

**PREVALENCE OF COMMON MUSCULOSKELETAL  
DISORDERS AMONG PARAPLEGIC WHEELCHAIR USERS**

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

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

**PREVALENCE OF COMMON MUSCULOSLELETAL  
DISORDERS AMONG PARAPLEGIC WHEELCHAIR USERS**

Submitted by **Md. Delowar Hossain**, for the 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 mistakes or inaccuracies are my own. I also decline that for any publication, presentation or dissemination of information of the study. I would be bound to take written consent of my supervisor.

**Signature:**

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## Abbreviations

<b>ASIA:</b>	American Spinal Injury Association
<b>BHPI:</b>	Bangladesh Health Professions Institute
<b>BPKS:</b>	Bangladesh Protibandhi Kallayan Somiti
<b>CRP:</b>	Center for the Rehabilitation of the Paralyzed
<b>CSF:</b>	Cerebrospinal Fluid
<b>IFB:</b>	Impact Foundation Bangladesh
<b>ROM:</b>	Range of Motion
<b>SSI:</b>	Sight Savers International
<b>SARVE:</b>	Social Assistance and Rehabilitation for the Vulnerable
<b>SCI:</b>	Spinal Cord Injury
<b>SPSS:</b>	Statistical Package of Social Science
<b>WC:</b>	Wheelchair

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## Abstract

*Purpose:* To find out the prevalence of common musculoskeletal disorders among paraplegic wheelchair users. *Objectives:* To demonstrate the socio-demography among the paraplegic wheelchair users, to find out the problems while using manual wheelchair, to establish different body parts involved with musculoskeletal disorders, to define secondary mobility related complication after SCI, to bring out perception about user friendly wheelchair among participants. *Methodology:* A cross sectional study design was used to conduct the study. About 51 patients were selected through simple random sampling technique from inpatient of Spinal Cord Injury (SCI) unit, Department of Physiotherapy, Center for the Rehabilitation of the Paralyzed (CRP), Savar, Dhaka, Bangladesh. The data were collected by using a questionnaire and were analyzed by descriptive statistics through using SPSS software version 16.0. *Result:* 51 patients were included as sample. Among them most of the participants were young aged range from 20-29 years (n=27) and male are predominantly higher than female (4.1:1). Majority of the patients were from rural areas having poor educational status. Among them, about 41.25% (n=21) patients have been found loss of range of motion, 29.4% (15) shoulder pain, wrist pain 23.53% (n=12), 25.5% (n=13) back pain, 29.4% (n=15) feels discomfort during the time of propelling the wheelchair. *Conclusion:* The results of this study provided more insight into the musculoskeletal disorders in a group of patients with paraplegic wheelchair users. More research is needed to evaluate the rehabilitation program for these patients.

### **1.1 Background**

Bangladesh is one of the most densely populated countries in the world and is situated in the South Asian subcontinent. The total population of this country is about 130 million and about 830 people live in per square kilometer area. More than 80% population lives in the village and about 60% of the total labor forces are involved in agriculture (Jahan, 2008).

In Bangladesh near about 10% of the total population are disabled which is identified by the social assistance and rehabilitation for the physical vulnerable (SARVE). WHO estimated the prevalence of the disable person at 10.5% and it is more common in the rural areas. The total rate of the physically disabled population is 27.5% (Disability in Bangladesh, 2004). And about 4.6% people are disabled due to Spinal cord injury (Hossain, 2001).

Spinal cord injuries are one of the most debilitating and devastating injuries with an estimated annual incidence of 11,000 cases per year in the United States (National SCI Statistical Center, 2006). In India, approximate 20,000 new cases of spinal cord injury (SCI) are added every year; 60-70% of them are illiterate, poor villagers (Singh et al., 2003). Spinal cord injury is a devastating event on a person and family level, as well as a tremendous financial burden to the society as because of its attendant morbidity, expense and prolonged treatment is required. Near about 40% of patients with spinal cord injury are Complete SCI, 40% with incomplete injury and about 20% with either no cord or root lesions (Hoque et al., 1999).

The level and the severity of the injury determine the type and degree of impairments and functional ability. Incomplete tetraplegia- 29.5%, complete paraplegia- 27.9%, incomplete paraplegia- 21.3% and complete tetraplegia- 18.5%. The most common neurologic level of injury is C5. In paraplegia, T12 is the most common level of injury (Ditunno et al., 1997).

In Bangladesh the overall age group for SCI is ranged from 10-70 years. The majority of the patient's aged from between 20-30 years, with 19% between 10-20 years, 42% between 20-30 years, 20% between 30-40 years, 15% between 40-50 years and 4% between 50-60 years (Hoque et al., 1999). In UK spinal cord injury (SCI) occur most frequently in younger adults between the ages of 16-30 years, most common age 19 years (Kennedy and Rogers, 2000). Among these patient CRP figured out from the discharge patients up to 2001 show that 65% of patients were paraplegic (Ali, 2003).

Therefore, spinal cord injury patient needs a specialized and comprehensive rehabilitation services. The disabled people are needed to influence training and rehabilitation to get back to their own community. In Bangladesh, there are many government and non government organizations working for disabilities as Sight Savers International (SSI), Bangladesh Protibandhi Kallayan Somiti (BPKS), Impact Foundation Bangladesh (IFB), but only a few organizations manage SCI patients (Momin, 2003).

In Bangladesh, there are two specialized hospital for the management of spinal cord injury (SCI). They are National Institute of Traumatology Orthopedics and Rehabilitation (NITOR) and Center for the Rehabilitation of the Paralyzed (CRP). The CRP is a non-governmental organization specializing in the management of patients with spinal cord lesions (Hoque et al., 1999). Here, only CRP provides the treatment and complete rehabilitation training to the SCI patients (Disability in Bangladesh, 2004), and management is based on a multi- and inter-disciplinary approach, with emphasis on the development of community based rehabilitation programs (Hoque et al, 1999).

People with spinal cord injury have musculoskeletal problems that are similar to the general population but more frequent and possibly more severe because they use their upper extremities for weight bearing, mobility, and in awkward or extreme positions. Musculoskeletal problems may be much more disabling in the people with spinal cord injury (SCI). For example, pushing a wheelchair, a shoulder problem may interfere with SCI patient's ability to ambulate, transfer, and perform all of their activities throughout the day. Such pain or injury threatens the independence that people with a spinal cord injury (SCI) have worked so hard to achieve (Goldstein et al., 1997).

Musculoskeletal problems are the most frequent cause of disability in the United States of America (USA) today and are more prevalent than either heart disease or cancer. There are more complaints and more outpatient visits (ambulatory care) to doctors' offices for these problems than any other kind of health problems. It has been suggest that musculoskeletal complaints are the second most common reason for visits to surgeons, third most common reason for visits to family doctors and the fourth most common reason for visits to specialists (Goldstein et al., 1997).

A spinal cord injury patient who needs the wheelchair can learn about the proper use of it trough the rehabilitation program. For the people with complete or incomplete paraplegia, a wheelchair is very much important in their every aspect of life. For social adjustment, mobility, crossing the long distance, other activities of daily living (ADLs) and interaction in their community a paraplegic patient either complete or incomplete needs the appropriate use of the manual wheelchair. The study focuses on the arising musculoskeletal problems while using a manual wheelchair by the paraplegic patient in their activities of daily living.

## **1.2 Justification of the study**

Injuries that are affecting the spinal cord and complicated by neurological damage are an important health problem in Bangladesh as they carry a high rate of morbidity and mortality. In our country paraplegia is the most common type of spinal cord injury.

The interventions which are provided to the spinal cord injury (SCI) patients have been limited to prevention, good initial resuscitation, pharmacotherapy and nursing care. As the Bangladesh is a developing country and trying to develop health care system. So the spinal cord injury patient needs a specialized and comprehensive rehabilitation services to continue their activities of daily living in the community.

Spinal cord injury patient especially paraplegic wheelchair patient feel some musculoskeletal problems or disorders which affect their life style. By doing this research, the problems or disorders may be drawn out. And patient will try to enhance these facts during the wheelchair training program in the rehabilitation program. Thus the research may help the paraplegic patients with manual wheelchair and will aware about the arising problems during living in the community. The research will also aware the medical professional about the arising musculoskeletal disorders among paraplegic wheelchair users and thus it will enhance them to take further measures to minimize these disorders.

### **1.3 Research question**

What are the common musculoskeletal disorders found among paraplegic wheelchair users?

### **1.4 Study objectives**

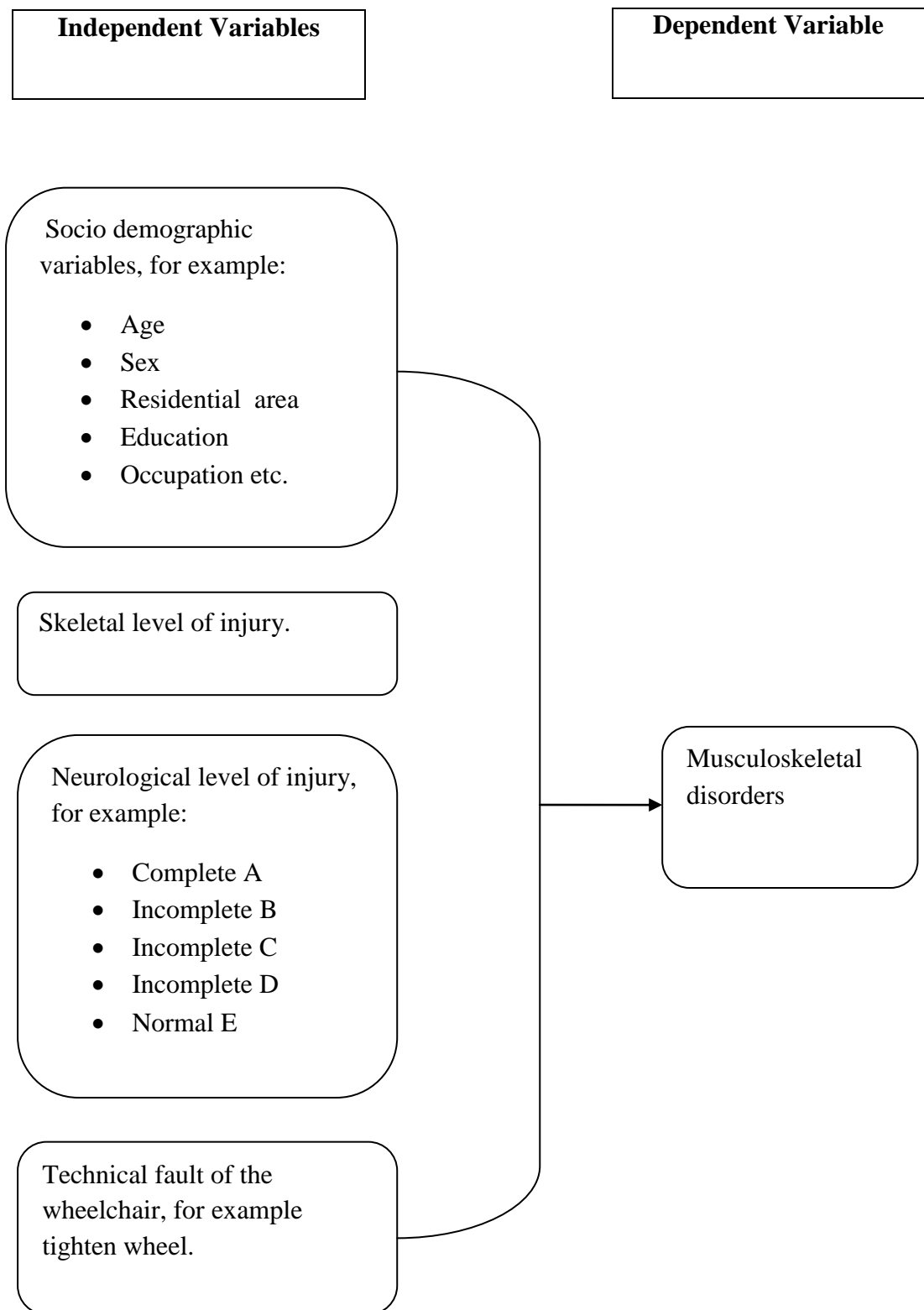
#### **1.4.1 General objective**

To find out common musculoskeletal disorders among paraplegic wheelchair users.

