 7.8:1. In Bangladesh a research had been conducted on Spinal Cord Injury and the result shown that male, female ratio was 7.5:1 (Hoque et al, 2002).In Jordan male, female ratio was 5.8:1 (Otom et al, 1997).

It was found that between age group fifteen and thirty, affected persons were thirty-six 36 (52%) and between thirty-one and forty-five, affected person were 22 (31%), between forty-six and sixty affected person were 13 (17%), it was found that the biggest sample contain in age range 15 to 30 and lowest sample range was 46 to 60 .In one Banladeshi study, it was found that the ,majority of the spinal cord injury patients were aged between 20-30 years and the nearest maximum age range 30-40 years (Hoque et al, 2002).

The study recommended that educational level were, 28(39.4%) cannot read and write, 6(8.5%) can read and write; 12(16.9%) were in primary level; 17(11.3%) passed SSC level, and 8 (11.3%) were completed HSC and above. An epidemiological study in India has been found thjat approximate 20,000 new cases of SCI are added every year, 60-70% of them are illiterate, poor villageers (Singh et al., 2003). The sudy shown that people with lower educational level were more prone to have spinal cord injury.

It was noted that spinal cord injury was more common in rural people. An epidemiological study in India has been found that approximate 20,000 new cases of SCI are added every year, 60-70% of them are illiterate, poor villageers (Singh et al, 2003). A Brazilian study showed that of the 60 patients, 38 (63.3%) had complete or

incomplete primary education, 19 (31.7%) had complete or incomplete secondary education, and 3 (5%) had college education (Blanes et al, 2009).

In the present study among 71 participants, 39(55%) were paraplegia and 32 (45%) were tetraplegia. In Canadian study, paraplegia are more prone rather than tetraplegia, this study 58% were paraplegia and 42% were tetraplegia (Rouleau et al, 2011). In case of skeletal level of injury 32(45%) occurred in cervical, 22(31%) in thoracic and 17(24%) in lumbar region. A research 'Epidemiology of spinal cord injuries in Novosibirsk, Russia' showed that, SCI were distributed as cervical 96 patients (49%), thoracic 54 (27.5%) and lumbar 46 (23.5%) (Silbersteinl & Rabinovich, 1995).

In this study 50(70.4%) were complete-A; 12(16.9%) were incomplete-B; 5(7%) were incomplete-C; 1(1.4) were incomplete-D and 3(4.2%) were normal-E. A study in Gaza showed that, (49.4%) has complete SCI ASIA (A), (1.2%) has incomplete SCI ASIA (B), (4.9%) has incomplete SCI ASIA (C) , (4.9%) has incomplete SCI ASIA (D) (Zeyada, 2004).

This study found that 36(51%) had pressure sore, 35(49%) did not have any pressure sore and 57(80%) were affected from UTI, 14(20%) were not affected from UTI. A Netherland study also claimed that 49% had UTI and 36% had pressure (Janneke et al, 2007). In case of spastic tone 44(62%) were present and 27(38%) were not present. Another study found that, the most common complications resulting from SCI were urinary infection (88.3%), muscle spasm (65%) and pressure ulcers (26.7%) (Blanes, 2009). Very few studies have reported urinary tract infections (62%), spasticity (57%), pressure ulcers (30%) (Rouleau et al, 2011). On the other hand muscle atrophy were in 56(79%) and were not present 15(21%). This study also found that 10(14%) had developed heterotrophic ossification and also 31(44%) were affected and 40(56%) were not affected from autonomic dysreflexion.

Spinal cord lesion is one of the most devastating in human life. Millions of people in every year face spinal cord lesion. In Bangladesh there is lack of information and proper data base about spinal cord lesion. Even there is no estimate number of spinal cord lesion people in Bangladesh. Bangladesh is a developing country. Most of them live with low economic level and poor educational level. In this country there is also lack of awareness about injury especially caused by spinal cord lesion. The researcher explored the common complications among the SCI patient. In this study, the total respondents were 71 whereas 63(89%) was male and 8(11%) was female. So it shows that male are most vulnerable than female. From the study it can be concluded that the most vulnerable age range were 15-30 years and the people, who were less educated and the study also found that, the complications which commonly develop within the SCI patient are urinary tract infection, pressure sore, respiratory complication, spasticity. The complications mentioned above repeat more among the SCI patients. So it is necessary to raise awareness and take steps to reduce the risk of developing complications.

The recommendation evolves out of the content in which the study was conducted. The aim of the study is to find out the behavior of pain among the low back pain, therefore main recommendation would be made. Further research of the different perspectives emerged from the study, is recommended: In Bangladesh, as a new profession physiotherapy practice should be strong evidenced based so that can develop a interrelationship with other professionals' standard in comparison with the support of the global evidence of rigorous.

