PREVALENCE OF SHOULDER PAIN AMONG TETRAPLEGIA PATIENTS ATTENDED AT CRP.

Sharif Hossain

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

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BHPI, CRP, Savar, Dhaka-1343

Bangladesh Health Professions Institute (BHPI)

Department of physiotherapy

CRP, Savar, Dhaka-1343

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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.

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

……..
Nasirul Islam
B. Sc. PT (Hons.), MPH
Assistant professor &
Course Coordinator, M. Sc. in physiotherapy
BHPI, CRP, Savar, Dhaka
Supervisor.

…….
Mohammad Anwar Hossain
B. Sc. PT (Hons.), Dip. Ortho. Med., MPH
Associate professor
Head, Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

……..
Muhammad Millat Hossain
B. Sc. PT (Hons.),
Lecturer
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

……..
Md. Shofiqul Islam
B. Sc. PT (Hons.), MPH
Assistant professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

……
Md. Obaidul Haque
B. Sc. PT (Hons.), Dip. Ortho. Med., MPH
Associate Professor of Physiotherapy &
Head of the Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

Declaration

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

Signature: **Date:**

Sharif Hossain
Bachelor of Science in Physiotherapy (B.Sc. PT)
Session: 2006-2007
BHPI, CRP, Savar, Dhaka-1343

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Acronyms

ASIA	American Spinal Cord Injury Association.
BHPI	Bangladesh Health Professions Institute.
BMRC	Bangladesh Medical and Research Council.
CRP	Center for Rehabilitation of Paralyzed
MRI	Magnetic Resonance Imaging
NSCISC	National Spinal Cord Injury Statistical Center
ROM	Range of Motion
SCI	Spinal Cord Injury.
SPSS	Statistical Package of Social Sciences.
TSCI	Traumatic Spinal Cord Injury.
UK	United Kingdom
US	United States
VAS	Visual Analogue Scale
WHO	World Health Organization.

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Abstract

Purpose: The purpose of the study was to explore the prevalence of shoulder pain among tetraplegia patients attended at CRP. *Objectives:* To calculate number of all tetraplegia patients with shoulder pain from 10th February 2013 to 7th April 2013 among all tetraplegia patients and percentage of this proportion; to explore socio demographic characteristics (age, sex, residential area) of tetraplegia patients with shoulder pain; to measure the severity of shoulder pain with find out aggravating and ease factors. *Methodology:* A quantitative (cross sectional) research model in the form of a prospective type survey design is carried out in this study. 70 tetraplegia patients were conveniently selected from SCI unit of CRP, Savar, Dhaka, Bangladesh. The tools used to collect data included direct interview, a body discomfort assessment tool that consists of Visual Analogue Scale (VAS) and a questionnaire. Data was collected by mixed type questionnaire and confidentiality of information and voluntarily participation were ensured by the researcher. Data were numerically coded and captured in Microsoft Excel 10, using an SPSS 16.0 version program. *Results:* The finding of the study provides a baseline of information about prevalence of Shoulder pain among tetraplegia patients. The result of the study shows that, the prevalence of shoulder pain is (61.40%), among the tetraplegia patients attended at CRP. Among the cases gender distribution, male (65.10%) and female (34.90%). The most affected age range is 30-35years of age (30.29%). The severity of pain among the cases includes moderate pain (65.10%), mild pain (14%) and severe pain is (20.90%). Most of the participants (86%) pain had increased during movement whenever only (14%) patient's pain had increased during rest. The study found that the (32.60%) patient's pain has radiated and most of the radiating pain was shoulder to elbow (55.1%). *Conclusion:* From this study it is concluded that shoulder pain is the common problem of tetraplegia patients. Prevention of shoulder pain is beneficial for tetraplegia patients. To prevent shoulder pain, we should focus on awareness about the prevalence of shoulder pain among tetraplegia patients and greater attention to be given to other risk factors such as history of shoulder injury and perception of health status after spinal cord injury.

Key word: Shoulder pain, Prevalence, Tetraplegia.

CHAPTER-I: INTRODUCTION

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 countries of Bangladesh (Haque et al., 1999). Spinal cord injury (SCI) is an acute and devastating event that results in significant and permanent life changes for the individuals who are injured, as well as their surroundings. Worldwide, approximately 90 million people currently suffer from SCI and the incidence in developed countries varies from one to five persons per 100,000 (Holtz & Levi, 2006). In the Nordic countries the incidence of traumatic SCI is about 11-16 cases per million inhabitants per year (Biering-Sorensen, 2002), and prevalence rates of 223-755 per million inhabitants have been reported in studies from Australia, Finland, Sweden, and USA (Dahlberg et al., 2005). National Spinal Cord Injury Database (NSCID, 2005) has been estimated that 11,000 spinal cord injuries occur each year in the United States and that approximately 222,000 to 288,000 individuals with SCI are currently living in the United States.

In Sweden, approximately 120 individuals suffer from traumatic spinal cord injury every year, resulting in prevalence of 500 persons (Holtz & Levi, 2006). "Between" 400-430 people sustain spinal cord injuries in Australia each year (Paraquad, 1997). The age adjusted incidence rate for SCI is estimated to be 14.5 per million of population in Australia (O'Connor, 2000). Many studies have shown that more than two thirds of individuals with SCI reported suffering or having suffered from shoulder pain. In addition, upper limb pain may occur as early as five years post injury (Sie et al., 1992). The etiology of shoulder pain in individuals with SCI may be partially a result of overload (overuse). The patient with SCI excessively overloads the upper limbs, especially the shoulders, using them more frequently and in a higher number of activities than people without SCI. Those segments are used for performing transferences, locomotion with crutches and sport related activities. Also, due to the need to remain in a seated position, many daily activities must be performed with the arms raised above the level of the head, resulting in muscle imbalance and overload (Lee TQ et al., 2002). Some tetraplegia patients experience pain in upper limbs that

interfere on essential daily activities or bed mobility practice, as when dressing and performing transferences. Chronic pain incidence was investigated in 384 tetraplegia patients, from these, 75.6% referred pain in the upper limbs, limiting function and their independence (Turner et al., 2006). Among musculoskeletal complications in SCI patients, shoulder pain was the most relevant one, present in 48% of the 216 studied patients (Vogel et al., 2002).The incidence of shoulder pain in acute tetraplegia has been reported to range from 51% to 78%.1-4 Shoulder pain limits participation in rehabilitation activities and reduces the time available for functional retraining (MacKay, 1994). The degree of functional independence that a person with tetraplegia can achieve is influenced by shoulder musculoskeletal integrity (Waring & Maynard, 2002). Loss of independence may have a detrimental psychological effect and financial consequences (eg, the need to employ caregivers and/or to purchase additional equipment), and it increases the physical burden on caregivers. Shoulder pain may therefore be functionally and economically equivalent to a higher lesion level (Sie et al., 1992).

Many tetraplegia patients experience shoulder pain that interfere on essential daily activities, as when dressing and performing transferences. On the other hand, many tetraplegia patients complain of shoulder joint pain during medical rehabilitation, sometimes pain occurs during the early stage of medical rehabilitation after SCI. Shoulder pain experienced during the medical rehabilitation period disturbs the progress of rehabilitation and the patients' ADL. Due to shoulder pain patients feel disturbed when perform residual function in each of the major upper limb joint, such as grooming, hygiene, eating, and dressing, as a result muscle is weakening day by day and patients feel discomfort both physically and mentally (Lee, 2002). As tetraplegia individuals usually experience a higher level of functional and strength restrains on upper limbs when compared to paraplegic individuals, it is not of surprise that tetraplegia patients experience a high prevalence and incidence of shoulder pain during functional activities when compared to paraplegic people (Holtz & Levi, 2006). This corroborates with the study by Sie et al. 1992, who observed a higher prevalence of shoulder pain after SCI in tetraplegia (58%) than in paraplegic individuals (36%).