#### **1.4.2 Specific objectives**

- To demonstrate the socio-demography among the paraplegic wheelchair users.
- To identify the problems while using manual wheelchair.
- To establish different body parts involved with musculoskeletal disorders.
- To define secondary mobility related complication after SCI.
- To bring out perception about user friendly wheelchair among participants.

## 1.5 List of variables



## 1.6 Operational definition

**Spinal cord injury:** When the spinal cord is damaged following trauma to the spine or disease process than it is called spinal cord injury which resulting in either temporary or permanent change in its normal motor, sensory, or autonomic functions.

**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.

**Complete lesion:** Absence of sensory and motor functions in the lowest sacral segments.

**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.

**Prevalence:** Prevalence specifically refers to the all current case (old & new) existing at a given point in time or over a period of time in a given population.

**Musculoskeletal:** The word musculoskeletal is related to the involvement of muscles, tendons, ligaments and bones.

**Wheelchair:** A wheelchair is a chair with special arrangement including wheels, designed to be a replacement for walking for the disabled.



## **2.1 Spinal cord**

The spinal cord is the part of the central nervous system (CNS) in the superior two third of the vertebral canal. It is roughly cylindrical to oval in cross section with a central canal (Drake et al., 2005). It is protected by the vertebra and their associated muscles, ligaments, spinal meninges and the cerebrospinal fluid (CSF). The spinal cord begins as a continuation of the medulla oblongata; the caudal part of the brainstem (Moore and Dalley, 2006). The spinal cord is 42-45cm long and extends from the foramen magnum to the level of the L1 or L2 vertebra (Drake et al., 2005).

The spinal cord has two enlargement- cervical enlargement which gives rise to the nerves of upper limbs and the lumbosacral enlargement which gives rise to the nerves of pelvic region and to the lower limbs (Saladin, 1998). The function of the spinal cord is to act as the main pathway for all incoming and outgoing impulses from the higher center to the periphery for reflex activities and also exerts traffic control over the muscular system (Drake et al., 2005).

## **2.2 Spinal cord injury**

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 (International Standards for Neurological Classifications of Spinal Cord Injury, 2000). According to David W 1996, Spinal cord injury usually results from an accident that breaks severely damaged the central nerve cord in the neck or back, when the cord is damaged, feeling and movement in the body below the level of injury are lost or reduced (Jahan, 2008).

The SCI is the 'highway' through which motor and sensory information travels between the brain and body via nerves which pass up and down through the spinal cord along definite pathway. When the path is broken, the message cannot get through. This occur when there is an injury to, or disease of the spinal cord (Momin, 2003).

### **2.2.1 Causes of spinal cord injury**

The spinal cord lesions are considered to be either 'traumatic' or 'non-traumatic'. In case of traumatic injury, there were three main causes in our country. Resulted from a fall from a height (such as a tree) are 43%, 20% are associated with falling while carrying a heavy load on the head which one is a common practice in Bangladesh, 18% are resulted of a road traffic accident and 6% formed a diverse group which included assault, stab injury, sports injury and bull attack. In the 'non-traumatic' spinal cord lesion group the main causes are Pott's disease with a tumor, transverse myelitis, prolapsed inter-vertebral disc and Guillain Barre Syndrome (Hoque et al., 1999).

### **2.2.2 Classification of Spinal cord injury**

- Paraplegia: Injury in the spinal cord in the thoracic, lumbar, or sacral segments, including the caudaequina and conus medullaris (Bromley, 1998).
- Tetraplegia or quadriplegia: Injury to the spinal cord in the cervical region, with associated impairment or loss of muscle strength in all four extremities and trunk (Maynard et al., 1996).
- Complete lesion: A complete spinal cord lesion is the term used to describe damage to the spinal cord that is absolute. It causes complete and permanent loss of ability to send sensory and motor nerve impulses and, therefore, complete and usually permanent loss of function below the level of the injury (Ditunno et al., 1997).
- Incomplete injury: If partial preservation of sensory and/or motor functions is found below the neurological level and includes the lowest sacral segment, the injury is defined as incomplete (Hossain et al., 2008). Sacral sensation includes sensation at the anal mucocutaneous junction as well as deep anal sensation. The test of motor function is the presence of voluntary contraction of the external anal sphincter upon digital examination (Ditunno et al., 1997).

### **2.2.3 Types by the American Spinal Injury Association (ASIA)**

In 1982, based on neurological responses, touch and pinprick sensations tested in each dermatome, and strength of ten key muscles on each side of the body the American Spinal Injury Association (ASIA) first published an international classification of spinal cord injury called the International Standards for Neurological and Functional Classification of Spinal Cord Injury. Traumatic spinal cord injury is classified into five categories on the ASIA Impairment Scale (Maynard et al., 1996):

**A**=Complete. No sensory or motor function is preserved in the sacral segments S4-S5.

**B**=Incomplete. Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5.

**C**=Incomplete. Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a muscle grade less than 3.

**D**=Incomplete. Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a muscle grade greater than or equal to 3.

**E**=Normal. Sensory and motor function is normal.

### **2.3 Paraplegia**

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. 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 caudaequina and conus medullaris injuries, but not to lumbosacral plexus lesions or injury to peripheral nerves outside the neural canal (Ditunno et al., 1997).

Paraplegia means impairment or loss of motor and/or sensory function due to damage of the spinal cord at the level of thoracic, lumber or sacral segment (Atrice et al., 2001).

## **2.4 Common musculoskeletal disorders**

Musculoskeletal complications after spinal cord injury (SCI) are frequent because these kinds of problems are common to getting older. It has been suggested that the majority of people with SCI have musculoskeletal problems during their lifetime. For example, shoulder pain, neck and back pain are reported in up to three-quarters of the spinal cord injury (SCI) population. Shoulder pain is more common in people who use a manual wheelchair for many years than in people who use their arms for repetitive heavy labor, such as welders (Goldstein et al., 1997).

Musculoskeletal pain comes from problems in the muscles or skeleton and is common in the population as a whole, especially as people get older. In the spinal cord injury (SCI) population, musculoskeletal pain can be produced by injury at the time of SCI, injury following SCI, overuse or strain, arthritic changes, or wear and tear of the joints, often from wheelchair use (Northwest Regional Spinal Cord Injury System, 2002).

Independence in occupational performance is a major goal in rehabilitation of the client with paraplegia due to a spinal cord injury (SCI). Whereas the ability to move and transfer is most central in the independence process and necessary to compensate for, the manual wheelchair becomes an important assistive device. However, the wheelchair user with paraplegia due to spinal cord injury (SCI) puts an intense load upon the muscles and joints of the trunk and upper extremities during wheelchair propulsion, and in almost every other daily activity such as transfer, driving and household activities. Due to this potential intense load in the upper extremities and trunk, musculoskeletal pain is a common complication in the spinal cord injured paraplegic wheelchair users (Samuelsson et al., 2004).

All tissues that make up the musculoskeletal system-tendons, bones, ligaments, and muscles- start going through changes associated with normal aging in early adulthood and continue throughout the life. These changes in the uninjured population have been well-described and studied, but we know much less about musculoskeletal conditions that happen after spinal cord injury (SCI). Musculoskeletal problems are the most frequent cause of disability after spinal cord injury (Goldstein et al., 1997).

### **2.4.1 Loss of Range of Motion**

Loss of range of motion (known as a contracture) is probably the most common musculoskeletal problem following spinal cord injury (SCI). Range of motion is very important for seating, transferring, and other functional activities (Dalyan et al., 1998). The causes of decreased range of motion are numerous, although the most common cause is staying in the same position for prolonged periods of time, such as sitting, decreasing flexibility; arthritis-people with joint problems commonly lose range of motion (Goldstein et al., 1997).

### **2.4.2 Shoulder pain**

Shoulder pain is a common problem in paraplegia. Wheelchair propulsion as well as transfers are supposed to cause and increase upper extremity pain, such as shoulder pain in active wheelchair users (Samuelsson et al., 2004). There are many different mechanical causes of shoulder pain after spinal cord injury (SCI) such as stiffness, tight muscles, muscle tears (rotator cuff), overuse, biomechanical problems, disuse, impingement, inflammation, arthritis and excess weight bearing while strengthening (Alm et al., 2008).

### **2.4.3 Wrist pain**

wrist pain following spinal cord injury is a common phenomenon in the patient with paraplegic wheel chair users those who use manual wheelchair in a much greater speed than normal or those who were participates in sports activity such as wheelchair basket ball, wheelchair race or running the wheelchair in up and down slopes (Dalyan et al., 1999).

### **2.4.4 Fracture**

Unfortunately, fractures are very common in people with SCI. About 14% of people with SCI get fractures five years after injury. This increases to 28% after 10 years and 39% after 15 years. The frequency of fractures increases with age and completeness of injury, and is higher in women than men. Although most fractures are in the lower extremities and result from falls from bed or wheelchair during transfer and fractures often occur from only a mild slip (Northwest Regional Spinal Cord Injury System, 2002).

### **2.4.5 Back pain**

Back pain is a common problem in people with paraplegia. If there has been a fusion, the spine is more rigid at the levels of the fusion. Increased motion is likely to occur just above and just below the fusion, and this can lead to back pain (Northwest Regional Spinal Cord Injury System, 2002).

There may also be found buttock pain, chest pain and some sort of neck pain. The buttock pain is usually occurred as a result of long time sitting in a same position without taking lift, chest pain, neck pain are due to abnormal posture as like kyphotic (Boninger et al., 2003). Swelling in the ankle joint is a common phenomenon in the paraplegic patient. It usually occurred due to placing the lower extremity downward while sitting on a wheelchair for a prolong period of time (Siddall et al., 1997).

### **2.6 Wheelchair**

A wheelchair is a chair with wheels, designed to be a replacement for walking. The device comes in variations where it is propelled by motors or by the seated occupant turning the rear wheels by hand. Often there are handles behind the seat for someone else to do the pushing. Wheelchairs are used by people for whom walking is difficult or impossible due to illness (physiological or physical), injury, or disability. People with both sitting and walking disability often need to use a wheel bench (Edwin and Linda, 1993).

A basic manual wheelchair incorporates a seat, foot rests, handles at the back and four wheels: two castor wheels at the front and two large wheels at the back (Langbein, 1993).

### **3.1 Study design**

A cross sectional study design was selected by the researcher to carry out the research. These types of research were primarily used to determine prevalence (Mann, 2003). Prevalence equals the number of cases in a population at a given point in time. All the measurements on each person were made at one point in time. The data are collected all at the same time or within a short time frame. A cross-sectional design provides a snapshot of the variables included in the study, at one particular point in time (Fraenkel, 2000). The researcher collected data from the spinal cord injury (SCI) unit of physiotherapy department of CRP through a standard questionnaire.

### **3.2 Settings**

The researcher was selected the SCI unit of physiotherapy department of CRP for data collection. At first researcher developed a standard questionnaire and then selected the paraplegic wheelchair patient of SCI unit as sample for data collection.

### **3.3 Study population and sample population**

A population is the total group or set of events or totality of the observation on which a research is carried out. It is the group of interest to the researcher, the group whom the researcher would like to generalize the result of the study (Bailey, 1997). In this study the researcher choose the paraplegic spinal cord injury patient in the CRP as population to carry out this study. The sample population or sample is a relatively small subset of population that is selected to represent or stand in for the population (Heiman, 1995). According to Bailey 1997, a sample is the researcher defined subgroup of the population. The researcher chooses the paraplegic wheelchair patients in CRP as a sample population to carry out this study. About 51 patients were selected for this study as sample.

### **3.4 Sampling technique**

Sampling refers to the process of selecting the subjects/individual (Hicks, 1999). The researcher was selected the simple random sampling technique to draw out the sample from the population. The simple random technique is the process where every single subjects of the population has an equal chance of being selected as a sample (Fraenkel, 2000). It is the most unbiased manner to selecting the data from the population (Heiman, 1995).

