CHARACTERISTICS OF SHOULDER PAIN AND ITS ASSOCIATED FUNCTIONAL LIMITATION FOR PATIENT WITH SPINAL CORD INJURY AT CENTRE FOR THE REHABILITATION OF PARALYSED (CRP)

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

CHARACTERISTICS OF SHOULDER PAIN AND FUNCTIONAL LIMITATION FOR PATIENT WITH SPINAL CORD INJURY AT CENTRE FOR THE REHABILITATION OF PARALYSED (CRP).

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DECLERATION

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also decline that for any publication, presentation or dissemination of information of the study. I would bound to take written consent from the Department of Physiotherapy of Bangladesh Health Professional Institute (BHPI).

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Acronyms

ADL : Activity of Daily Living

BHPI: Bangladesh Health Profession's Institute

BMRC: Bangladesh Medical Research Council

CRP : Centre for the Rehabilitation of the Paralyzed

IRB : Institutional Review Board

SCI : Spinal Cord Injury

SPSS : Statistical Package for the Social Sciences

USA : United State of America

WHO : World Health Organization

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Abstract

Purpose: The purpose of the study was to explore the characteristics of shoulder pain and associated functional limitations among paraplegia and tetraplegia patients attended at CRP.

Objectives: To find out the characteristics of shoulder pain and its associated functional limitations in patient with spinal cord injury..

Methodology: A cross sectional research design was carried out in this study. This study was chosen to conduct 60 participants who were admitted in CRP hospital. Face to face interview was used in this research. The data was collected by use a body discomfort assessment tool that consists of Numeric Rating Scale (NRS), Functional impairment measurement (FIM) scale and a Questionnaire. Data was collected by standardized questionnaire and confidentiality of information and voluntarily participation were ensured by the researcher. Data were numerically coded and captured in Microsoft Excel 13, using an SPSS 20.0 version program.

Results: The finding of the study provides a baseline of information about characteristics of Shoulder pain and its associated functional limitation among all type of SCI patients. The result of this study shows that, there is no association between various age and functional limitation. The severity of pain among the cases includes mild pain, moderate pain and severe pain depend on NRS. Also there was not founded any association between pain intensity and functional limitation during rest as well as during movement.

Conclusion: From the result of the study it was found that there is no association between pain intensity and functional limitation. Significances may be not explored due to time limitation. So, further study with more number of patient and time may provide association between severity of pain and functional limitation of SCI patient.

*Key words***:** Characteristics of pain, Functional limitation, Association, Spinal cord injury.

CHAPTER –I INTRODUCTION

1.1Background

The spinal cord injury is the important health problem which causes the disruption of Spinal cord resulting complete or incomplete muscle paralysis, loss of sensation and dysfunction of autonomic system (Eriks-Hoogland et al., 2009). Any dysfunction depends on the extent of lesion which may the chances of the mortality and morbidity (Eriks-Hoogland et al., 2009).Spinal cord injury (SCI) is the most devastating condition that produces severe functional impairment and requires intensive and specialized clinical rehabilitation. SCI occurs often at a young age, and life expectancy of persons with SCI has increased in recent decades (Saulino, 2014).Spinal cord lesion includes lower body part and body part lesions cause dysfunction of the legs, whereas high body part lesions conjointly end in dysfunction of the trunk muscles cervical lesions (tetraplegia) end in dysfunction of the legs and trunk still as (partial) dysfunction of the arms (Rahman et al., 2017). Injuries and illness affecting the spinal cord are vital health related problem in Bangladesh. This also origins elevated rates of morbidity and mortality. Right now there is no national spinal cord injury registers organization in Bangladesh to outline the accessible literature and to deliver previous information from this country. So it is very challenging to know the approximation of whole number of patients with spinal cord injury in Bangladesh. Spinal cord lesion includes lower body part and body part lesions cause dysfunction of the legs, whereas high body part lesions conjointly end in dysfunction of the trunk muscles cervical lesions (tetraplegia) end in dysfunction of the legs and trunk still as (partial) dysfunction of the arms (Rahman et al., 2017). Injuries and illness affecting the spinal cord are vital health related problem in Bangladesh. This also origins elevated rates of morbidity and mortality. Right now there is no national spinal cord injury registers organization in Bangladesh to outline the accessible literature and to deliver previous information from this country. So it is very challenging to know the approximation of whole number of patients with spinal cord injury in Bangladesh. Centre for the Rehabilitation of the Paralyzed (CRP) is the solitary non-government organization