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 Bangladesh. 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 effect on a family a society as well as in whole country.

Literature shows that shoulder pain is common problem experienced by tetraplegia patients. A large number of populations suffer from shoulder pain among tetraplegia patients. Many secondary complications arise, due to lack of awareness of patients and family after having shoulder pain among tetraplegia patients. Strategy related to prevention of shoulder pain should be taken in order to prevent it. If enough knowledge about the shoulder pain is given among tetraplegia patients, it would take fewer rescues to prevent further complications. The aim of the study is to find out the Prevalence of shoulder pain among tetraplegia patients. After completing the study, we will be aware about the prevalence of shoulder pain among tetraplegia patients, subsequently, this issue shall be addressed to prevent such prevalence. This is very important for the tetraplegia patients focusing on preventing the shoulder pain and improving quality of life for people with tetraplegia patients. Finally, these study participants may be beneficial and practitioner will gain knowledge from this study.

1.3 Research question

What is the Prevalence of shoulder pain among tetraplegia patients?

1.4 Aim

The aim of the study was to find the Prevalence of shoulder pain among tetraplegia patients attended at CRP.

1.5 Objectives

1.5.1 General objective

To identify the prevalence of shoulder pain among tetraplegia patients attended at CRP.

1.5.2 Specific objectives

- To calculate number of all tetraplegia patients with shoulder pain from 10th February 2013 to 7th April 2013 among all tetraplegia patients and percentage of this proportion.
- To explore socio demographic characteristics (age, sex, residential area) of tetraplegia patients with shoulder pain.
- To measure the severity of shoulder pain.
- To find out the aggravating factors of shoulder pain.
- To find out the ease factors of shoulder pain.

1.6 Conceptual Framework

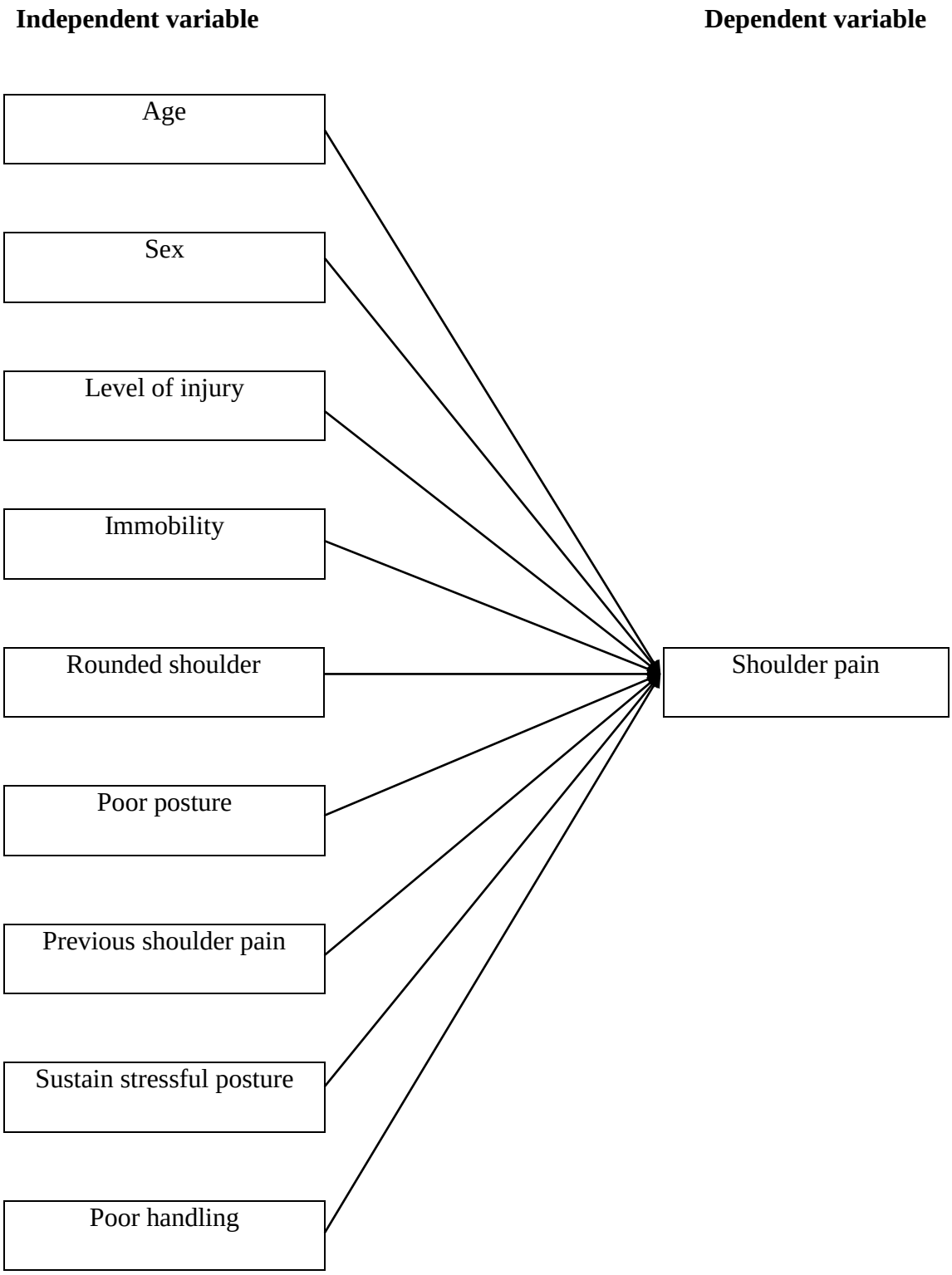

Table-1: List of variables

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.

Shoulder Pain

Shoulder pain is any pain in or around the shoulder joint.

Tetraplegia

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

Rehabilitation

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

Complete injury

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

Incomplete injury

Preservation of motor and sensory function below the neurological level of injury that included the lowest sacral segment.

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.

CHAPTER-II: LITERATURE REVIEW

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 and sensory information travels between brain and body via nerves which pass up and down through the spinal cord along definite pathway. When the path is broken the massage 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).

Spinal cord lesion (SCL) continues to be a major cause of disability throughout Asia as well as in Bangladesh. Patients, who have SCL, very often develop life threatening complications (Islam et al., 2011). 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 caring 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 and 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 majority of the persons with SCI (70-80%) are men, but women have increased their proportion during the last years (Biering-Sorensen et al., 1990) and according to the NSCID (2005), since 2000, 79.6 % of the cases are male, with a slight trend toward a decreasing percentage of males, with 81.1% of new injuries among males prior to 1980.

The educational levels of individuals with SCI tend to be lower than those of the general population, and most people with SCI have never been married at time of injury (51.8%), with the reduced likelihood of getting married after injury (NSCID, 2005). SCI chiefly affects young people between the ages of 16 and 30. They account for 55% of all SCI, with 80-82% of cases occurring in males. It was reported that, the mean age at injury has risen during the last years, to be 38-39 years (Alaranta et al., 2000). In detected that the mean age at injury is 33 years, Holtz and Levi (2006) reported, the median age is approximately 30years, and male to female ratio is 4:1. which is clearly higher than that for persons with traumatic SCI, and the male/female ratio was 1.2:1 (Catz et al., 2004).

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 populations 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 analyzed 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).

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).