### **3.5 Sample size**

In this project study, the researcher selected 51 paraplegic wheelchair patients from the spinal cord injury (SCI) unit of CRP through simple random sampling technique.

### **3.6 Data management and analysis plan**

The data that the researcher collected is descriptive data. The researcher used the graph technique for analyzing data, calculated as percentages, and presented this using bar and pie charts by SPSS (Statistical Package of Social Science) software version 16.0.

SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses.

### **3.7 Informed consent**

Written consent (appendix) was given to all participants prior to completion of the questionnaire. The researcher explained to the participants about his or her role in this study. The researcher received a written consent form every participants including signature. So the participant assured that they could understand about the consent form and their participation was on voluntary basis. The participants were informed clearly that their information would be kept confidential. The researcher assured the participants 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 care 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.

### **3.8 Ethical consideration**

The researcher took permission initially 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 the researcher was permitted to do this research. Also the necessary permission was taken from the in-charge of the rehabilitation division of CRP. The participants were explained about the purpose and goal of the study before collecting data from the participants. Pseudonyms were used in the notes, transcripts and throughout the study. It was ensured to the participants that the entire field notes, transcripts and all the necessary information will be kept in a locker to maintain confidentiality and all information will be destroyed after completion of the study. The participants were also assured that their comments will not affect them about any bad thing.

### **3.9 Limitation of the study**

100% accuracy will not be possible in any research so that some limitation may exist. Regarding this study, there were some limitations or barriers to consider the result of the study as below:

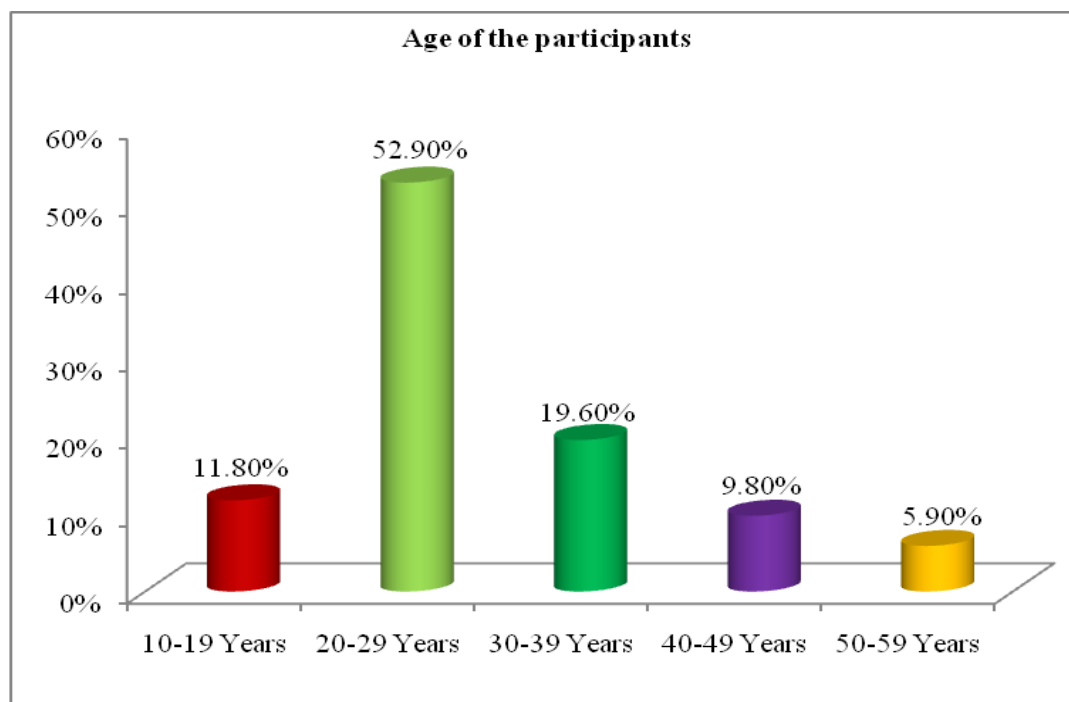
- The first limitation of this study was small sample size. It was taken only 51 samples.
- A very few researches have been done on a few of musculoskeletal disorders. So there was little evidence to support the result of this project study in the context of Bangladesh.
- Another major limitation was time. The time period was very limited to conduct the research project on this topic. As the study period was 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 Result and discussion

The data that were collected by the researcher through survey, analyzed and discussed as follows:

#### 4.2 Age range involvement

In this study 51 participants are gathered as sample, where there mean age is 28.39 with standard deviation ( $\pm 9.58$ ), median 27 and the mode was 22. In this study age range of the traumatic paraplegic spinal cord injury patient varied from 10-70 years. These were divided into 10-19 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years and 60-70 years.



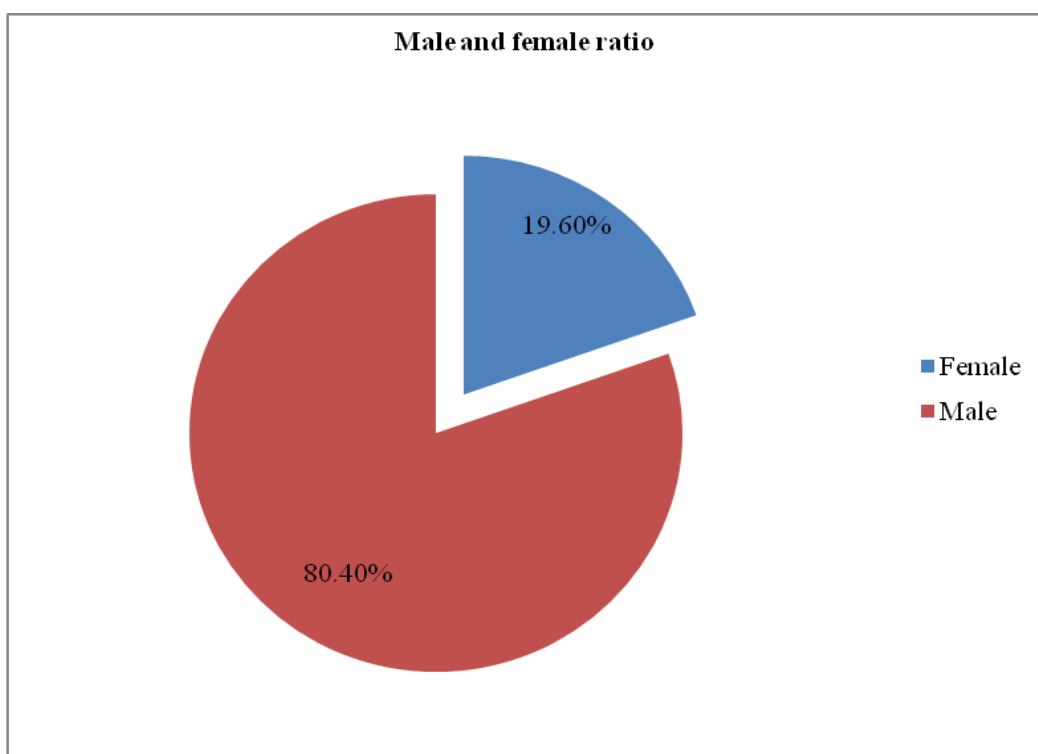
**Figure-1:** Age range of the participants with percentage.

The researcher was found in this study that, 11.8% were between 10-19 years ( $n=6$ ), 52.9% were between 20-29 years ( $n=27$ ), 19.6% were between 30-39 years ( $n=10$ ) and between 40-49 years ( $n=5$ ), 9.8%. It was found that the biggest sample contains in the age range of 20-29 years and the lowest sample contains in the 40-49 years. In a 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., 1999). The figure above shows the percentages of involved age those who were participated in this research.

### 4.3 Male and female ratio

51 paraplegic spinal cord injury patients were included as sample of the study, among them 80.4% (n=41) were male and about 19.6% (n=10).



**Figure-2:** Involvement of sex (male and female).

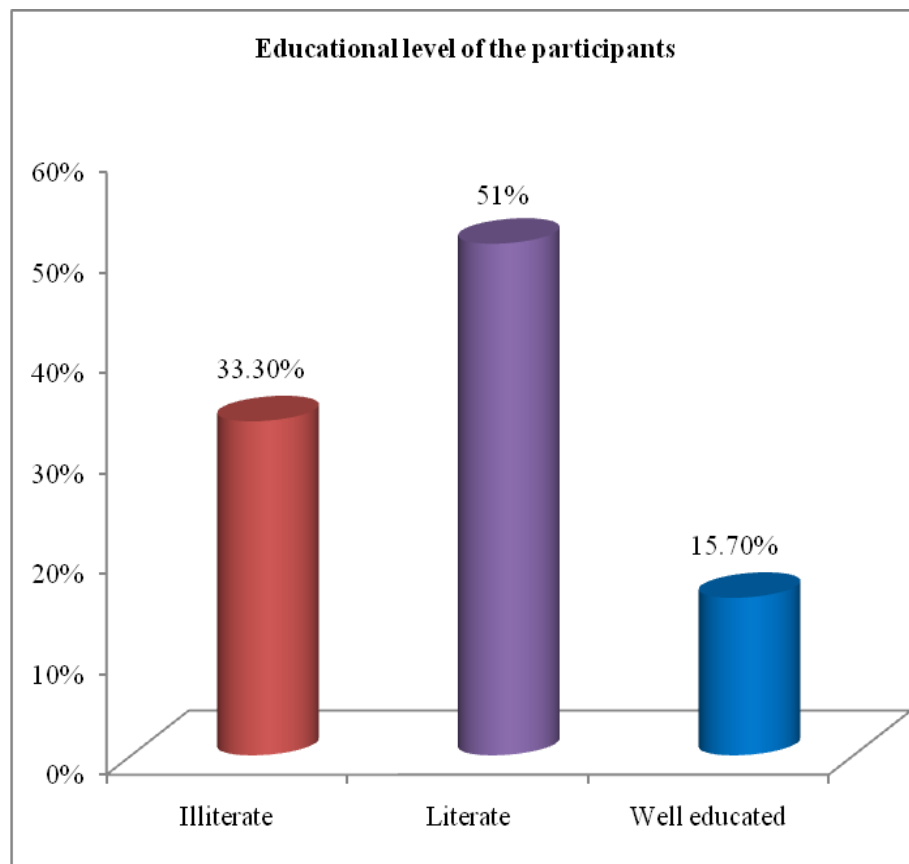
In an epidemiological study it has been found that 84.5% of spinal cord injury patients were male where 15.5% patients were female (Karamehmetog et al., 1997). Another study has found that 80% of spinal cord injury patients were male (Dowodu, 2007). So male are more affected than female in spinal cord injury.

In this study it was found that male and female ratio was 4.1:1. In Bangladesh a few researches have been conducted on spinal cord injury and the result shown that male, female ratio was 7.5:1 (Hoque et al., 2002).

#### 4.4 Educational level

Among 51 participants in this study, 33.3% (n=17) patients were illiterate (those who only can sign), about 51% (n=26) patients were literate (those who only can read and write) and about 15.7% (n=8) were well educated (those who have at least one board certificate). 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 villagers (Singh et al., 2003). The study shown that people with lower educational level were more prone to have a spinal cord injury.