This type of study should be considered that need to be collected adequate resources that knowledge on this area could be extended and later result can obtain to generalize to the population. During further research it is recommended to take more samples with adequate time to solve the recent problems areas for better result and perspectives.

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CONSENT FORM

Assalamualaikum, my name is Md. Shah Alam. I am conducting this study for partial fulfillment of Bachelor of Science in Physiotherapy degree, titled, "The common complications among the spinal cord injury patients at CRP" from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some information. You will answer some questions which are mentioned in this form. This will take approximately 20-25 minutes. Your participation will be voluntary. You have the right to withdraw consent and discontinue participation at any time. You might not be benefited, but in future may benefit and would not harmful. This project is only for the development of the profession.

If you have any query about the study or your right as a participant, you may contact with, researcher Md. Shah Alam or Md. Obaidul Haque, Associate professor & course coordinator, Department of physiotherapy, BHPI, CRP, Savar, Dhaka-1343.

I (participant) have read and understand the contents of the form. I agree to participant in the research without any force.

Do you have any questions before I start?

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

Yes:

No:

Signature of the participant _____

Signature of the Interviewer _____

Signature of the physiotherapist _____

Signature of the witness _____

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?SA	<p>j 4 + -----</p>
?Sb	<p>4 - * * <input type="checkbox"/></p> <p>S= * -S</p> <p>?= * -?</p> <p>T= * -T</p> <p>U= * -U</p>
?Sc	<p>4 - * j ? <input type="checkbox"/></p> <p>S= m</p> <p>?= I-</p> <p>T= k</p> <p>U= 2 3</p> <p>A= I</p> <p>b= = n</p> <p>c=</p> <p>e= K 6</p> <p>f= > > (-----)</p>

?.Se	$4 * *, = n * op$ $S = > l$ $? = (\# < B ? . Sf \quad)$	<input type="checkbox"/>
?.Sf	$= n * op - * * -$ $S = 2 g \$ \quad \$$ $? = = n /$ $T = 6 \text{ €}$ $U = 6 P 6$ $A = 6 : r$ $b = > > (\text{-----})$	<input type="checkbox"/>
?.?@	$s \% \quad ?$ $S = > l$ $? = (\# < B ? . ? S \quad)$	<input type="checkbox"/>
?.?S	$s \% \quad - * j ?$ $S = * t ; = n * j (\text{-----} \quad)$ $2 = (* t ; = n * j (\text{-----}))$	<input type="checkbox"/>
?.??	$u [$ $S = >$ $? = (\# < B ? . ? T \quad)$	<input type="checkbox"/>
?.?T	$u [\quad - * j$ $S = * t ; = n * j (\text{-----} \quad)$ $? = * t ; = n * j (\text{-----})$	<input type="checkbox"/>
?.?U	$= n /$ $S = >$ $? = (\# < B ? . ? U \quad)$	<input type="checkbox"/>
?.?A	$= n / - * j ?$ $S = \text{€}$ $? =$	<input type="checkbox"/>

	<p>T= w U= t A= b= K 6 c= > > (_____)</p>	
?.?b	<p>2 g \$ \$? S= > ?= (#< B?.?c)</p>	<input type="text"/>
?.?c	<p>2 g \$ \$ - * j ? S= x ?= y T= \$ U= A=g 6= c= > > (_____)</p>	<input type="text"/>
?.?e	<p>6: r ? S= >l ?= (#< B?.?f)</p>	<input type="text"/>
?.?f	<p>6: r - * j ? S= x ?= y T= \$ U= A=g 6= c= > > (_____)</p>	<input type="text"/>

& * = O G #<B

?.T@	<p>4 * *, & * * 6* v ? S= >l ?= </p>	<input type="text"/>
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?TS	[* \$ m ? S= >I ?= (#< B?.T?)	<input type="text"/>
?T?	[* \$ m - * ? S= >I ?= (#< B??.?f)	<input type="text"/>
?TT	" * ? S= >I ?= (#< B?.TT)	<input type="text"/>
?TU	* " * ?(/)	<input type="text"/>
?TA	*" * ? S= >I ?= (#< B?.TU)	<input type="text"/>
?Tb	* " * ?(/)	<input type="text"/>