Pain in patients with traumatic spinal cord injuries (SCI's) is a well-documented finding (Donovan et al., 1982). Estimates have been made that up to 70% of patients with SCI have chronic pain (Nepomuceno et al., 1979). Shoulder pain occurring in patients with SCI's is of special interest because of their dependence on their upper extremities for the basic activities of daily living such as wheelchair propulsion, transfers, and dressing. Shoulder pain may also be one of the most common musculoskeletal pain problems among people with SCI's. It can be acute or chronic, can be localized or diffuse, and can have many etiologies. A 1979 survey from England reported that over 50% of paraplegics and quadriplegics have chronic shoulder pain (Nichols et al., 1979). Fleming and Dawson reported in 1959 that 14 of 18 (78%) new patients with quadriplegia admitted for initial rehabilitation had shoulder or neck pain (Fleming & Dawson, 1958).

It’s known the shoulder girdle is consisting of several joints and their articulations, and one of the synovial and most moveable joint in human body and also it takes maximum part of activities of daily living.The glenohumeral joint consist of the humerus which articulating with glenoid cavity of scapula. The main stabilization of this joint is provided by the musculature, joint capsule and several ligaments. As a study noted, after brain lesion affecting the sensorimotor systems there is decreased descending inputs to spinal motor neurons leading to muscle paralysis and weakness, this can cause immobility of the limb or muscular imbalance (Carr & Shepherd, 2000).

Although there were several explanations about the etiology, specific causes of shoulder pain is still unclear. As the study reported that several factors have been associated with shoulder pain including, glenohumeral misalignment or subluxation, limitation of shoulder range of motion (ROM), adhesive changes of the shoulder musculatures, shoulder hand syndrome, also secondary brachial plexus or suprascapular nerve injuries and hemi neglect (Yeihan & Yesim, 1997). The shoulder pain can present initially in flaccid stage of onset and lasts from a few weeks and may be longer or in spastic muscle tone and with or without subluxation. A study reported

that there is close association between spasticity and shoulder pain (Wade, 1996). Spasticity or flaccidity can cause the scapula to fail to rotate simultaneously when the arm is elevated or abducted, this can result in sensitive structures being pinched between the head of the humerus and the acromion process causing shoulder pain Another study shows , shoulder pain can be associated with lifting the patient by pulling on the arm by cares and staff furthermore this study also been reported that passive range of motion exercise, including overhead pulley exercise, have been implicated in injury of the paralyzed shoulder (Downie, 1993).

While shoulder pain may not initially limit the ability to perform activities independently, it may have functional costs such as rapid fatigue, loss of endurance, decreased speed or efficiency of movement, low tolerance for prolonged work or leisure activity and decreased cardiorespiratory endurance. Eventually shoulder pain may eliminate functional activities that are associated with pain (Curtis et al., 1995).

The shoulder joint consists of four articulations: the sternoclavicular joint, acromioclavicular joint, glenohumeral joint and scapulothoracic articulation (Sarrafian, 1983). One side is round, and the other side is flat .The round side is called the humeral head, and the flat side is the glenoid. This comprises the shoulder joint. The bones that form the shoulder joint, because of their shape, do not provide much, if any, built in stability. The shoulder joint is a ball and socket joint and it is the most freely movable of the joints in the body (Watson, 2005).

The structures that do provide stability are the ligaments which surround the joint and are attached to the glenoid on one side and the humerus on the other side. These ligaments are most prominent in the front, underneath, and in the back of the joint. They are called the glenohumeral ligaments. There is also a thickened rim of 19 cartilages which surrounds the bony glenoid and acts to deepen the surface to more of a saucer (Lal, 1998).

This cartilage is called the glenoid labrum. On the top of the shoulder, there is a group of tendons attached to muscles which are called the rotator cuff. These tendons that make up the rotator cuff are not generally involved in a shoulder that dislocates,

except in older individuals. Overuse of the shoulder, such as with pitching, can lead to irritation of the rotator cuff muscles and tendons as well as weakness. Some athletes that do a lot of throwing or participate in overhead racquet sports develop subluxation or instability secondary to these activities. They develop a tendonitis of the rotator cuff as it tries to compensate for the instability of the shoulder. In this group of patients, the initial treatment should be to strengthen the rotator cuff musculature, to use nonsteroidal anti-inflammatory drugs, and to rest. Failure to improve and to respond positively to this treatment may lead to surgical recommendation to correct the instability. The names of the muscles and tendons that comprise the rotator cuff are the subscapularis in the front or anterior, the biceps tendon in the front and top of the shoulder, the subraspinatus which is more or less on top and the infraspinatus and teres minor which comprises the posterior or back. The ligaments which provide stability to the joint are actually underneath the cuff tendons. These muscles and tendons do support the shoulder, but their main function is to move the arm and shoulder. Again, the ligaments, anterior (front), inferior (bottom), and posterior (back), give the joint stability (Longobardi, 2007).

For most people who have sustained a spinal cord injury mobility is affected by a number of factors including the accessibility of the environment, the appropriateness of the wheelchair and the functional ability of the user. Tetraplegia patients (target population in this thesis) as one of the most common type of SCI have been trained to perform for functional locomotion, activities of daily living and sports practice. Some wheelchairs users experience pain in upper limbs that interfere on essential daily activities, as when try to performed daily living activities, driving, dressing and performing transferences. Some of them reject to propel their wheelchairs by themselves and invite others to propel them due to pain in their upper extremities especially the shoulder. While shoulder pain may not initially limit the ability to perform activities independently, it may have functional costs such as rapid fatigue, loss of endurance, decreased speed or efficiency of movement, low tolerance for prolonged work or leisure activity and decreased cardiorespiratory endurance. Eventually shoulder pain may eliminate functional activities that are associated with pain (Curtis et al., 1995).

Shoulder pain in the acute injured individual has been described to be due to high demands on weak or unconditioned muscles, whereas shoulder pain in the chronic phases is believed to be partly a result of overuse. Individuals who want to move and have poorly innervated trunk muscles must rely on their upper extremities for stability and mobility. In the chronic stage after SCI, soft tissue structures are exposed to overuse in activities of daily living, for example, in transfer in whom the shoulder becomes a weight-bearing joint. Subacromial impingement with bursitis, tendinopathy and tears of the rotator cuff (especially the supraspinatus), the biceps tendon, or both are the most common diagnoses of individuals with tetraplegia suffering from chronic nociceptive shoulder pain. Findings such as radiographic bone and joint abnormalities, that is, acromioclavicular joint space narrowing and osteolysis of the distal clavicle, have also been found to be common. Further complications described in tetraplegia patients, especially in peripheral neuropathies where the median nerve is the most commonly affected nerve and a high prevalence of carpal tunnel syndrome (Ballinger et al., 2000).

Shoulder pain in individuals with tetraplegia is believed to be multi-factorial, but the aetiology and associated factors have not been investigated fully. Some studies report that the prevalence of shoulder pain in subjects with tetraplegia increases the longer the time since injury. Others failed to observe any differences regarding time since injury and age in subjects with and without shoulder pain. Few studies have carefully addressed the association of age and time of wheelchair use with shoulder pain or possible interactions between these factors (Watson, 2005). Following tetraplegia: a follow-up study 2-4 years after injury which revealed that Shoulder pain prevalence was 70%. Pain was associated with discharge motor level of C6-T1. Pain was most commonly located in the shoulder joint (Salisbury et al., 2006). Other suggested risk factors for the development of shoulder pain are the duration of injury, age (e.g. older people have a higher risk than younger people), higher body mass index (BMI) (Boninger et al. 2001), and wheelchair propulsion style (Boninger et al., 2002). Surveys involving as many as 450 wheelchair-based individuals find that as many as 73% report some degree of chronic upper-extremity pain, which they attribute primarily to wheelchair propulsion and transfers (Subbarao et al., 1995).