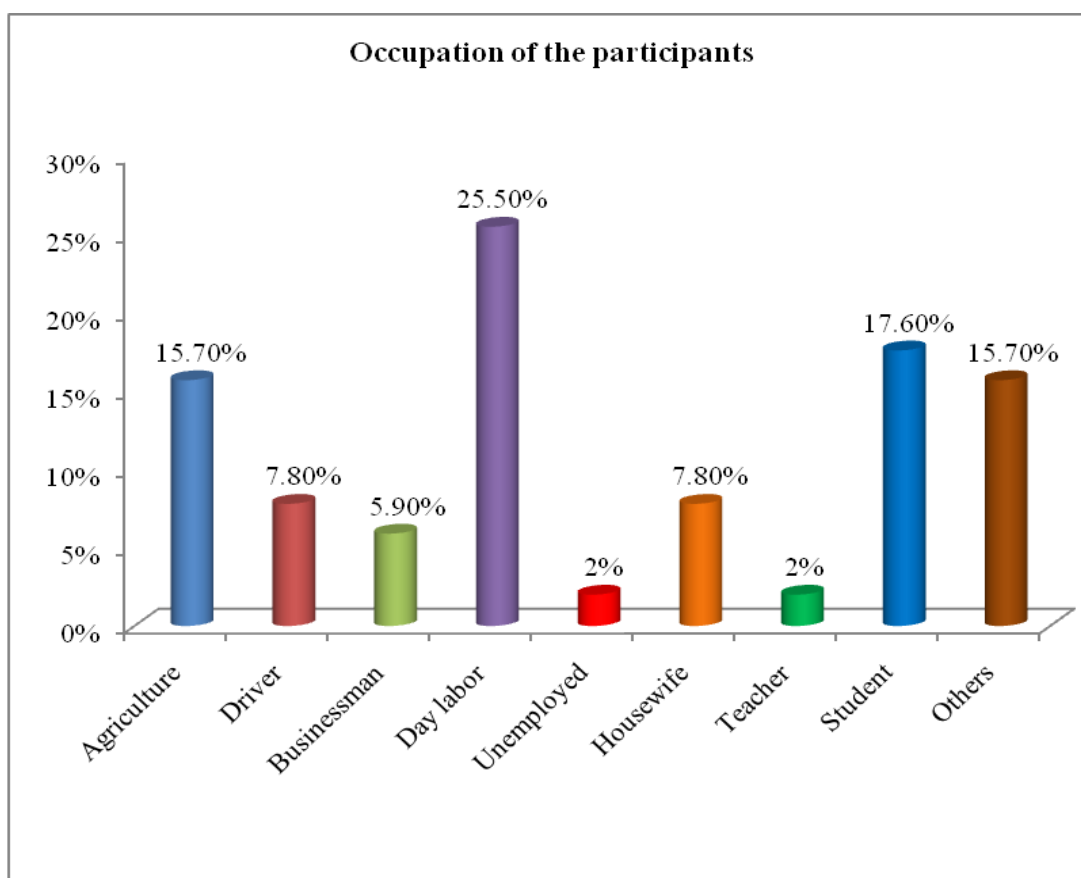
The figure below shown that the involvement of spinal cord injury in the people who are illiterate, literate and well educated:



**Figure-3:** Educational level of the participants with percentage.

#### 4.5 Occupation

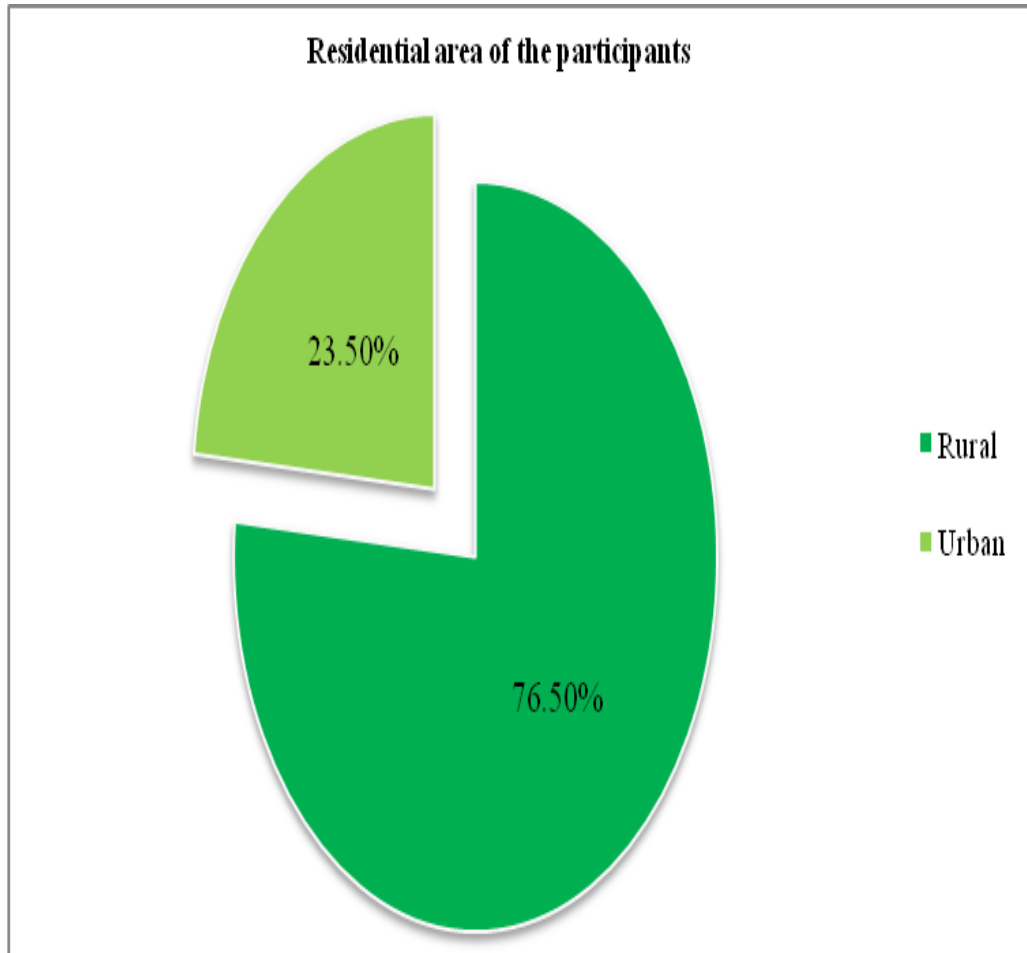
About 51 participant were involved as sample in this study. Among them 15.7% (n=8) were agriculture, 25.50% (n=13) were day labor, 9.8% (n=5) were housewife, 7.8% (n=4) were driver, 5.9% (n=3) were businessman, 2% (n=1) unemployed and teacher, students were 15.70% (n=8) and others were 17.60% (n=9). In this case study it is found that day labor and agriculture are the most vulnerable group to prone in spinal cord injuries.



**Figure-4:** Occupation of the involved participants with percentage.

#### 4.6 Residential area

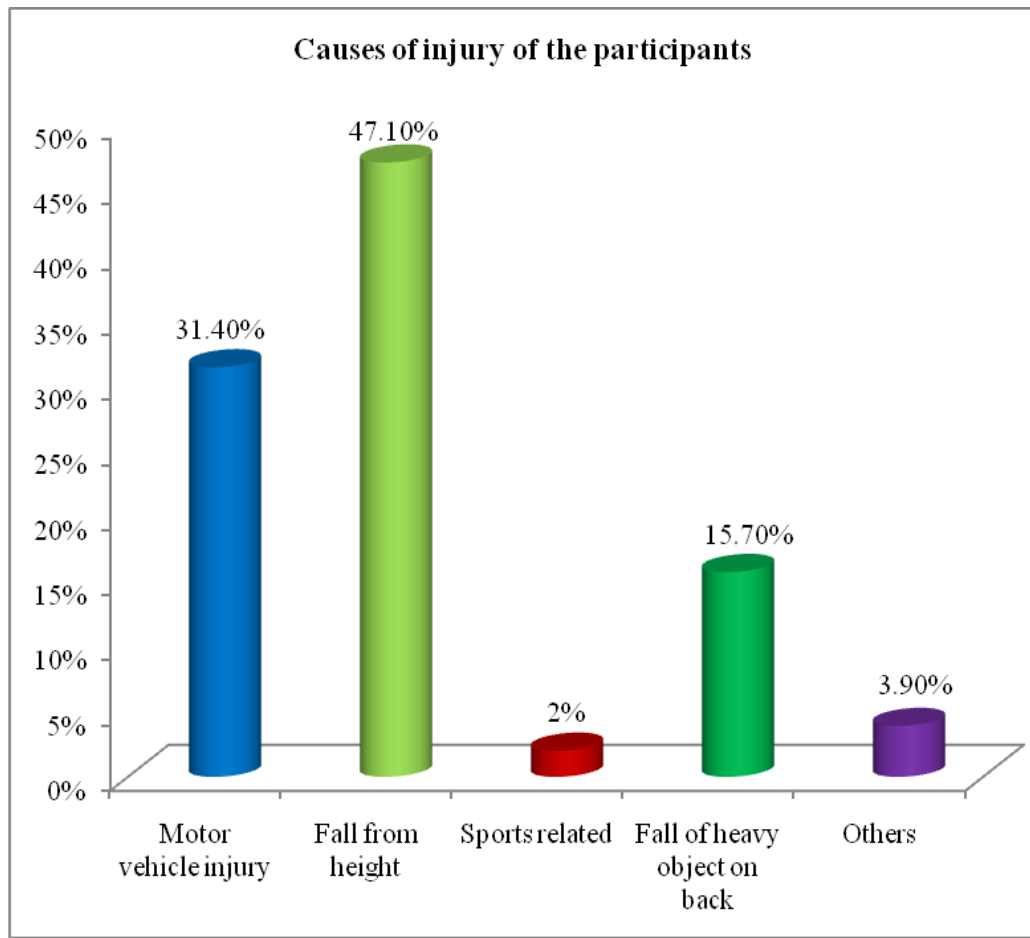
In this study about 76.5% (n=39) people were lived in rural area and leads poor qualities of life, about 23.5% (n=12) people were from urban areas. The research shows that spinal cord injury is more common in the rural people who had lower educational status. In an epidemiological study, it was found that approximate 20,000 new cases of spinal cord injury (SCI) are added every year in India and about 60-70% of them are illiterate and poor villagers (Singh et al., 2003).



**Figure-5:** Residential area of the participants with percentage.

#### **4.7 Causes of injury**

In this study it was found that among 51 participant 47.1% (n=24) were injured by fall from height, 31.4% (n=16) were by motor vehicle or road traffic accident, fall of heavy objects on back were 15.7% (n=8) sports related and others were 5.9% (n=3). In an epidemiological study (Spinal cord lesions in Bangladesh: an epidemiological study 1994-1995), it was shown that out of 179 participant seventy-six (43%) resulted from a fall from a height (such as a tree). Thirty-seven injuries (20%) were associated with fall of heavy load on back and fall while carrying heavy object (a common practice in Bangladesh). Thirty-three (18%) were a result of a road traumatic accident. Eleven patients (6%) formed a very diverse group which included assault, stab injury, sports injury and bull attack (Hoque et al., 1999).



**Figure-6:** Percentage of causes of injury among involved participants.

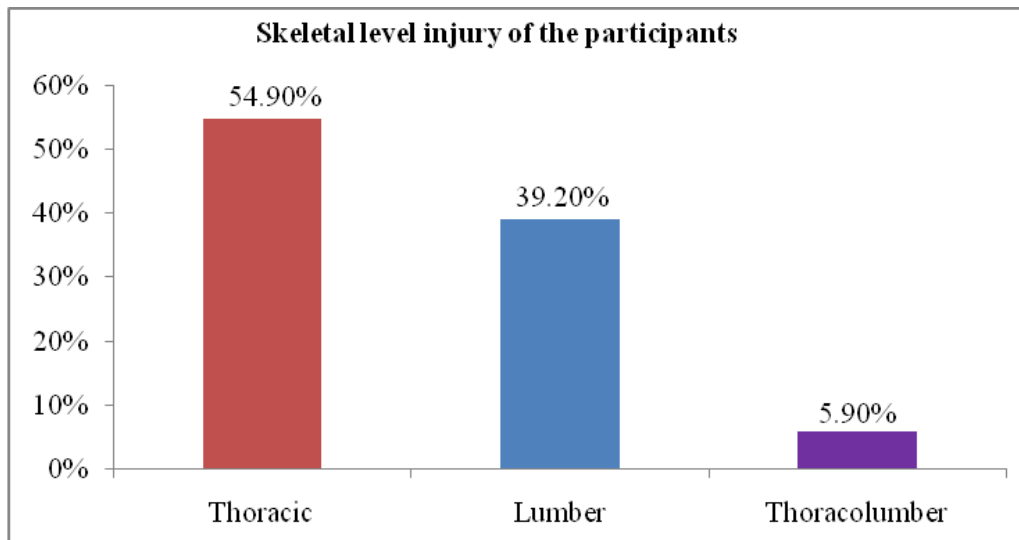
In this study it was also found that fall from height is the highest cause of injury, secondly road traffic accident and the third highest rate is due to fall of heavy object on back. The bar chart above shows the percentage of causes of injury in the involved participants.