in Dhaka which involved in rehabilitation and management of patients with spinal cord injury for more than 30 years (Islam et al., 2011).The prevalence of shoulder pathology has been reported in varied patient populations as 34% of persons 65 and older, 78% SCI (Lin et al., 2005). The shoulder mechanism may be advanced system that consists of the clavicula, scapula, arm, bone and also the thorax. During this quality, a movement of the shoulder is thus really a movement in four joints: the sternoclavicular, acromioclavicular and glenohumeral joints and also the scapulothoracic in gliding plane (Khalid Mohammed et al., 2014). The arm correlate via the affiliation to the shoulder blade and therefore the structure of the glenohumeral joint and therefore the glenoid, the saucer of this joint, is comparatively tiny compared to the top of the arm bone, so the joint needs continuous muscle activity to stabilize it (Khalid Mohammed et al., 2014).Stabilization of the glenohumeral joint is the main function of the four muscles of the rotator cuff, while other muscles are prime movers of the arm due to their large moment arm. At any rate, the mobility is at the expense of the stability of the joint and therefore makes it especially vulnerable for the development of related instability complaints. A number of factors and conditions can contribute to shoulder pain and functional disability with some additional problem such as decreased ROM, contractions and retard rehabilitation in the lives of people with SCI (Robinson, Seah and Akhtar, 2011).People with spinal cord injury (SCI) square measure extremely keen about the perform of their upper limbs for quality and ADL and square measure a lot of in danger for issues related to over-use of the shoulder than those while not SCI throughout rehabilitation, contracted shoulder fixed storage could limit participation in rehabilitation activities and thereby delay rehabilitation or cause sub-optimal outcomes (Eriks-Hoogland et al., 2009).

The shoulder has a wide and versatile range of motion. When something goes wrong with shoulder, it hampers the ability to move freely and can cause a great deal of pain and discomfort (Islam et al., 2011). Pain intensity causes limited ROM leading to dependence on daily living activities assistance in people with SCI (Eriks-Hoogland et al ., 2009). 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 (Bromley., 2006). 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).Shoulder pain is most intense during activities of daily living, including, wheel chair propulsion uphill, transfer, reaching overhead and other tasks that causes overload (overuse) (Benavent A et al., 2003). Shoulder-related dysfunction can affect an individual's ability to function independently, consequently decreasing quality of life (Eriks-Hoogland et al ., 2009).

The prevalence of shoulder dysfunction has been reported 78% of tetraplegic and of 35% of paraplegic individually experience shoulder pain during the first 6 months after injury whereby overtime, prevalence increases, so that 20 years after SCI upper limbs pain, paresthesia - or both(Jain et al., 2010). Additionally, some occupational activities, such as polishing, sanding, and grinding, as well as certain recreational activities, such as overhead sports and wheelchair athletics, have been found to increase shoulder dysfunction (Alm et al., 2008). The study that reflect correlation between shoulder pain, ROM and associated functional limitation would be useful to identify the influence of preventive interventions on shoulder ROM limitations and the other interventions for participation on functional activities (Eriks-Hoogland et al., 2009).When we consider the different ways in which we can assess effectiveness of intervention in shoulder pathologies, naturally outcomes such as pain, range of motion (ROM) and strength come to mind (Alentorn-Geli et al .,2018). Functional implications of the shoulder pain have been documented in 11 paraplegic women where the incidence of shoulder pain during functional activities requiring an extreme range of motion on the shoulder .So,woman reported that work and school activities, the wheelchair propulsion, housekeeping and children care, and the act of carrying the wheelchair into car. (Lephart SM. et al., 2002). Beside these, people also mentioned that the most painful activities climbing slopes, reaching something with the arm above the level of the head, sleeping, moving to unequal surfaces and washing their backs (Samuelsson, Tropp and Gredle, 2004).When a person experiences a trauma or everlasting disability such as SCI, the ability to participate in daily performance can change