The prevalence and intensity of pain and associated patient characteristics in a national sample of veterans with paraplegia. Of particular interest were upper limb (UL) pain conditions, which pose unique challenges to individuals who use a wheelchair for mobility. Because the risk for UL pain conditions appears to increase over time, the associations among age, duration of wheelchair use, and UL pain were evaluated. Approximately 81% of the respondents reported at least a minimal level of ongoing unspecified pain and 69% experienced current UL pain (Gironda, 2004). Another study reported that, 51% of persons with SCI have shoulder problems. Common shoulder problems in persons with spinal cord injury begin with muscle imbalance that can lead to glenohumeral instability, impingement disease, rotator cuff tears, and subsequent degenerative joint disease. These problems can be attributed to the functional demands placed on the shoulder that are specific to patients with SCI, including overhead activities, wheelchair use, and Transfers (Lee & McMahon, 2002).

In another study for found that pain was primarily aggravated by movement and cold weather and relieved by rest and the most painful activity was lifting an object from overhead. Quality of life was affected by pain in 68.4% of participants (Salisbury et al., 2006).

A longitudinal study is conducted to determine if shoulder pain and range of motion (ROM) problems can be predicted by demographic, injury-related, body weight, and radiographic data over 3 years and to determine the relationships among these shoulder problems and functional limitations, disability, and perceived health. Eighty-nine adult men with TSCI were included in the study. The Acromioclavicular (AC) and the glenohumeral (GH) joints were x-rayed on plain Film in standard anteroposterior position. Functional limitations were determined with the Functional Independence Measurement (FIM) instrument; disability was measured with the Craig Handicap Assessment and Reporting Technique (CHART). Thirty percent had shoulder pain and 22% had shoulder ROM problems. Men with shoulder pain had lived longer with SCI, were more likely to report shoulder ROM problems, had lower CHART mobility scores, and were more likely to rate their health as fair than those without shoulder pain. Shoulder ROM Problems were more common among men who

were older, had AC joint narrowing, had lower FIM scores, and reported poorer health (Ballinger et al., 2000).

After SCI, excessive burden falls on the upper extremity, especially the shoulder. Overall, 51% of persons with spinal cord injury have shoulder problems. Common shoulder problems in persons with spinal cord injury begin with muscle imbalance that can lead to glenohumeral instability, impingement disease, rotator cuff tears, and subsequent degenerative joint disease. These problems can be attributed to the functional demands placed on the shoulders that are specific to patients with spinal cord injury, including overhead activities, wheelchair use, and transfers. Despite preventive exercises, shoulder problems in persons with spinal cord injury remain a significant problem, causing pain and functional limitations. The biomechanics of the shoulder for persons with spinal cord injury resulting from changes in muscle plasticity will be elucidated. Specifically, the effects of scapular protraction that can result from muscle imbalance, the age-dependent properties of the anterior band of the inferior glenohumeral ligament, and the influence of the dynamic restraints around the shoulder will be addressed (Lee & McMahon, 2002).

Another study compared the onset and prevalence of shoulder pain in athletic and nonathletic and the odds of having shoulder pain were twice as high among nonathletic as they were among athletes. This finding represents a significant difference over and above age differences, differences in years spent in a wheelchair, and differences in level of spinal cord injury. Athletes also have an average of 12 yrs. free of shoulder pain after becoming wheelchair bound, whereas nonathletic have only 8 yr. (Fullerton et al., 2003). A study review reported that an estimated 90% of all a physically straining form of ambulation that can lead to repetitive strain injuries in the arms and, eventually, to secondary impairments and disability. Further disability in bed-dependent individuals can lead to a sedentary lifestyle and thereby create a greater risk for cardiovascular problems. Studies shown that these patients mechanisms are less straining and more efficient. This article reviews these studies and substantiates that the frequent use of these alternative propulsion mechanisms may help prevent some of the secondary impairments that are seen (Van et al., 2001).

Since individuals with tetraplegia are generally more limited in upper extremity strength and function than are persons with paraplegia, we might expect that wheelchair users with tetraplegia would experience a higher prevalence and intensity of shoulder pain during functional activities than would wheelchair users with paraplegia. This was supported by Sie and associates who observed that significantly more individuals with tetraplegia than individuals with paraplegia reported that they had experienced shoulder pain since their SC1 (46% and 36%, respectively). Neither the intensity of shoulder pain nor the difficulty it imposes during functional activities has been compared in wheelchair users with respect to level of SCI. Identification of these problems in the SC1 population has implications for detection, prevention, and treatment of musculoskeletal complications and resulting secondary disability. Therefore, the purpose of the current study was to compare the prevalence and intensity of shoulder pain during specific functional activities in individuals with tetraplegia and individuals with paraplegia (Bayley, 1987).

As tetraplegia individuals usually experience a higher level of functional and strength restraints on upper limbs when compared to paraplegic individuals, it is not of surprise that tetraplegia wheelchair users experience a high prevalence and incidence of shoulder pain during functional activities when compared to paraplegic people. Observed a higher prevalence of shoulder pain after SCI in tetraplegia 46% than in paraplegic individuals 36% (Sie et al., 1992). The prevalence of shoulder injuries is also a time-dependent phenomenon. A percentage of 78% of tetraplegia individuals and of 35% of paraplegic individuals experience shoulder pain during the first 6 months after injury. After initial trauma, prevalence decreases, so that 33% of tetraplegia patients and 10% of the paraplegic patients experience shoulder pain 6 – 18 months after injury. But, overtime, prevalence increases, so that 20 years after SCI upper limbs pain, parenthesis - or both - is still common. This is accompanied by a functional decrease and by the replacement of a traditional wheelchair to an electric wheelchair (Nicholas et al., 1979).

Studies have investigated the prevalence of specific musculoskeletal pathologies among SCI carriers presenting painful symptoms at shoulder joint. Among those, imaging diagnosis (magnetic resonance and X-ray), questionnaire and physical

examination focusing shoulder joint were used to detect the prevalence of pathologies in tetraplegia patients. A total of 28 patients were studied, with average age of 35 years and average SCI time of 11.5 years. By magnetic resonance analyses, only a rotator cuff rupture was found. Five patients presented with distal osteolysis of the clavicle on the X-ray study, two of them bilaterally (Boniger et al., 2001).

Scapular and humeral movements during body weight lifting and transference maneuvers were studied in 25 asymptomatic volunteers. Findings of this study related to body lifting include the increase of protraction and inner rotation of the scapula and reduction of lateral bascule and humeral outer rotation. Those kinematical findings are similar for transference activities; however, they are higher at the supporting upper limb than at the non-supporting one. This kinematical pattern identified by scapula (increase of protraction, reduction of the lateral bascule and increased inner rotation) and by humerus (reduction of outer rotation), suggests that the performance of those tasks may expose shoulder joint to damaging positions due to the reduction of the sub acromial space (Ballinger et al., 2000).

The painful picture on the shoulder and the problems related to this joint are usually attributed to excessive activities and functional demand on that site. More attention should be given to exercises and preventive measures (Lee, 2002). Even because rest, which is frequently prescribed for the rehabilitation of soft parts injuries, may be difficult to perform, because it leads to the loss of functional independence required for performing daily activities; thus, recovery time may be longer than expected for a not-disabled person (Steinberg et al., 1995). The very use of a wheelchair may trigger a vicious circle of pain (Samuelsson, 2004). Clinical instructions to patients regarding the technique for making wheelchair propulsion effective, especially for women, must be provided, because the reduced use of force during wheelchair propulsion may minimize the development of shoulder injuries (Boninger et al., 2001). In addition, changes in the wheelchair design together with efforts to strengthen muscles and to make them more resistant may be considered for preventing the development of shoulder pain. Some studies addressing the conservative rehabilitation for people with focus the correction of wrong scapular and humeral movement pattern, targeting the normal restoring of scapulothoracic rhythm (Lee, 2002). Muscular strengthening of

adductors, inner rotators and outer rotators targeting a muscular balance of the shoulder joint is also considered as an important approach for prevention and treatment in paraplegic athletes (Kulig, 2001). Another important aspect in prevention and in rehabilitation programs is the incorporation of exercises for overall cardiovascular and muscular conditioning to minimize fatigue (Lee, 2002). Additionally, alternative methods should be studied as a replacement for push up maneuver in tetraplegic individuals (Newsam, 2003).