#### **4.8 Skeletal level of injury**

Among 51 participants of this study the skeletal level of injury of the participants were about 54.9% (n=28) thoracic, 39.2% (n=20) lumber and about 5.9% (n=3) thoracolumbar region of injury. The study shown that thoracic region is the most vulnerable for paraplegic spinal cord injury. In a study, it was found that, T12 is the most common level of injury in paraplegia (Ditunno et al., 1997).

The figure bellow shows the level of injury that is higher in thoracic level which was found in this study:

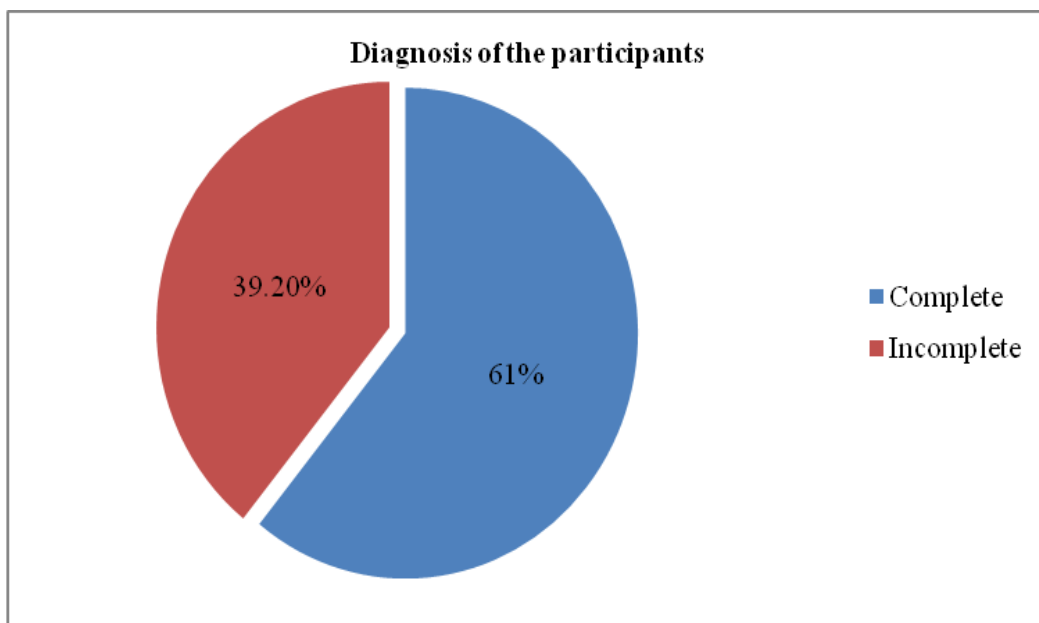




**Figure-7:** Skeletal level of injury of the involved participants with percentage.

#### 4.9 Diagnosis

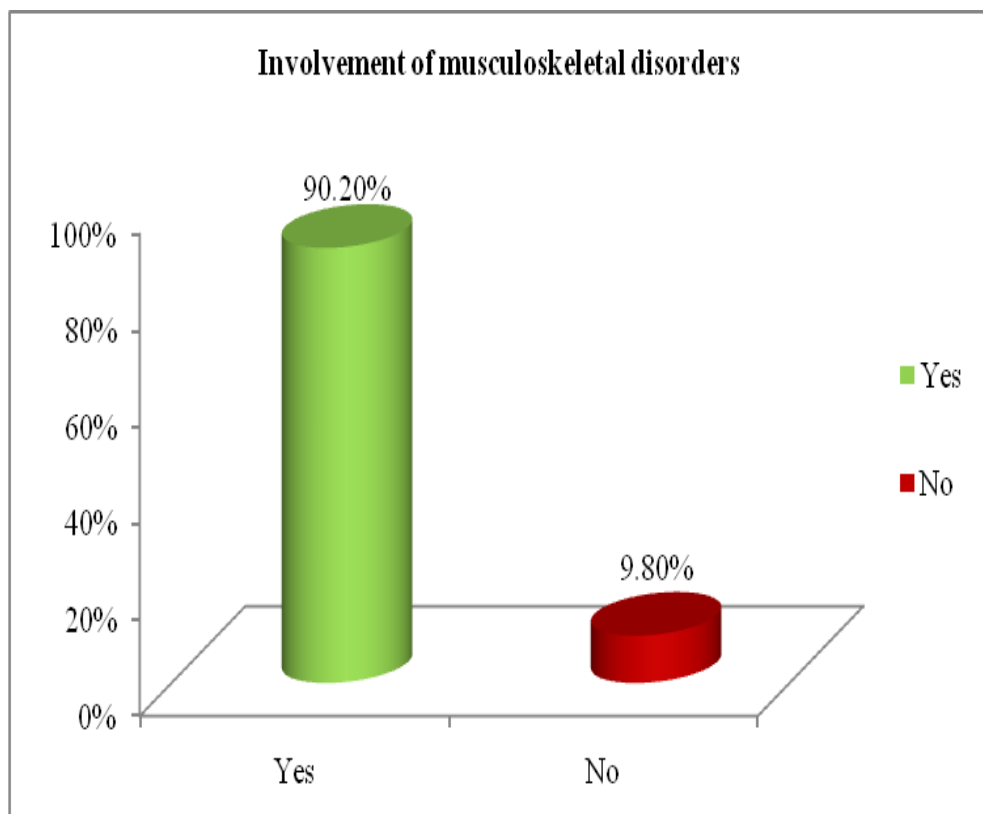
Among this 51 paraplegic spinal cord injury patients, researcher found that 60.8% (n=31) were complete spinal cord injured and 39.2% (n=20) were incomplete spinal cord injured. In this study, it is shown that complete spinal cord injuries are higher than incomplete spinal cord injury. In an epidemiological study it was shown that 48.7% patients were complete SCI, 39.4% patients were incomplete SCI and 11.9% patients were either no cord lesion or root lesion (Asbeck et al., 2000).



**Figure-8:** Percentage of participants according to the diagnosis.

#### 4.10 Involvement of musculoskeletal disorders

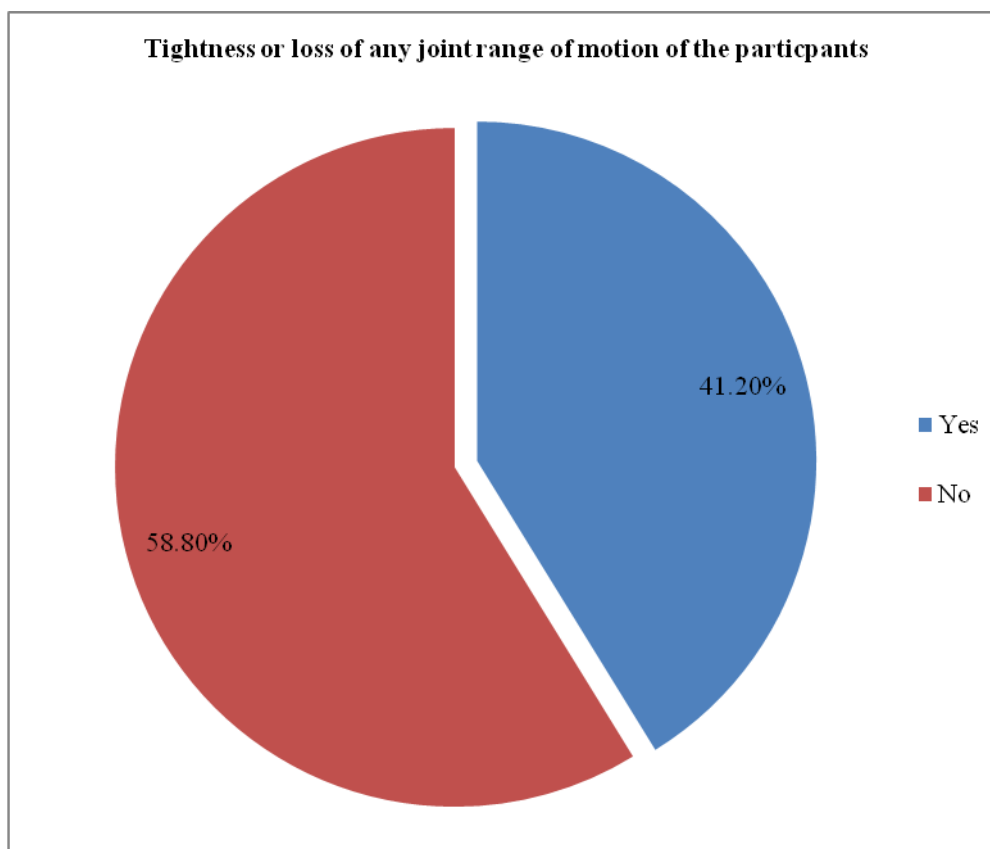
About 51 paraplegic wheelchair patients were selected as sample to carry out this study. In this, it was found that about 90.2% (n=46) patient have different type of musculoskeletal disorders and about 45.65% (n=21) of them had more than one disorders and 54.35% (n=25) had at least one disorder. The higher prevalence of musculoskeletal disorders includes tightness or loss of joint range of motion (41.2%), shoulder pain (29.4%), wrist pain (23.53%), back pain (25.5%) and discomfort during time of wheelchair propulsion (29.4%). And some other disorders also found with a lower prevalence. The bar chart below shows the involvement of musculoskeletal disorders among paraplegic participants:



**Figure-9:** involvement of musculoskeletal disorders among the participants with percentage.

#### 4.11 Tightness or loss of range of motion

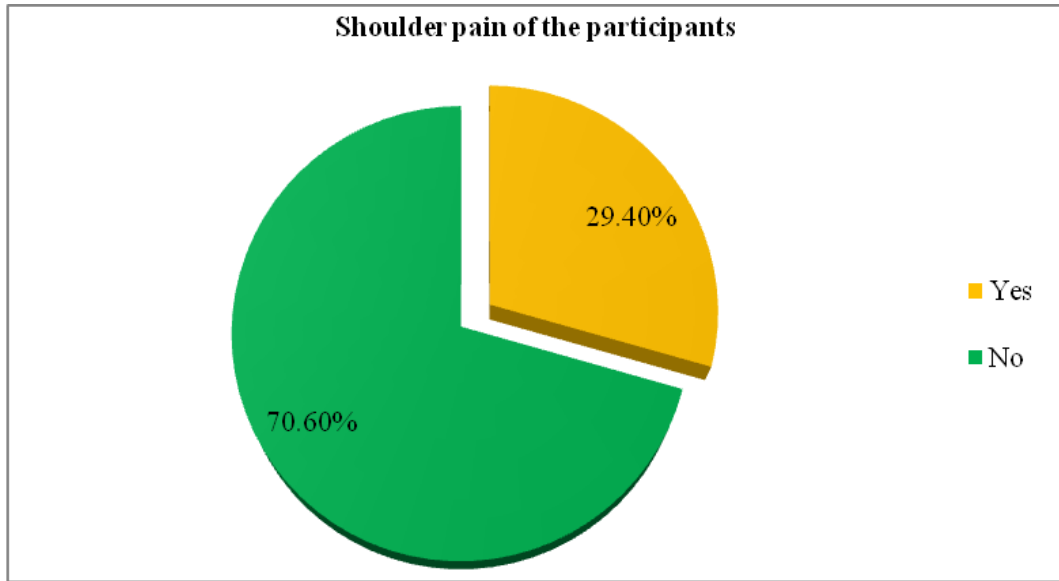
Out of 51 paraplegic spinal cord injury participants, there were 41.2% (n=21) had complain of tightness or loss of range of motion and 58.8% (n=30) had no complain of tightness or loss of ROM. In a study, it was described that long time staying in a same position without taking lift (when at W/C) and/or changing position (when at bed) are more prone to developing tightness or loss of ROM (Goldstein et al., 1997).