[L- *s * * . k * O G #<B

?Tc	4 * ,z -#z * = ? S= >I ?= (#< B?.TU)	<input type="text"/>
?Te	z -#z * = * j @N (" 4n)	<input type="text"/>
?Tf	4 * *,z -#z * = ? S= >I ?= (#< B?.U@)	<input type="text"/>
?U@	4 * *,z -#z * = * j @N (" 4n)	<input type="text"/>

?US	$- * = ?$ $S = z \quad ^$ $? = L$ $T = \{$ $U = 6$ $A = > > (\text{-----})$	<input type="text"/>
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$> > \# < B$

?U?	$- = ? (\$)$ $S = > I$ $? =$	<input type="text"/>
?UT	$\$ - * j$ $S =$ $? = K 6$ $T = > > (\text{-----})$	<input type="text"/>
?UU	$(* \quad ?$ $S = > I$ $? = (\# < B ? . TU)$	<input type="text"/>

Questionnaire

Part- I: Patient's Socio-demographic Information	
1.1	Identification Number : _____
1.2	Age? _____ Yrs
1.3	Gender: 1= Male 2= Female <input data-bbox="1187 835 1267 943" type="checkbox"/>
1.4	Religion? 1= Muslim 2= Hindu 3= Christian 4= Buddhist <input data-bbox="1193 1193 1289 1301" type="checkbox"/>
1.5	What is your marital status? 1= Married 2= Unmarried 3= Separated 4= Divorced 5= Widowed <input data-bbox="1203 1585 1299 1693" type="checkbox"/>

1.6	Educational status? <input data-bbox="1203 219 1311 324" type="checkbox"/> 1= Can not read and write 2= Can read and write 3= Primary 4= SSC 5= HSC and above
1.7	What is your Occupation? <input data-bbox="1209 721 1318 792" type="checkbox"/> 1= Daily Labor 2= Farmer 3= Housewife 4= Business 5= Driver 6= Van/ Rickshaw Puller 7= Service(govt.) 8=Service(NGO) 9= Student 10= Electrician 11= Unemployed 12= Helper of Motor Vehicle 13= Tailor 14= Job at Abroad 15= Carpenter 16= Boat Man 17= Other specify(_____)
1.8	Monthly Family Income: _____ (Approximately taka)
1.9	Family Type: <input data-bbox="1262 1509 1370 1581" type="checkbox"/> 1= Nuclear Family 2= Extended Family
1.10	Home District: _____
1.11	Residential Area: <input data-bbox="1278 1845 1386 1917" type="checkbox"/> 1= Rural 2= Urban

Musculoskeletal related questions

2.13	After admission to CRP , had you affected from pressure sore? 1= Yes 2=No (Skip question no 2.14)	<input style="width: 50px; height: 25px;" type="text"/>
2.14	Multi area affected 1=Yes 2=No (Skip question no 2.15)	<input style="width: 50px; height: 25px;" type="text"/>
2.15	Number of pressure _ _ _ _ _	
2.16	Grade of pressure sore? 1=Grade-I 2= Grade-II 3= Grade-III 4= Grade-IV	<input style="width: 100px; height: 40px;" type="text"/>
2.17	Area of pressure sore? 1=Occipital 2=Shoulder 3=Scapula 4=Spine 5=Gluteal region 6=Hip joint 7=Knee joint 8=Heel 9= Other specify (_ _ _ _ _)	<input style="width: 100px; height: 40px;" type="text"/>
2.18	Decrease Joint range of motion , after injury 1=Yes 2=No (Skip question no 2.19)	<input style="width: 50px; height: 25px;" type="text"/>
2.19	Decrease joint range of motion due to 1=Heterotrophic ossification 2= Joint stiffness 3= Muscle Spasm 4=Muscle weakness 5= Muscle atrophy	<input style="width: 50px; height: 25px;" type="text"/>

	6= Other specify (_ _ _ _ _)	
2.20	Spastic tone? 1=Yes 2=No (Skip question no 2.21)	<input type="checkbox"/>
2.21	Where spastic tone? 1=Upper limp ; Joint location (_ _ _ _ _) 2=Lower limp ; Joint location (_ _ _ _ _)	<input type="checkbox"/>
2.22	Flaccid tone? 1=Yes 2=No(skip no 2.23)	<input type="checkbox"/>
2.23	Where flaccid tone? 1=Upper limp ; Joint location (_ _ _ _ _) 2=Lower limp ; Joint location (_ _ _ _ _)	<input type="checkbox"/>
2.24	Joint stiffness? 1=Yes 2=No(Skip question no 2.25)	<input type="checkbox"/>
2.25	Where stiffness? 1=Shoulder joint 2=Elbow joint 3=Wrist joint 4=Hip joint 5=Knee joint 6=Ankle joint 7= Other specify (_ _ _ _ _)	<input type="checkbox"/>
2.26	Heterotrophic ossification? 1=Yes 2=No (Skip question no 2.27)	<input type="checkbox"/>
2.27	Where Heterotrophic ossification? 1=Quadriceps 2=Hamsring 3=Culf muscle 4=Biceps 5=Triceps 6=Neck muscle 7= Other spicify (_ _ _ _ _)	<input type="checkbox"/>