CHAPTER-III: METHODOLOGY

3.1 Study design

It was used a cross sectional research model to find out persons who were suffering from shoulder pain with regards to tetraplegia patients.

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 and only specialist rehabilitation Centre for the SCI patients in Bangladesh.

3.3 Study sampling and population

The study populations were spinal cord injury patients with tetraplegia who admitted at CRP. The sample was chosen by using convenient sampling. The researcher used a mixed type questioner to obtain the information which was related to shoulder pain.

3.4 Sample size

The equation of sample size calculation is given bellow:

$$n = \left\{\frac{z\left(1-\frac{\alpha}{2}\right)}{d}\right\}^2 \times pq$$

Here,

$z\left(1-\frac{\alpha}{2}\right)$ =1.96 {linked to 95% confidential interval (used to 1.96)}

P= 0.51 (P= prevalence and P= 51%)

q= 1-P

d= 0.05 {margin of error at 5% (value of 0.05)}

According to formula of sample size calculation for a cross sectional study, it would require total 286 subjects, but the researcher could recruit only 70 subjects due to resource constraint.

3.5 Inclusion criteria

- The patients attended at SCI unit at CRP, Savar, Dhaka.
- Both male and female were included.
- Participants with all age group took part in the study.
- Voluntary participants.

3.6 Exclusion criteria

- Patients who were medically unstable.
- Participants who had speaking and hearing problem.
- Subject who had mental disorders.
- Subjects who are unwillingness to participate.

3.7 Sampling technique

Seventy participants with tetraplegia were selected through convenience sampling and as it was one of the easiest, cheapest and quicker methods of the sample selection. Data was collected from spinal cord injury unit at CRP.

3.8 Data collection method and tools

Data was collected by using a structural mixed type questionnaire paper set by conducting to interview to collect information. The questionnaire sought information on identification demographic information and musculoskeletal related questions and neurological related questions. The tools used for collecting data were pen, pencils, paper, approved forms and consent forms and a bag for storing these tools.

3.9 Data collection procedure

There was a questionnaire for acquiring the participant's demographic information including age, sex, disease condition related information such as musculoskeletal related information, neurological related, and others information.

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 and pie charts also.

3.12 Ethical issues

A research proposal was submitted to local ethical review committee of Bangladesh Health Professions Institute (BHPI) for being approval. At first the researcher applied for official permission for the study from the head of the Physiotherapy Department of CRP. Then the head of the Physiotherapy Department of CRP permitted to collect data at SCI unit at CRP, Savar. The ethical consideration was making sure by an informed consent letter to the participant. Consent was obtained by providing each participant a clear description of the study purpose, the procedure involves in the study and also informing them that if they wish they can withdraw themselves at any time from the study.

Participant were explained about his/her role in the study and it was explained that there is no direct benefit from the study but in future, cases like these may be benefited from it. Participants are also advised that they are free to decline answering any questions during interview. The necessary information had been kept secure place to also ensure confidentiality. They were also assured that it would not cause any harm. Then they signed the consent form.

3.13 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 or finger trip (who were not able to give 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 SCI unit at 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 Limitations

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 just seventy (70) samples.
- There were a few researches completed in Bangladesh related to this research, so there was little evidence to support the result of this project with other study.
- The result of the study might not be generalized because of small number of sample.
- As the study was conducted at Centre for the Rehabilitation of the paralyzed (CRP) which may not represent the whole country.

CHAPTER-IV: RESULTS

Prevalence of shoulder pain

By following this formula,

$$\text{Prevalence} = \frac{\text{number of tetraplegia patients with shoulder pain (43)}}{\text{total tetraplegia patients (70)}} \times 100$$

Among the 70 participants 61.4% (n=43) were affected from shoulder pain and 38.6% (n=27) were not suffered from shoulder pain. Figure: 1 show the number of affected participants in pie.

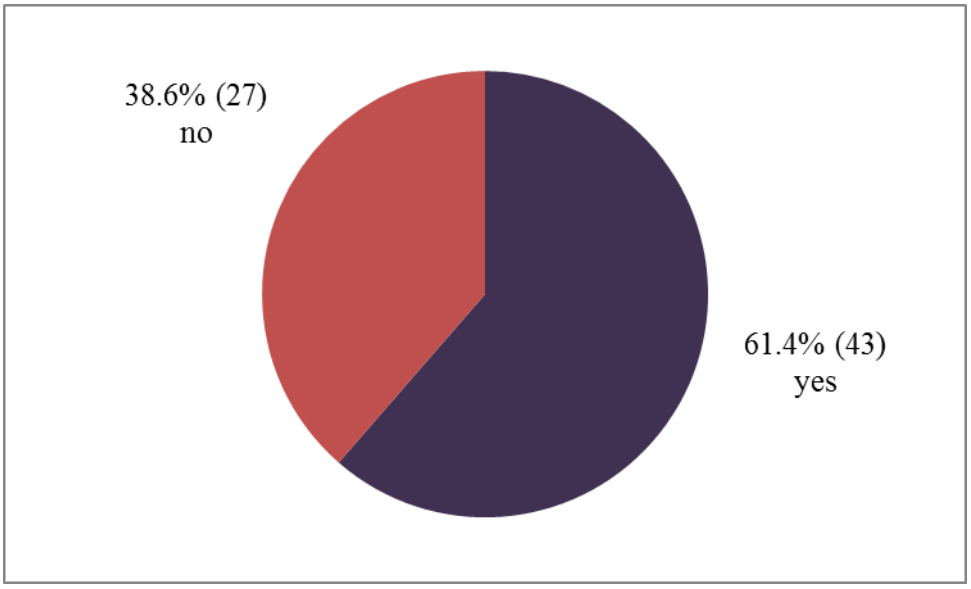

Figure -1: Prevalence of shoulder pain

Age group

Among the 43 cases, the age group 18-25 years there were 20.9% (n=9), age group 26-29 years 20.9% (n=9), age group 30-35 years 30.3% (n=13) and age of more than 35 years, there were 27.9% (n=12) people had suffered from shoulder pain. Other 27 tetraplegia patients whom had no shoulder pain, among them age group 18-25 years 14.8% (n=4), age group 26-29 years 44.4% (n=12), age range 30-35 years 18.5% (n=5) and age group >35 years is 22.2% (n=6). Table 2 shows, distribution of age group of the participants.

Age	Affected participants		Unaffected participants	
	Frequency	%	Frequency	%
18-25 years	9	20.9	4	14.8
26-29 years	9	20.9	12	44.4
30-35 years	13	30.3	5	18.5
>35 years	12	27.9	6	22.2
Total	**43**	**100**	**27**	**100**

Table-2: Age group

Sex of the participants

Analysis shows that among the 43 cases 65.1% (n=28) participants were male and 34.9% (n=15) were female and among the other 27 participants 66.7% (n=18) were male and 33.3% (n=9) were female. Table 3 shows, distribution of gender within cases and other participants.