**Figure-10:** Percentage of tightness or contracture among the involved participants.

#### 4.12 Shoulder pain

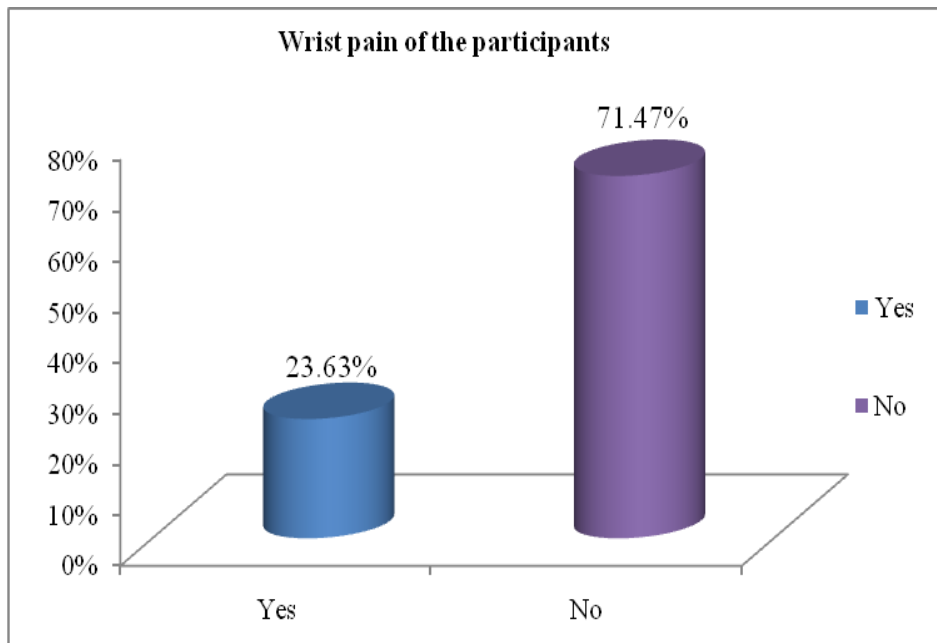
From the data of the present study, the researcher was found that about 29.4% (n=15) paraplegic spinal cord injury patient have shoulder pain and 70.6% (n=36) patient have no shoulder pain. In a research of upper extremity pain following spinal cord injury showed that about 53% patients had complained of shoulder pain (Dalyan et al., 1999). Shoulder pain is more common in people who use a manual wheelchair for many years than in people who use their arms for repetitive heavy labor, such as welders (Goldstein et al., 1997).



**Figure-11:** Shoulder pain among the involved participants with percentage.

#### 4.13 Wrist pain

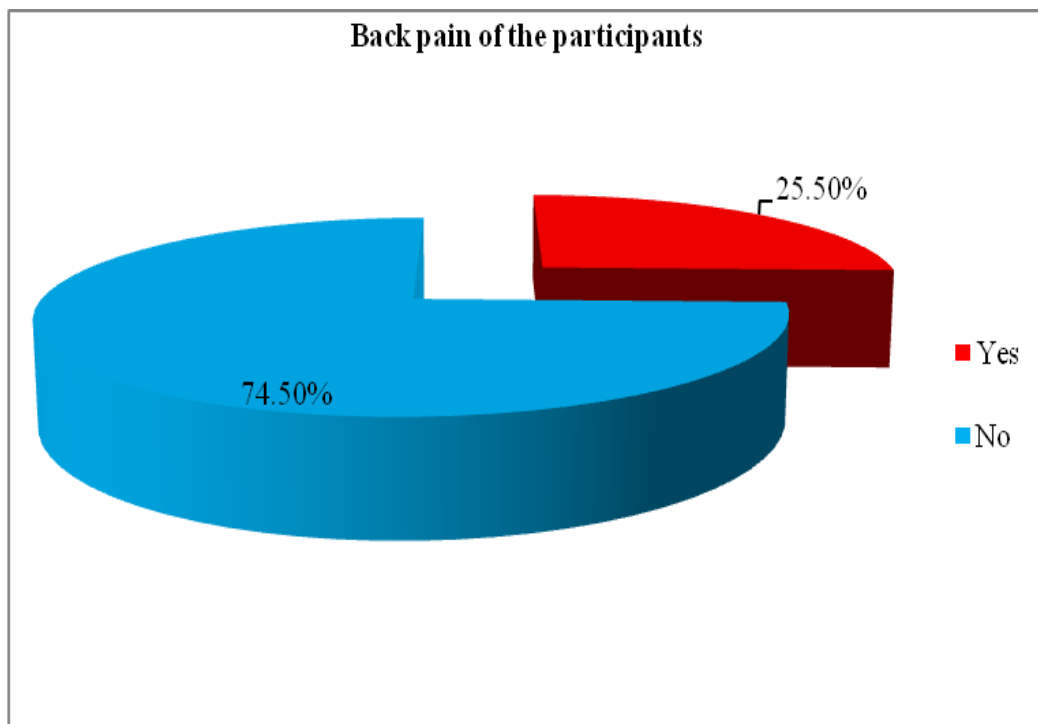
Among 51 paraplegic wheelchair participants, the researcher found that about 23.53% (n=12) was complained of wrist joint pain and 71.47% (n=39) has no complain of wrist pain during the propulsion of wheelchair. Dalyan et al. (1999) found that about 37.20% of paraplegic wheelchair patient those who use manual wheelchair for at least more than one year were complained wrist joint pain during time of propelling wheelchair.



**Figure 12:** Wrist pain among the participants with percentage.

#### 4.14 Back pain

In this study, the researcher found that among 51 participants 25.5% (n=13) has back pain and 74.5% (n=38) has no complain of back pain. In a study was said that, it may due to the level of fusion which is done by the surgeon. Because the spine motion occurred more in just above and just below to the fusion which may responsible for developing back pain in the paraplegic wheelchair patients (Northwest Regional Spinal Cord Injury System, 2002). The pie chart bellow shows the percentages of back pain which are found in this study:



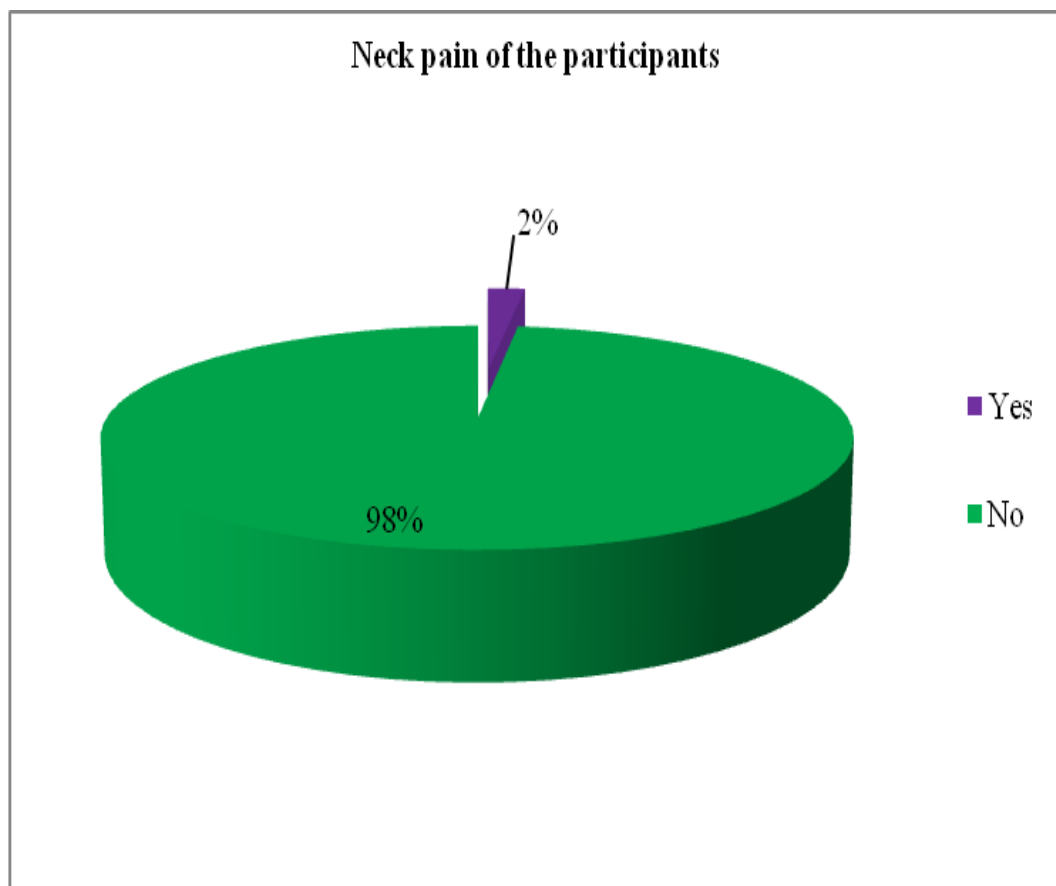
**Figure-13:** Percentage of back pain among the involved participants.

#### 4.15 Fracture after injury

In this study, among 51 paraplegic SCI patients there was no history of fracture during the rehabilitation process after injury. It was found that, fractures are very common in people with spinal cord injury (SCI). About 14% of people with SCI get fractures five years after injury and it increases to 28% after 10 years and 39% after 15 years (Northwest Regional Spinal Cord Injury System, 2002). As all patients involved in this study were under rehabilitation program and the patients have no history of fall from the bed and wheelchair during rehabilitation program that's why researcher does not find any patient with fracture in this study.

#### 4.16 Neck pain

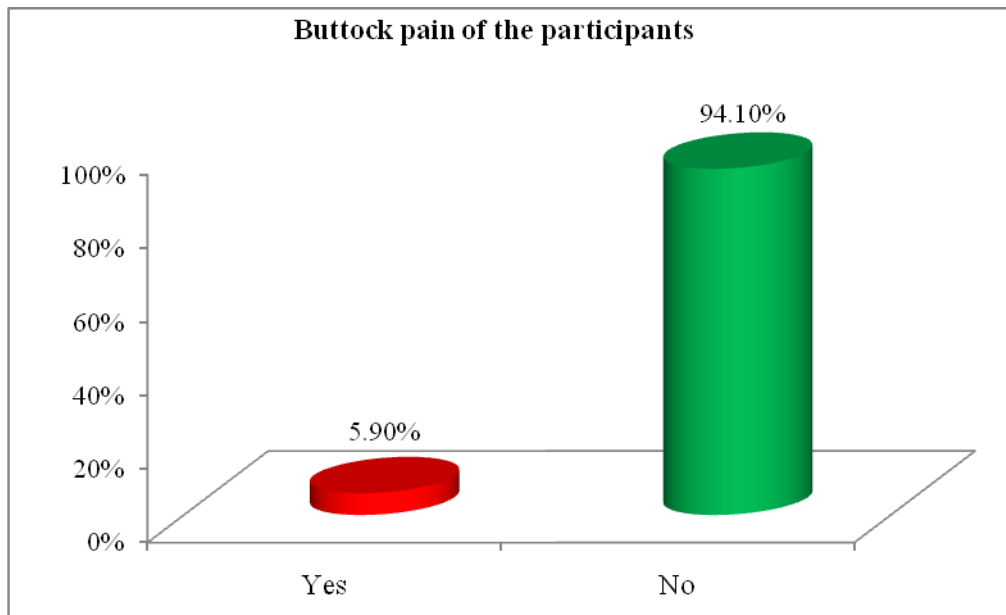
51 paraplegic spinal cord injury participants were used as sample in this study. Among them, the researcher found that only 2% (n=1) has neck pain and rest of 98% (n=50) has no complain of neck pain. In a study it was shown that, in case of spinal cord injury neck pain is more common in tetraplegia and less in paraplegia (Siddall et al., 1997). The pie chart below shows the neck pain found in this research among the involved participants.