radically. After injury a person may not be able to contribute to full-time paid employment or education as he or she did before the injury (Chen et al., 2009). Some of them expect that they will be cured one day and come back to a normal life, but when this does not occur they often lose their confidence and they becomes fully dependent on their families for their existence. These studies show how widespread shoulder pain is in the SCI population and their functional limitation associated with specific activities such as pushing a wheelchair, transferring, or high levels of physical activity which reported about limitations due to pain in people with SCI age (Jain et al., 2010).The present study is based on data from community-living adults with SCI which emphasizing objective observations, IOM also incorporates the personal experience of people with a disability, including their interactions with the physical and social environments as the influences of culture, societal limitations, and the environment of each individual, the IOM model defines impairment as the "loss and/or abnormality of mental, emotional, physiological, or anatomical structure or function: and also includes pain," functional limitation as the "restriction or lack of ability to perform an action or activity (Wang et al., 2015).We have to make the correlation between shoulder ROM limitations and activities and participation in work to improve our understanding of the relevance of limitations in shoulder ROM for rehabilitation treatment in persons with SCI (Quadir et al., 2017). In addition to our previous work we have to focus on this study investigates the predictive value of limitations in shoulder ROM in persons with SCI (paraplegia and tetraplegia, as well as in the subgroup of those with tetraplegia alone) in their wheelchair performance, making a transfer and participation 1 year after discharge after rehabilitation (Wang et al., 2015).As with paraplegia, spinal cord injuries are the leading cause of quadriplegia. The most common causes of spinal cord injuries include automobile accidents, acts of violence, falls, and sporting injuries, especially injuries due to sports. Traumatic brain injuries can also cause this form of paralysis. Under these condition, patient experience functional limitation due to their pain in shoulder (Kumar et al., 2016)The results of the patient's progress and rehabilitation are evaluated by various functional status steps; The FIM (effective independent measurement) score among them is the most common. These scores can be managed easily for a reliable measurement and periodic evaluation of patient performance changes (Davidson et al., 2009).Measures

FIM was developed in collaboration with American Congress rehabilitation and American Academy of Physical Medicine and Rehabilitation in 1983 lead by Carl Ganger and Byron Hamilton (Aydin et al., 2016). It was made more than 20 years ago, the FIM has been widely used, as proved by its use for multiple diseases, including spinal cord injury, stroke, severe brain injury, cancer, and back injury. Physical rehabilitation, including physical therapy, occupational therapy and speech therapy, was shown to improve the effective results of patients who had stroke (Douglas et al., 2010).

All the studies shows the prevalence, characteristics of pain intensity .However no studies shows any association of characteristics with the associated issue at CRP. These studies aimed to judge characteristics of pain intensity and determine associated functional limitations following to type of paralysis.