Gender	Participants	Affected	Unaffected
Male	46	65.1% (n=28)	66.7% (n=18)
Female	24	34.9% (n=15)	33.3 % (n=9)
Total	**70**	**100% (n=43)**	**100% (n=27)**

Table-3: Gender distribution within cases and unaffected participants

Residential Area

In this study, among the 43 affected participants, there were 95.3% (n=41) are lived in rural areas and only 4.7% (n=2) are lived in urban areas. Rest of 27 unaffected participants there were 85.2% (n=23) rural and 14.8% (n=4) were urban people. Table 4 shows the number of affected and unaffected peoples living condition.

Living area	Affected participants		Unaffected participants	
	Frequency	**%**	**Frequency**	**%**
Rural	41	95.3	23	85.2
Urban	2	4.7	4	14.8
Total	**43**	**100**	**27**	**100**

Table-4: Residential status of total participants

Severity of pain

Study revealed that among the 43 cases 6 (14%) participants had mild symptoms and 28 (65.1%) participants' had moderate symptoms and 9 (20.9%) have severe symptoms of pain. Figure 2 shows the severity of pain in pie.

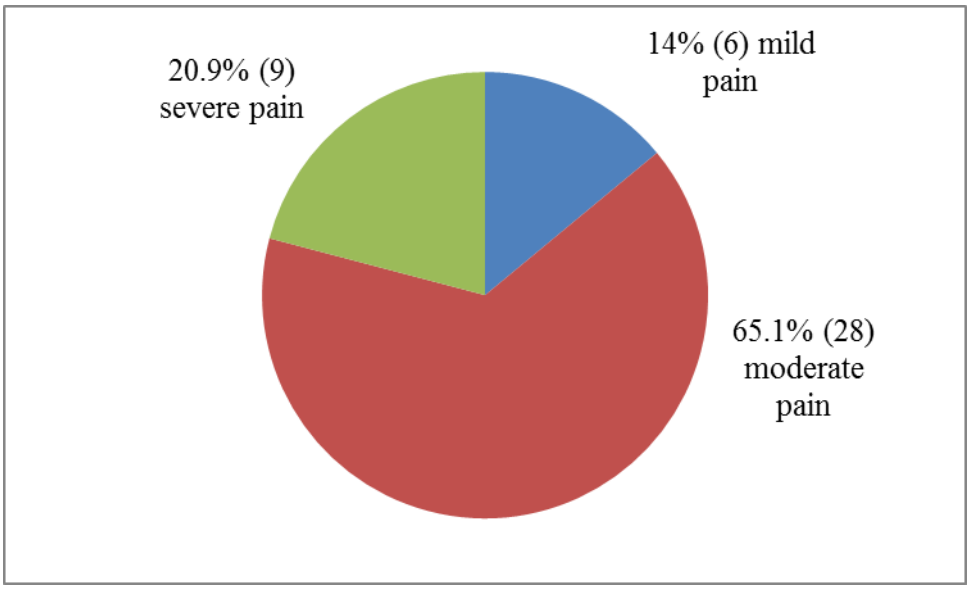

Figure -2: severity of pain among the participants.

Aggravating factors of pain

Among the 43 cases, 37 (86%) participants pain is aggravated with movement and 6 (14%) participants pain aggravates with rest. Figure 3 shows the aggravating factors of pain in pie.

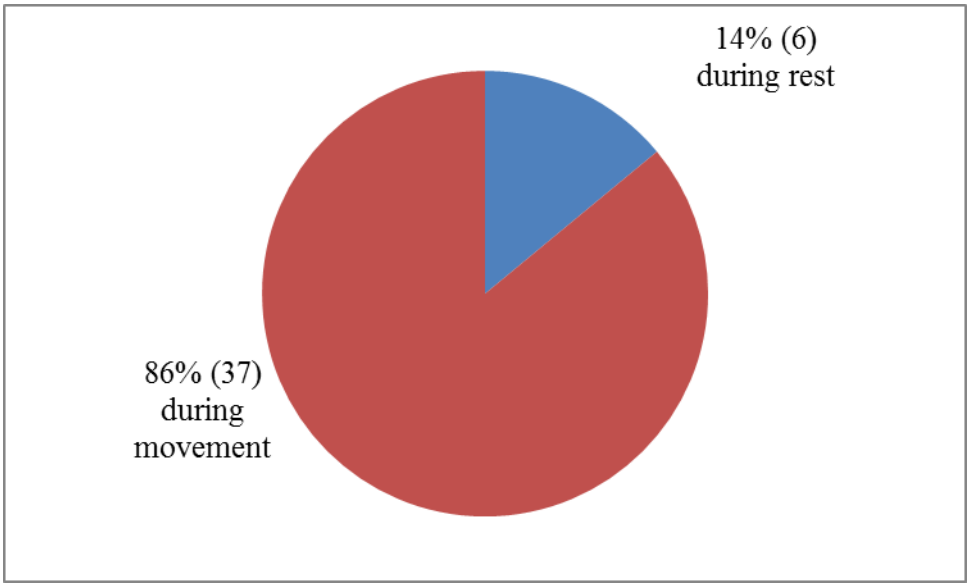

Figure -3: Aggravating factors of pain

Ease factors of pain

Among the 43 cases, 37 (86%) participants pain is decreases with rest and 6 (14%) participants pain decreases with movement. Figure 4 shows the ease factors of pain in pie.

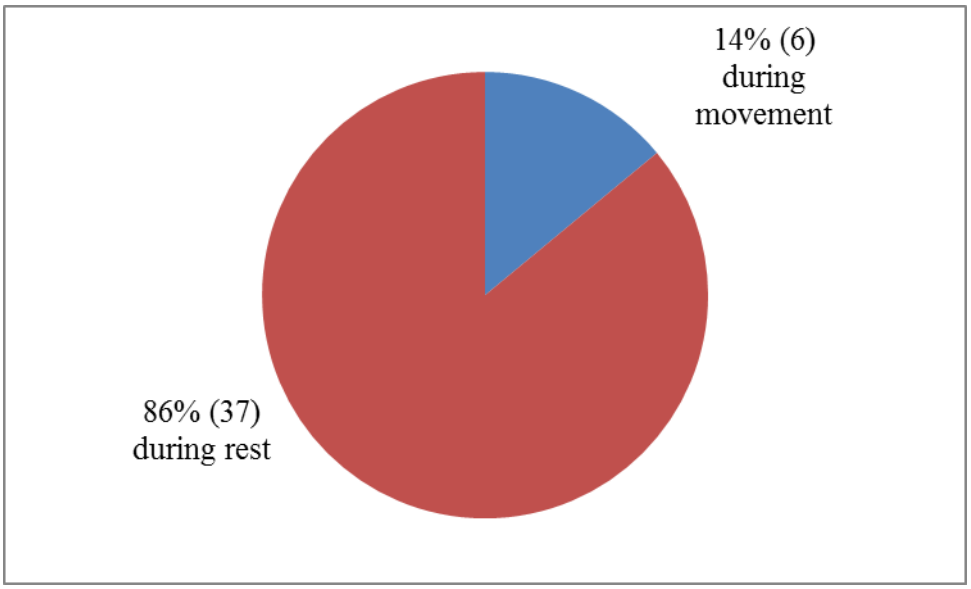

Figure -4: Ease factors of pain

Pain radiation

Study revealed that among the 43 cases, 14 (32.6%) is radiated pain and 29 (67.4%) local pain. Figure 5 shows radiating and local pain in pie.