**Figure14:** Percentage of neck pain among the involved participants.

#### 4.17 Buttock pain

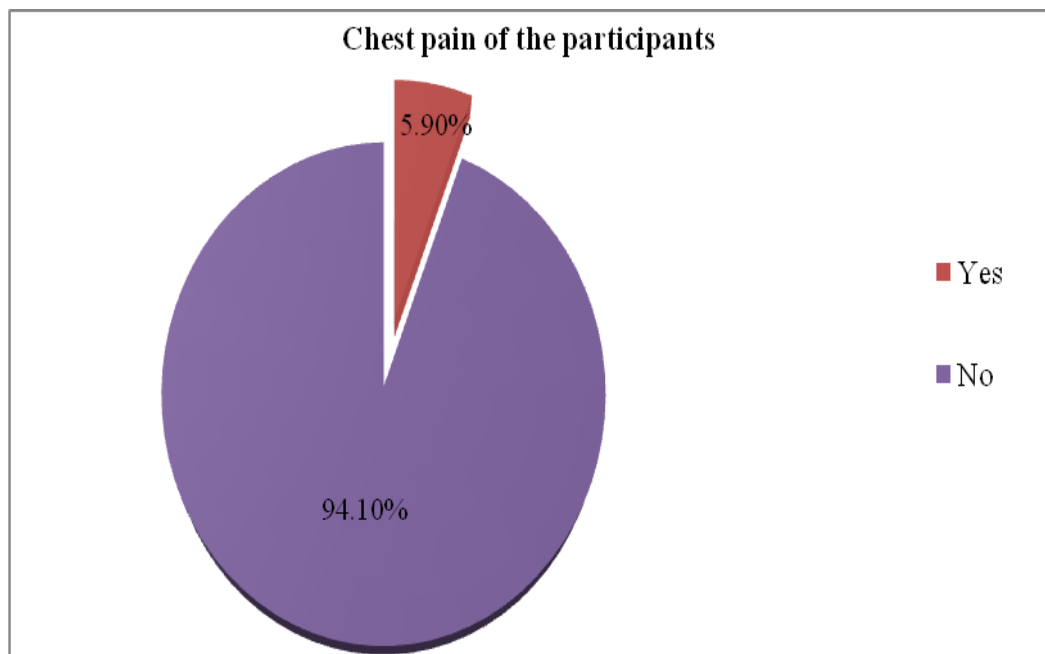
In this study it is found that about 5.9% (n=3) participants has buttock pain and rest of 94.1% (n=48) participants has no complain of buttock pain. In a research it was shown that this type of pain is usually occurred as a result of long time sitting in a same position without taking lift (Siddall et al., 1997). The bar chart below shows the back pain participants which are found in this research project.



**Figure15:** Buttock pain among the involved participants with percentage.

#### 4.18 Chest pain

Among 51 participants, only 5.9% (n=3) participants were complain of chest pain and 94.1% (n=48) participants has no complain of pain. In a study, it has been found that the neck pain is usually occurred due to long time sitting with an abnormal posture as like kyphotic and usually more common in the patients with thoracic level of injury (Siddall et al., 1997).

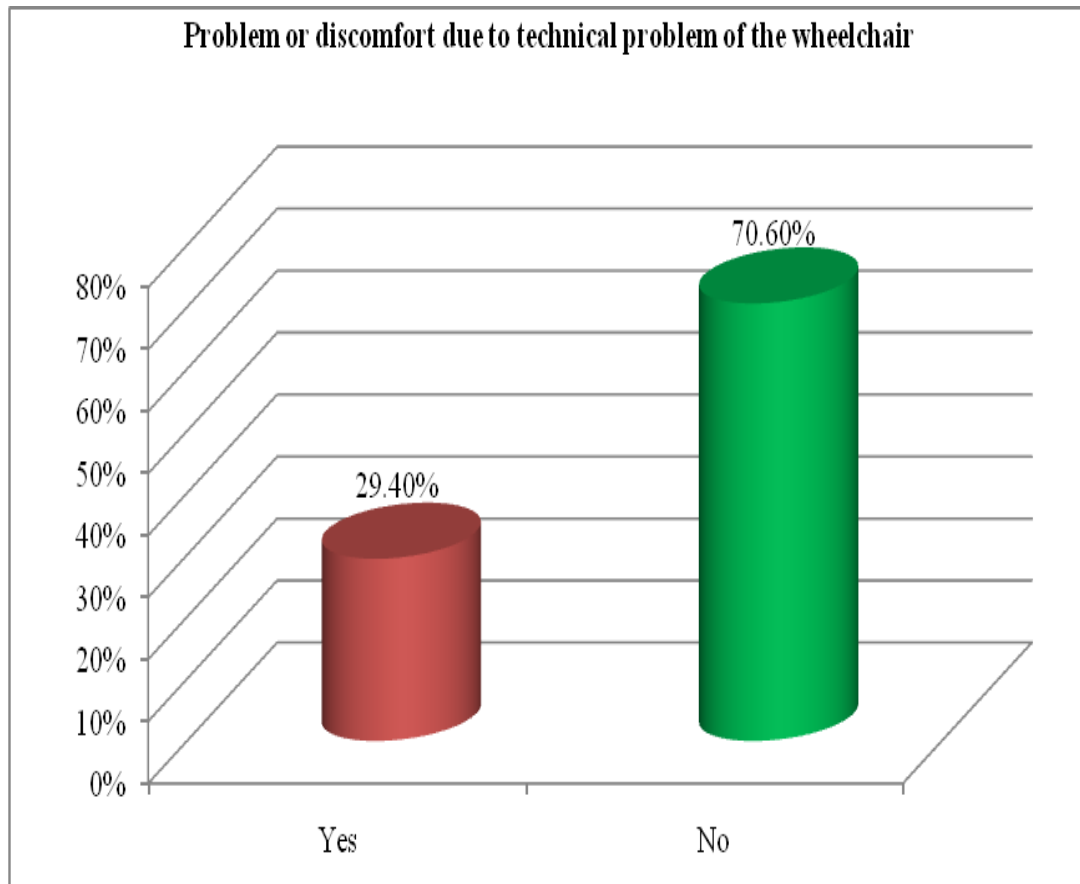


**Figure-16:** Percentage of chest pain among the involved participants.

#### 4.19 Perception about appropriateness of wheelchair

Among 51 samples, about 29.4% (n=15) patients feel discomfort during the time of wheelchair propulsion and 70.6% (n=36) has no complain of problem or discomfort.

The bar chart bellow shows the percentages of having discomfort or other problems:



**Figure-17:** Feeling of discomfort or problems among the participants due to technical fault of the wheelchair with percentage.



## **5.2 Conclusion**

In Bangladesh the number of spinal cord injury patient is increasing day by day. And paraplegia is more common than tetraplegia. This study was aimed to find out the common musculoskeletal disorders among paraplegic wheelchair users. For the fulfillment of the study the researcher was designed a quantitative study design (cross-sectional study) and collected 51 data from the samples through a standard questionnaire. From the data base, it was found that the age range between 20-29 years is more vulnerable to have spinal cord injury (SCI). Male are predominantly more affected than female where the ratio is (4.1:1). The educational level were very poor in most the patients, about 84.3% patients have lower level of educational status and most of them are from rural areas. From the research findings, the researcher found that loss of range of motion or contracture is more common in the lower educational level of patients, it may due to the lack of awareness in that group of patients. The researcher have also found that those who have technical problem in their wheelchair (for example- tighten wheel where patients need extra effort to propel the wheelchair), they had more shoulder pain and it was about 17.6%, this may due to needed of extra effort or abnormal wheelchair propulsion. The research has also found that patients age range from 40-49 years and 50-59 years are more prone to have back pain and it was about 13.72%. The researcher also found that besides these, there are some other disorders with lower prevalence may have occurred such as ankle swelling, buttock pain, chest pain, neck pain and fracture. Last of all the study will try to represent the strong evidence among paraplegic wheelchair users with the musculoskeletal disorders.

## **5.2 Recommendation**

In this study, the researcher takes information from the participants' through a standard questionnaire to identify the common musculoskeletal disorders among paraplegic wheelchair users. Though the research has some limitations but researcher identified some further step that might help for the better accomplishment of further research. To ensure the generalizability of further research it is recommended to investigate a large sample. In this study researcher investigate only paraplegic wheelchair patient. So researcher is strongly recommended to include both paraplegic and tetraplegic wheelchair patients for further study. Comparative study should be done including the 't' test. In case of further long duration research study with more samples will bring more significant results. This research has been performed with 51 samples from the Center for the Rehabilitation of the Paralyzed which will not represent the whole country. So, it is finally recommended by the researcher for further study to take setting in whole Bangladesh as much as possible to generalize the study.

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# APPENDIX

## PERMISSION LETTER

To  
The Head of the Physiotherapy department,  
Center for the Rehabilitation of the Paralyzed (CRP)  
Savar, Dhaka-1343

**Subject: Permission to collect data to conduct a research study.**

Sir,  
I respectfully to state that I am a student of 4<sup>th</sup> year B.Sc in physiotherapy at Bangladesh Health Professions Institute(BHPI). As a part of my study I have to conduct a research project. So that I need your kind permission to conduct this research and I have chosen a title that is "Prevalence of common musculoskeletal disorders among paraplegic wheelchair users". I have selected the Spinal Cord Injury (SCI) unit of physiotherapy department at CRP for data collection. For your kind information the research methodology, patient consent form & questionnaire have submitted with this application.

May I therefore pray and hope that you would be kind enough to give me the permission to do this study successfully in your department and oblige thereby.

Yours faithfully  
Md. Delwar Hossain  
Md. Delwar Hossain

4<sup>th</sup> year B.Sc in Physiotherapy  
Session: 2005-2006  
BHPI, Savar, Dhaka

Dated: 13.10.11.

*He allow to collect data in SCI unit. Thanky. Md. Hossain 20-10-11*

*Give Permission for Data Collection and plan ahead with SCI beduge. Thanky*

*13/10/11*

**Mohammed Anwar Hossain**  
Assistant Professor &  
Acting Head of Physiotherapy  
CRP Chapain, Savar-13



## VERBAL CONSENT STATEMENT

(Please read out to the participants)

Assalamualaikum/Namasker, my name is Md. Delowar Hossain, I am conducting this study for a Bsc in Physiotherapy project study dissertation titled “Prevalence of common musculoskeletal disorders among complete paraplegic wheelchair users” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding Spinal Cord Injury (SCI). You will perform some tasks which are mention in this form. This will take approximately 20-30 minutes.

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

If you have any query about the study or your right as a participant, you may contact with me, researcher and/or **Md. Sohrab Hossain**, Assistant Professor of Physiotherapy, Head of Physiotherapy Department, CRP, Savar, Dhaka.

Do you have any questions before I start?

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

Yes

No

Signature of the Participant \_\_\_\_\_

Signature of the Interviewer \_\_\_\_\_

## মৌখিক অনুমতি পত্র/সম্মতি পত্র

(অংশগ্রহনকারীকে পড়ে শোনাতে হবে)

আসসালামুআলাইকুম/ নমস্কার,

আমার নাম মোঃ দেলোয়ার হোসেন, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)-এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বি এস সি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হল- "হুইলচেয়ার ব্যবহারকারী অর্ধাঙ্গের পক্ষাঘাত গ্রন্থদের মধ্যে অস্থিপঞ্জর এবং পেশী সমূহের সচরাচর দৃষ্ট অস্বভাবিকতার সর্বব্যাপিতা"। আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তিগত এবং আনুষঙ্গিক প্রশ্ন মেবুরজ্জু ক্ষতিগ্রন্থ সম্পর্কে করতে চাচ্ছি। এতে আনুমানিক ২০-৩০মিনিট সময় নিবো।

আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্যকোন উদ্দেশ্যে ব্যবহৃত হবে না। গবেষক সরাসরি এই স্নায়ুজ্ঞান অধ্যয়নের সাথে অল্ভূক্ত নয়। তাই এই গবেষণায় আপনার অংশগ্রহণ বর্তমান ও ভবিষ্যৎ চিকিৎসায় কোন প্রকার প্রভাব ফেলবেনা। আপনি যে সব তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে এবং আপনার প্রতিবেদনের ঘটনা প্রবাহে এটা নিশ্চিত করা হবে যে এই তথ্যের উৎস অপ্রকাশিত থাকবে।

এই অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছাপ্রণোদিত এবং আপনি যে কোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকারও আপনার আছে।

এই অধ্যয়নে অংশগ্রহনকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং মোঃ সোহরাব হোসেন, সহকারী অধ্যাপক, ফিজিওথেরাপী বিভাগীয় প্রধান, সিআরপি, সাভার, ঢাকা-১৩৪৩-তে যোগাযোগ করতে পারেন।

সাক্ষাৎকার শুরু করার আগে আপনার কি কোন প্রশ্ন আছে?