1.2 Justification

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. Consistent and reproducible measurement of patient functional status is important in medical rehabilitation. Clinician's uses patient functional status to assess rehabilitation needs, to set goals, to set treatment plan and evaluate outcomes. Moreover, perception during admission and at discharge from rehabilitation has been providing as a basis standard for the rehabilitation center. Almost 60% of countries with rehabilitation facilities uses the Functional Independence Measure (FIM) Besides, a patient classification structure based on it, called the FIM-Function Related Groups (FIM-FRGs) is now being measured by the Health Care Financing Administration for development of a Medical care prospective payment system .As physical activity (PA) has imminent benefits after spinal cord injury (SCI), particularly in moving forward effectiveness and useful capability in exercises of day by day living. As of now, numerous who gets advantage from activities are play a part in related to their functional capacity. As functional independence is exceptionally domineering. So that as health professional we should know the perception of patients about their functional independence .As physical activity (PA) has prospective benefits after spinal cord injury (SCI), especially in improving efficiency and functional capability in activities of daily living (Dixon et al., 2008). Currently, many who gets benefit from activities are play a part related to their functional capacity. As functional independence is very important (Aydin et al., 2016).In our country paraplegia and tetraplegia are 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 feel some functional limitation or disorders due to pain which affect their daily life style. By doing this research, the problems or disorders may be drawn out. We also increase

our knowledge about characteristics of lesion and shoulder pain severity, muscle strength and associated functional limitations. Currently, many who gets benefit from activities are play a part related to their functional capacity. As functional independence is very important (Zehr, 2011).Communication and evidence transmission over care settings and as well as the collecting information approximately enhancement from the patient is essential for the rehabilitation professionals. Communication among care levels is highly appreciated by patients in general. Patients from various studies identified that there is a gap in communication and information transfer among different levels of healthcare .For e.g. many patients saw that specialists did not interact with the patients properly. That's why, many health problems might not be under control or find out (Waibel et al., 2012).Thus the research may help the SCI patients with manual wheelchair and will aware about the arising problems during living in the hospital. The research will also aware the medical professional about the arising shoulder pain and functional limitations among SCI patient to take further measures to enhance their functional activities. Now a days, SCI is a common problem in our nation and the rate is expanding day by day. Directly the frequency of spinal line damage is expanding in Bangladesh with increasing in population and social changes. Still now there is no evidence that research has been done on this topic. So I become interested to select this topic. As most of the spinal cord injury patients of Bangladesh come at CRP for treatment, that's why the researcher select the patients of Spinal Cord Injury(SCI) unit of CRP as sample population.

1.3 Research Question

What are the characteristics of shoulder pain and with its associated functional limitation in Patient with Spinal Cord Injury at CRP?

1.4 Study objectives

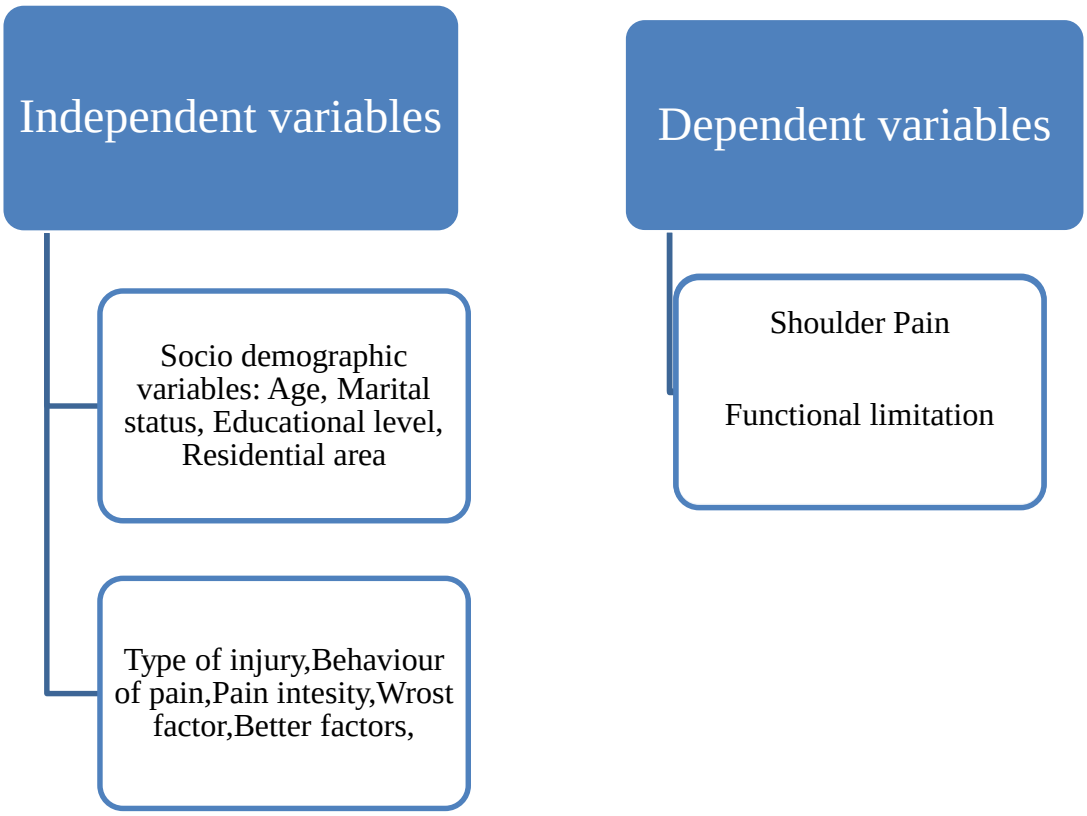
1.4.1 General Objective:

To find out the characteristic of shoulder pain and functional limitation of SCI patient at CRP

1.4.2 Specific Objectives

- To determine the socio-demographic information of the patient.
- To know the severity of pain by using NRS scale.
- To find out the association between pain intensity and age among the participants.
- To find out the association between pain intensity at rest and functional limitation of the participants.
- To find out the association between pain intensity at movement and functional limitation of the participants.

1.5 Conceptual Framework



1.6 Operational Definitions

Spinal Cord Injury

Spinal cord injury is defined as the occurrence of an acute traumatic lesion of neural elements in the spinal canal resulting in temporary or permanent sensory and/or motor deficit.

Paraplegia

Partial or complete paralysis of the lower half of the body with involvement of both legs that is usually due to injury or disease of the spinal cord in the thoracic or lumbar region.

Tetraplegia

Tetraplegia is caused by damage to the brain or the spinal cord at a high level C1–C7—in particular, spinal cord injuries secondary to an injury to the cervical spine. The injury, which is known as a lesion, causes victims to lose partial or total function of all four limbs, meaning the arms and the legs.

Pain Intensity

The severity or nature of pain.

NRS scale

A pain scale measures a patient's pain intensity or other features. It is a measurement instrument for subjective characteristics or attitudes that cannot be directly measured.

Functional independence measurement scale (FIM)

The FIM instrument refers to a scale that is used to measure one’s ability to function with independence. The FIM is used worldwide in medical rehabilitation units**.**

CHAPTER –II LITERRATURE REVIEW

Spinal cord injury sometimes result from associate in an accident that results injury the central nerve cord within the neck or back, once the spinal cord is broken, feeling & movement within the body below the amount of injury is lost or reduced (David, 2006). According to National spinal cord injury statistical center (2011), Spinal cord injury (SCI) is defined as an incidence of traumatic lesion of spinal cord origins in the spinal canal, which causes temporary or permanent sensory and/or motor deficit. .SCI has different non-traumatic and traumatic causes with changing degrees of coming about neurological damage. There are both traumatic and non traumatic causes of spinal cord injuries in Bangladesh. A study in Bangladesh aimed to discover life expectation of persons with SCI showed that, falling from height, either from trees, construction works, electric poles or roofs, was found to be the most common cause (40.30%) and falling while carrying a heavy load on the head was second most common cause (16.0%).Among the non traumatic cases of SCI, spinal tuberculosis was found to be the most common cause, comprising 7.0%. Other causes were road traffic accidents, fall of object on back, Guillain Barre Syndrome, and Transverse Myelitis (Razzak et al., 2011). A person with SCI may be dependent on others for support to do many tasks of ADLs such as toileting, bathing, brushing dressing, grooming, eating, community access, and leisure activities. These changes as often as possible have obliging impacts on the spinal cord injury patient's social connections. The changes causes different sorts of long lasting impacts and impact in each and each angle in a person's life (Sadat et al., 2010).