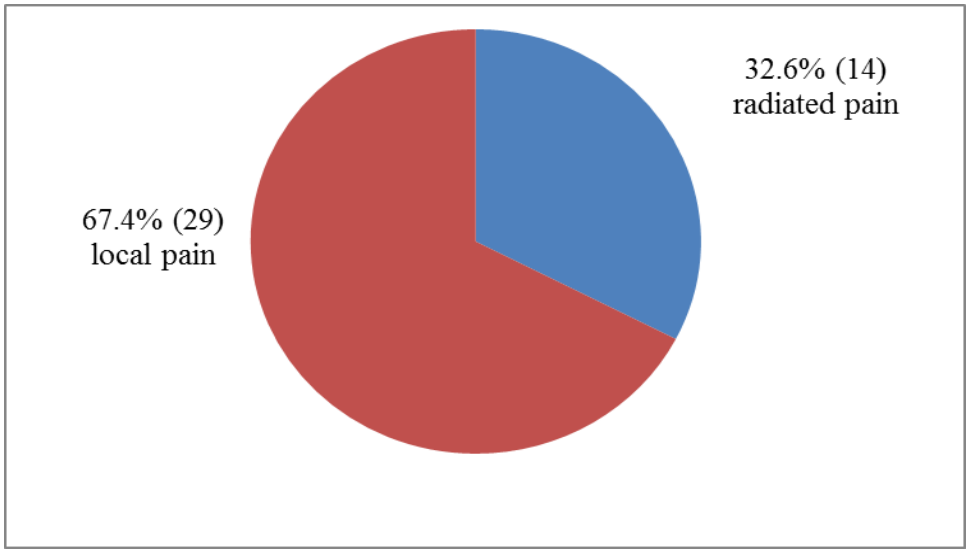

Figure -5: Pain radiation

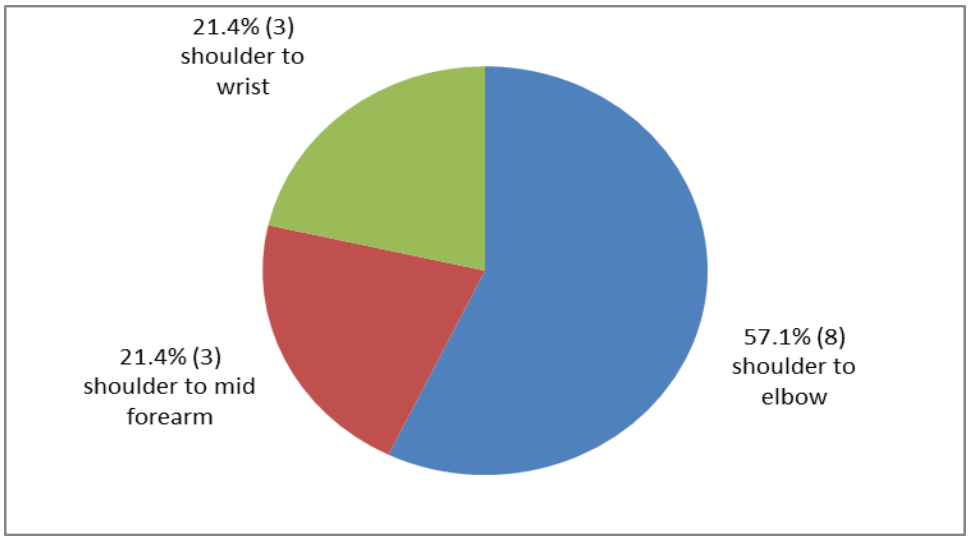

Figure -6: Area of the radiation

Figure 6 shows the area of radiation, 8 (57.1%) participants pain radiation were from shoulder to elbow, 3 (21.4%) were shoulder to mid forearm and 3 (21.4%) were shoulder to wrist.

CHAPTER-V: DISCUSSION

This study examined the prevalence of shoulder pain among tetraplegia patients. Seventy patients of tetraplegia were studied. By this study it has been found that near the 2/3 of the participant 61.4% (43) suffered from shoulder pain out of 70 and 38.6% (27) have no pain. This high prevalence rate was similar of many studies all over the world. For example: Nicholas et al. (1979) have found that the shoulder pain affects over one half (51.4%) of tetraplegia respondents. This result is comparable to Marius in 2010 at UK that (58.34%) tetraplegia patients have been reported of shoulder pain. Also, Curtis and Black (1999) found that (72%) of the subjects reported shoulder pain. An epidemiological study in India has been found that approximate 20,000 new cases of SCI are added every year and most of them are suffered by shoulder pain (60-70%).

Among the 43 cases, the age group 18-25 years there were 20.9% (9), age group 26-29 years 20.9% (9), age group 30-35 years 30.20% (13) and age of more than 35 years, there were 27.9% (12) people had suffering from shoulder pain. Analysis showed that more affected age group was 30-35 years. Among the 70 participants 46 were male and 24 were female and among the 43 participants who were suffered by shoulder pain 28 (65.1%) participants were male and 15(34.9%) were female. Blanes et al. (2009) identified that age range more than 40 years tetraplegia patients were contain higher prevalence rate. Curtis and Black (1999) found that near about two third (65.6%) male tetraplegia participants showed greater prevalence of shoulder pain. The findings from this study showed that 65.6% male are affected in shoulder pain whether the female affected participants are 34.4%.

In this study, among the 43 affected participants, there were 95.3% (41) are lived in rural areas and only 4.70% (2) are lived in urban areas. A Brazilian study showed that out of the 60 affected patients, 48 (83.3%) had live in rural area (Blanes et al., 2009). Analyses showed that among the 43 participants 6 (14%) participants have mild symptoms and 28 (65.1%) participants' had moderate symptoms and 9 (20.9%) have severe symptoms of pain. So study shows that moderate pain was more than mild and

severe pain. Blanes et al. (2009) found that 51.54% patients were affected by moderate pain. Another study by Salisbury et al. (2006) found that tetraplegia patients who suffered from shoulder pain most of the patients (49.1%) was suffered by moderate pain and (30.12%) patients by severe pain.

In this research most of the patient's pain is increasing with movement where near about 86% increases with rest. An UK study published by Dorsett (2001) that eighty percent subjects did not complain of any shoulder pain at rest times. Another study from MacKay (1994) found that most of the patient's pain was increased during movement. That means there is a relation between shoulder pain at rest and movement situation. After analysis researcher found that among the 43 participants out of 70 participants 14 (32.6%) participants Pain is radiated and 29 (67.4%) participants pain were local pain. Among 14 participants, 8 (57.1%) participants pain radiation were from shoulder to elbow, 3 (21.4%) is shoulder to mid forearm and 3 (21.4%) is shoulder to wrist. MacKay (1994) found that near about 1/3 tetraplegia patients suffered by radiating shoulder pain and maximum was shoulder to elbow.

CHAPTER-VI: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The result of the study identified the prevalence of shoulder pain among tetraplegia patients. In this study, total participants were 70. From this study it can be concluded that maximum (61.40%) of the patients had suffered by shoulder pain and most of the patient's pain was moderate pain. Researcher revealed that 65.1% were male and 34.9% were female among 43 cases and movements are containing aggravating factors rather than resting position. There was an association between age group and shoulder pain, in this study, most of the patients with shoulder pain age group were middle age (30-35 years) patients and patients who lived in rural areas are more affected. From the affected participants only few patients complain that their pain is radiated, among them most radiating pain was above elbow.

Shoulder pain is preventable for tetraplegia patients. Awareness and enough knowledge about shoulder pain can prevent this higher prevalence rate of shoulder pain among tetraplegia patients. So this is very important for the tetraplegia patients focusing on preventing the shoulder pain and improving quality of life for people with tetraplegia patients. If enough knowledge about the shoulder pain is given among tetraplegia patients, it would take fewer rescues to prevent further complications. Researcher had explored the prevalence of shoulder pain among tetraplegia patients. From this study, we will be aware about the prevalence of shoulder pain among tetraplegia patients, subsequently, this issue will be addressed to prevent such prevalence. This is very important for the tetraplegia patients focusing on preventing the shoulder pain and improving quality of life for people with tetraplegia patients.