আমি আপনার অনুমতি নিয়ে এই সাক্ষাৎকার শুরু করতে যাচ্ছি।

হ্যাঁ

না

১। অংশগ্রহনকারীর সাক্ষর.....

২। সাক্ষাৎগ্রহনকারীর সাক্ষর.....

**Title: Prevalence of common musculoskeletal disorders among paraplegic wheelchair users**

**Questionnaire**

<b>Interview Schedule</b>			
<b>Part- I: Patient's Identification</b>			
<b>(to be provided by patient or attendant)</b>			
<b>1.1</b>	Identification number:	Date of Interview:	
<b>1.2</b>	Address:	Contact no:	
<b>1.3</b>	Consent Taken :	Yes	No
<b>Part- II: Patient's Socio-demographic Information</b>			
<b>(To be collected from Record/Patient/Care giver)</b>			
<b>2.1</b>	Age (In year): ..... Yrs		
<b>2.2</b>	Sex:	Female	01
		Male	02
<b>2.3</b>	Marital status:	Married	01
		Unmarried	02
<b>2.5</b>	Educational level?	Illiterate	01
		Literate	02
		Well educated	03
<b>2.6</b>	Occupation?	Rickshaw puller	01
		Agriculture	02
		Factory/garments worker	03
		Driver	04
		Businessman.	05
		Day laborer.	06
		Unemployed	07
		Housewife	08
		Teacher	09
		Student	10
		Other(Specify): _____	11
<b>2.7</b>	What is the average monthly income of your household?	_____ (Taka)	

<b>2.8</b>	Residential Area	Rural Urban	01 02
<b>Part-III: Physiotherapy related Information</b> (To be collected from Record/ Care provider/Clinical examination)			
<b>QN</b>	<b>Questions</b>	<b>Responses/Answers</b>	<b>Code</b>
<b>IIIa:</b>	History of injury (HI)		
<b>3.1</b>	Date of injury:		
<b>3.2</b>	Date of admission:		
<b>3.4</b>	Causes of injury:	<input type="checkbox"/> Motor Vehicle Injury <input type="checkbox"/> Fall From Height <input type="checkbox"/> Fall while carrying heavy Load <input type="checkbox"/> Sports related <input type="checkbox"/> Fall of heavy object on back <input type="checkbox"/> Other (Please Specify)	01 02 03 04 05 06
<b>3.5</b>	Level of injury:	<input type="checkbox"/> Thoracic <input type="checkbox"/> Lumber <input type="checkbox"/> Thoracolumber <input type="checkbox"/> Sacral	01 02 03 04
<b>IIIb:</b>	Physical status at admission	<input type="checkbox"/> Paralyzed lower limbs <input type="checkbox"/> Weakness of lower limbs	01 02
<b>IIIc:</b>	Initial Neurological level by ASIA:	<input type="checkbox"/> Complete <b>A</b> <input type="checkbox"/> Incomplete <b>B</b> <input type="checkbox"/> Incomplete <b>C</b> <input type="checkbox"/> Incomplete <b>D</b> <input type="checkbox"/> Normal <b>E</b>	01 02 03 04 05
<b>IIId:</b>	Skeletal level	<input type="checkbox"/> Thoracic <input type="checkbox"/> Lumber <input type="checkbox"/> Thoracolumber <input type="checkbox"/> Sacral	01 02 03 04

<b>IIIId:</b>	Diagnosis(During admission)	<input type="checkbox"/> T/P <ul style="list-style-type: none"> <li>• Complete <b>A</b></li> <li>• Incomplete <b>B/C/D/E</b></li> </ul>	01 02
<b>Part IV: Musculoskeletal Disorders related questions</b> (To be provided by the patient/attendant)			
<b>4.1</b>	Have you feel tightness or (decreased JROM) contracture of your any joint?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.2</b>	Have you feel any pain on your shoulder?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.3</b>	Have you feel any pain on your back?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.4</b>	Have you any fracture after injury?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.5</b>	Have you feel pain on your neck?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.6</b>	Have you feel pain on your buttock?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.7</b>	Have you feel pain on your chest?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.8</b>	Have swelling in any of your joint (ankle)?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02
<b>4.9</b>	Have you feel any other problem/discomfort due to technical problem of your wheelchair?	<input type="checkbox"/> Yes <input type="checkbox"/> No	01 02

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**Thank you for your assistance.....**

শিরোনামঃ হুইলচেয়ার ব্যবহারকারী অর্ধাঙ্গের পড়াঘাত গ্রন্থদের মধ্যে অস্থিপঞ্জর এবং পেশী সমূহের  
সচরাচর দৃষ্ট অস্বভাবিকতার সর্বব্যাপিতা ।

প্রশ্নাবলী/প্রশ্নমালা

সাক্ষাৎকারের সময়সূচী			
পর্ব-১ঃ রোগীর সনাক্তকরণ/পরিচয়			
(রোগী অথবা রোগীর সহকারী তথ্যপ্রদান করবেন)			
১.১ সনাক্তকরণ নম্বরঃ	* সাক্ষাতের তারিখঃ		
১.২ ঠিকানাঃ	* যোগাযোগ/ফোন নম্বরঃ		
১.৩ অনুমতি নেওয়া হল : হ্যাঁঃ <input type="checkbox"/>	নাঃ <input type="checkbox"/>		
পর্ব- ২ঃ রোগীর আর্থসামাজিক অবস্থার তথ্যাবলী			
(রোগী অথবা রোগীর সহকারী তথ্যপ্রদান করবেন)			
ক্রমিক নং	প্রশ্ন	উত্তর	কোড
২.১	আপনার বয়স	-----বছর	
২.২	লিঙ্গ	<ul style="list-style-type: none"><li>▪ মহিলা</li><li>▪ পুরুষ</li></ul>	০১ ০২
২.৩	বৈবাহিক অবস্থা	<ul style="list-style-type: none"><li>▪ বিবাহিত</li><li>▪ অবিবাহিত</li></ul>	০১ ০২
২.৪	শিক্ষাগত যোগ্যতা	<ul style="list-style-type: none"><li>▪ অক্ষরজ্ঞান সম্পন্ন</li><li>▪ নিরক্ষর/মূর্খ</li><li>▪ সুশিক্ষিত</li></ul>	০১ ০২ ০৩

২.৫	পেশা	<ul style="list-style-type: none"> <li>▪ রিকশা চালক</li> <li>▪ কৃষিকাজ</li> <li>▪ ফ্যাক্টরী/পোশাক কারখানার শ্রমিক</li> <li>▪ গাড়ী চালক</li> <li>▪ ব্যবসা</li> <li>▪ শ্রমিক</li> <li>▪ বেকার</li> <li>▪ গৃহিণী</li> <li>▪ শিক্ষকতা</li> <li>▪ ছাত্র/ছাত্রী</li> <li>▪ অন্যান্য</li> </ul>	০১ ০২ ০৩ ০৪ ০৫ ০৬ ০৭ ০৮ ০৯ ১০ ১১
২.৬	মাসিক আয়	----- টাকা	
২.৭	আবাসিক এলাকা	<ul style="list-style-type: none"> <li>▪ গ্রাম</li> <li>▪ শহর</li> </ul>	০১ ০২
<b>পর্ব-৩ : ফিজিওথেরাপী সম্পর্কিত তথ্যাবলী</b> (রোগী অথবা রোগীর সহকারী তথ্যপ্রদান করবেন)			
<b>IIIa</b>	<b>আঘাতের ইতিবৃত্ত / ইতিহাস</b>		
৩.১	আঘাতপ্রাপ্তের তারিখ		
৩.২	ভর্তির তারিখ		
৩.৩	আঘাতের কারণ	<ul style="list-style-type: none"> <li>▪ মটর যানের আঘাত</li> <li>▪ উপর থেকে পড়ে</li> <li>▪ ভারী কিছু বহন করার সময় পড়ে গিয়ে</li> <li>▪ পিঠে ভারী কিছু পড়েছে</li> <li>▪ খেলাধুলার কারণে</li> <li>▪ অন্য কারণে</li> </ul>	০১ ০২ ০৩ ০৪ ০৫ ০৬

৩.৬	মেরুদন্ডের কোন অংশে আঘাত পেয়েছেন	<ul style="list-style-type: none"> <li>▪ বক্ষদেশীয় অংশে</li> <li>▪ কটীদেশীয় অংশে</li> <li>▪ বক্ষ এবং কটীদেশীয়</li> <li>▪ শ্রোণীদেশীয় অংশে</li> </ul>	০১ ০২ ০৩ ০৪
IIIb	ভর্তিকালীন শারীরিক অবস্থা	<ul style="list-style-type: none"> <li>▪ নিম্নাঙ্গের পক্ষাঘাত</li> <li>▪ নিম্নবাহুর দুর্বলতা</li> </ul>	০১ ০২
IIIc	প্রারম্ভিক স্নায়ু তত্ত্বীয় অবস্থা (এশিয়ার স্কেল অনুযায়ী)	<ul style="list-style-type: none"> <li>▪ সম্পূর্ণ A =1</li> <li>▪ অসম্পূর্ণ B =2</li> <li>▪ অসম্পূর্ণ C =3</li> <li>▪ অসম্পূর্ণ D =4</li> <li>▪ স্বাভাবিক E =5</li> </ul>	০১ ০২ ০৩ ০৪ ০৫
III d	প্রারম্ভিক স্নায়ু তত্ত্বীয় অবস্থা	<ul style="list-style-type: none"> <li>▪ বক্ষদেশীয় অংশে</li> <li>▪ কটীদেশীয় অংশে</li> <li>▪ বক্ষ এবং কটীদেশীয়</li> <li>▪ শ্রোণীদেশীয় অংশে</li> </ul>	০১ ০২ ০৩ ০৪
IIIe	নিশ্চিত পক্ষাঘাতের ধরন	<input type="checkbox"/> অর্ধাঙ্গের পক্ষাঘাত <ul style="list-style-type: none"> <li>▪ সম্পূর্ণ</li> <li>▪ অসম্পূর্ণ</li> </ul>	০১ ০২
<b>পর্ব-৪ঃ অস্থিগুহর এবং পেশী সমূহের অস্বাভাবিকতা সম্পর্কীয়</b> <b>(রোগী অথবা রোগীর সহকারী তথ্যপ্রদান করবেন)</b>			
৪.১	আপনার কি কোন সন্ধি আঁটসাঁট অথবা কনট্রাকচার হয়েছে?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>	
৪.২	আপনি কি স্কন্ধদেশ বা কাঁধে কোন ব্যথা অনুভব করেন?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>	
৪.৩	আপনি কি কটীদেশীয় অংশে কোন ব্যথা অনুভব করেন?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>	



8.8	আঘাত পরবর্তী সময়ে কি আপনার কোন অংশ ভেঙ্গেছিল?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>
8.৫	আপনি কি গ্রীষ্মদেশীয় অংশে কোন ব্যথা অনুভব করেন?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>
8.৬	আপনি কি বাটক অংশে কোন ব্যথা অনুভব করেন?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>
8.৭	আপনি কি আপনার বুকে কোন ব্যথা অনুভব করেন?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>
8.৮	আপনার অ্যাঙ্কেল সন্ধি কি ফুলা আছে?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>
8.৯	হুইলচেয়ারের যান্ত্রিক সমস্যার কারণে কি আপনি কোন সমস্যা/অস্বাচ্ছিবোধ করেন?	<ul style="list-style-type: none"> <li>▪ হ্যাঁ=০১</li> <li>▪ না=০২</li> </ul>

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 আপনার সহযোগিতার জন্য আপনাকে ধন্যবাদ.....