2.28	Muscle atrophy? 1=Yes 2=No(Skip question no 2.29)	<input type="checkbox"/>
2.29	Where muscle atrophy? 1=Quadriceps 2=Hamstring 3=Culf muscle 4=Biceps 5=Triceps 6=Neck muscle 7= Other specify (_ _ _ _ _)	<input type="checkbox"/>

Neurological related questions

2.30	Urinary tract infection after injury? 1=Yes 2=No	<input type="checkbox"/>
2.31	Autonomic Dysreflexia? 1=Yes 2=No (Skip question no 2.32)	<input type="checkbox"/>
2.32	How many times Autonomic Dysreflexia?	<input type="checkbox"/>
2.33	Hypothermia? 1=Yes 2=No (Skip question no 2.34)	<input type="checkbox"/>
2.34	How many times hypothermia?	<input type="checkbox"/>
2.35	Hyperthermia? 1=Yes 2=No (Skip question no 2.36)	<input type="checkbox"/>
2.36	How many times hyperthermia?	<input type="checkbox"/>

Cardio-respiratory and vascular related questions

2.37	Respiratory complication Before injury? 1=Yes 2=No (Skip question no 2.38)	<input type="checkbox"/>
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2.38	Duration of that complication?(By Minute/Hour)	<input type="text"/>
2.39	Respiratory complication after injury? 1=Yes 2=No (Skip question no 2.40)	<input type="text"/>
2.40	Duration of that complication?(By Minute/Hour)	<input type="text"/>
2.41	What type of complication? 1=Difficulty in breathing/ shortness of breathing 2=Pneumonia 3=Atelectesis 4=Asthma 5= Other spicify (_ _ _ _ _)	<input type="text"/>
2.42	How long that complication?(Days/Month/Year)	<input type="text"/>

Other Questions

2.43	Leg swelling? 1=Yes 2=No (Skip question no2.44)	<input type="text"/>
2.44	Location of leg swelling? 1=Knee joint 2=Ankle joint 3= Other spicify (_ _ _ _ _)	<input type="text"/>
2.45	Postural hypotension 1=Yes 2=No (Skip question no2.46)	<input type="text"/>
2.46	How many times of postural hypotension?	<input type="text"/>
2.47	Phantom limp pain 1=Yes 2=No	<input type="text"/>

2.48	<p>Where phantom limb pain?</p> <p>1=Ankle joint</p> <p>2=Knee joint</p> <p>3=Hip joint</p> <p>4=Shoulder joint</p> <p>5=Elbow joint</p> <p>6=Wrist joint</p> <p>7== Other specify (_ _ _ _ _)</p> <div data-bbox="1283 237 1390 322" style="border: 1px solid black; width: 67px; height: 38px; margin-left: auto; margin-top: 10px;"></div>
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Date: 11th September ,2012

To,

The head of the Physiotherapy Department,

Centre for the Rehabilitation of Paralyzed (CRP),

Savar, Dhaka-1343.

Subject: Application for permission of data collection from Spinal Cord Injury Unit of CRP for the research project.

Dear Sir,

I beg most respectfully to state that, I am a student of 4th year B. Sc in physiotherapy at Bangladesh Health Professions Institute (BHPI) under the University of Dhaka. I am conducting research on "Identify The Frequency Of Most Common Complications Of Spinal Cord Injury Patients" as a part of our course curriculum, under supervision of Md. Obaidul Haque, Assistant professor & course coordinator, Department of physiotherapy, BHPI. So I need to collect data from Spinal Cord Injury Unit of CRP.

I ,therefore, pray and hope that you would be kind enough to grant me and thus oblige thereby.

Sincerely yours,

Shah Alam *Shah Alam 11/9/12*

B.Sc in physiotherapy

4th year, Roll-08,

Session: 2006-2007

BHPI, CRP, Savar, Dhaka.

Accepted.
Pls inform with me
Dr. A. 11.09.12

Md. Shrab Hossain
BPT, DU, D'Orthopaedic Clinic (Belgium), MPH
Mechanical Diagnosis & Therapy A.B (UK)
Assistant Professor, Physiotherapy, BHPI
Head of the Physiotherapy Department, CRP