6.2 Recommendations

A recommendation evolves out of the context in which the study was conducted the purpose of the study was to estimate tetraplegia patients with shoulder pain. Though the researcher has some limitations but researcher identified some further step that might be taken for the better accomplishment of further research. For the esurient of the generalization of the research it is recommended to investigate large sample. In this study researcher only took the tetraplegia patients who were attended at CRP to show the prevalence of shoulder pain among tetraplegia patients. But due to resources constriction the investigator was not able to gather huge amount of participants and for this reason the result can't be generalized in all over Bangladesh. So for further study it is strongly recommended to increase sample size and area of sample selection to generalize the result in all of the tetraplegia patients in Bangladesh. Beside this, there is an unequal ratio of male and female participants so it is recommended for further study to take the participants equally for comparison of gender among tetraplegia patients.

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APPENDIX

Informed consent (Bangla)

মৌখিক অনুমতি পত্র

(অংশগ্রহনকারীকে পড়ে শোনাতে হবে)

আ্সসালামু আলাইকুম/ নমষ্কার, আমার নাম শরীফ হোসেন, আমি এই গবেষনাটি বাংলাদেশ হেলথ্ প্রফেশনস ইনস্টিটিউট (বি এইচ পি আই), ঢাকা বিশ্ববিদ্যালয়ের চিকিৎসা অনুষদের- এর অধিনে করছি যা আমার ফিজিওথেরাপী স্নাতক কোর্সের আংশিক অধিভূক্ত। যার শিরোনাম হল- ‘‘ট্যাঁটরাপ্লেজিক রোগীদের কাঁদের ব্যাথার ব্যপকতা’’। আমি এক্ষেত্রে কিছু ব্যক্তিগত এবং আপনার সমস্যা সম্পর্কে আনুষাঙ্গিক কিছু তথ্য জানতে চাচ্ছি যা আনুমানিক ২০-৩০ মিনিট সময় নিবো। আমি এই তথ্য সংগ্রহের জন্য শুধুমাত্র একবারই আপনার সাথে মিলিত হব।

এই গবেষনার লক্ষ ট্যাঁটরাপ্লেজিক রোগীদের কাঁদের ব্যাথার ব্যপকতা সম্পর্কে জানা। এই গবেষনা থেকে আমরা কিছু গুরুত্বপূর্ণ তথ্য জানতে পারব যেমন একশ জনের মাঝে কত জনের কাঁদের ব্যথা আছে সাথে কাঁদের ব্যথার কিছু কারণ ও জানতে পারব।

আমি আপনাকে অবগত করছি যে ,এটা কেবল মাত্র আমার অধ্যায়নের সাথে সম্পর্কযুক্ত এবং এই তথ্যগুলো অন্য কোন উদ্দেশ্যে ব্যবহৃত হবে না। আমি আপনাকে আরও নিশ্চয়তা প্রদান করছি যে, আপনার এবং আপনার দেওয়া সকল তথ্যের গোপনীয়তা বজায় থাকবে।

এই অধ্যয়নে আপনার অংশগ্রহন স্বেচ্ছাপ্রণোদিত এবং আপনি যে কোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন। এছাড়াও আপনি যদি চান তবে এই সাক্ষাৎকারের যেকোন প্রশ্নের উত্তর নাও দিতে পারেন যেটা আপনার পছন্দ না।

এই সাক্ষৎকার শুরু করার আগে আপনার কি কোন প্রশ্ন আছে?

.....

আমি আপনার অনুমতি নিয়ে এই সাক্ষাৎকার শুরু করতে যাচ্ছি।

হ্যাঁ ☐ না ☐

সাক্ষাৎকার প্রদানকারীর স্বাক্ষরঃ.....

সাক্ষাৎকার গ্রহনকারীর স্বাক্ষরঃ.....

Informed consent (English)

VERBAL CONSENT FORM

(Please read out to the participant)

The aim of the study is to determine the prevalence of shoulder pain among tetraplegia patients in CRP. The study will provide us important information on how many people are suffering from shoulder pain among per one hundred tetraplegic patients, subsequently possible causes of shoulder pain with also be emerged.

I would like to inform you that this is a purely academic study and obtain information will not be used for any other purpose. All information provided by you will be kept confidential and also the source of information will remain anonymous.

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.

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 …….. Date……..

Signature of the researcher……..…Date……..

Prevalence of shoulder pain among tetraplegia patients attended at CRP.

Questionnaire

Identification Number: **Date of Interview:**

1. Age: ……. …yrs.

2. Gender:

a = Female

b= Male

3 Residential Area:

a = Rural

b = Urban

4. Level of the injury:

a= Neurological level……

b= Skeletal level……

5. Have you any shoulder pain?

a = Yes

b = No

(If yes then)

6. In which shoulder do you feel pain?

a=Right

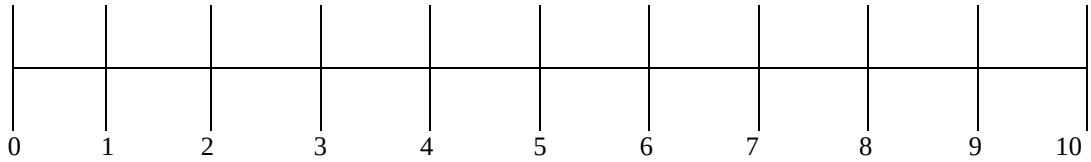
b=Left

c=Both

7. Exact area of pain:

……

8. How severe is your pain on VAS Scale?



9. What is the behavior of pain?

a=Intermittent

b=constant

10. What are the aggravating factors of pain?

……..…….

11. What are the ease factors of pain?

…….

12. Onset of pain:

a= Sudden

b= Gradual

13. When do you notice the pain?

a= Day

b= Night

c= during movement

d= during rest

14. Is the pain radiate?

a=Yes

b=No

15. If radiate, where?

a= shoulder to elbow

b=shoulder to mid forearm

c= shoulder to wrist

16. Muscle wasting:

a= yes

b= no

17. Limited shoulder JROM:

a = Yes

b = No

18. If limited:

a= active……

b= passive……..

Permission letter

30th March, 2013

The Head of the Department,
Department of the physiotherapy,
Center for the Rehabilitation of the paralyzed (CRP),
Savar, Dhaka-1343

Subject: Application for permission to collect data to conduct a research study.

Sir,

With due respect and humble submission to state that I am Sharif Hossain student of 4th year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). In fourth year course curriculum, we have to do a research project for the partial fulfillment of the requirements for the degree of B.Sc. in Physiotherapy. I have chosen a research title that is "Prevalence of shoulder pain among tetraplegic patients in CRP". The participants would be the tetraplegic patients and are expected to provide me necessary information, so that I can conduct this study successfully. I would like to assure that anything of my study will not be harmful for the participants. My supervisor is Nasirul Islam, Assistant Professor and Course Co-ordinator of Master in Physiotherapy programme. For this reason, I need to obtain permission to collect data from inpatient, spinal cord injury department of CRP.

Therefore, I pray and hope that you would be kind enough to grant my application and give me the permission to collect data from inpatient, spinal cord injury department of CRP.

Yours faithfully

Sharif Hossain
4th year B.Sc. in physiotherapy
Session: 2006-2007
BHPI, CRP, Savar, Dhaka-1343

Md. Sohrab Hossain
Associate Professor Physiotherapy, (BHPI), CRP
Head, Dept. of Physiotherapy,
CRP, Savar, Dhaka-1343