The spinal cord is road through that motor and sensory data travels between brain and body via nerves that pass up and down through the spinal cord on definite pathway, if the cord is broken the massage cannot get through, this happens if there's injury to, or sickness of the spinal cord(Momin , 2013).

The prevalence SCI according to NSCISC (2013) in the United States who are alive with SCI has been estimated to be approximately 273,000 persons, with a range of 238,000 to 332,000 persons. In United States the annual incidence of traumatic SCI is 40 cases per million or 1200 new cases each year (Rabadi et al., 2013). Nwankwo & Uche (2013) found that in SCI, The 31–45 years age group is the most frequently affected and male is more affected than female (4.3:1), 53% injury occurred in cervical spine, 22% thoracic spine and 25% lumbar spine injury.

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). Injury can occur at any level of the spinal cord and can be complete injury, with a total loss of sensation and muscle function, or incomplete, meaning some nervous signals are able to travel past the injured area of the cord. Depending on the location and severity of damage, the symptoms vary, from numbness to paralysis to incontinence (McDonald et al., 2013).

Spinal cord lesion (SCL) continues to be a serious reason for incapacity throughout Asia furthermore as in Bangladesh. Patients, United Nations agency have SCL, fairly 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 (2009). 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 (Robinson, Seah and Akhtar, 2011).

On the basis of a national data base of 30,822 SCI people in the United States, life expectancy of persons with SCI has been shown to increase over the past 30 years, with mortality rates reducing by approximately 40% in the first 2 years after the injury (Saadat et al., 2010).

Traffic accidents and falls from a height were the foremost common causes of SCI. Diving were additionally atypical cause, particularly in younger patients. Two patients were injured and one had a scattergun injury (Gutierrez et al., 2007). Gymanstic exercise and wrestling were also the causes of sport injuries in 9.7% patients. It's of interest that 20.3% of males and 9.3% of females were found to be beneath the influence of alcohol at the time of their injury (Chen et al., 2013). 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 (SingR et al., 2003). Spinal cord lesion includes lower body part and body part lesions cause dysfunction of the legs, whereas high body part lesions conjointly end in dysfunction of the trunk muscles cervical lesions (tetraplegia) end in dysfunction of the legs and trunk still as (partial) dysfunction of the arms (Rahman et *al.*, 2017). Shoulder-related pathology will effect on an individual's ability to perform severally, consequently decreasing quality of life. The prevalence of shoulder pathology has been reported in varied patient populations as 34% of persons 65 and older, 78% of spinal cord injury patients (Lin et al., 2005).

Worldwide, the quantity of recent cases since 1995 of SCI ranges from ten.4 to eighty three individuals per million. This big selection of numbers is maybe partially thanks

to variations among regions in whether or not and the way injuries area unit reportable (MacDeonid et al., 2006). In North America, concerning thirty-nine individuals per each million insecur SCI traumatically annually, and in Western Europe the incidence is sixteen per million. In the US, the incidence of spinal cord injury has been calculable to be concerning forty cases per one million individuals or around twelve cases In China, the incidence is more or less 60,000.The calculable range of individuals living with SCI within the world ranges from 236 to 4187 per million. Estimates vary wide thanks to variations in however information area unit collected and what techniques area unit wont to extrapolate the figures, very little data is accessible from Asia, and even less from continent and South America (Witiw, C.D. et al., 2015).

Spinal Cord Injury (SCI) is damage to the spinal cord that results in a loss of function such as mobility or feeling. The spinal cord does not have to be severed in order for a loss of function to occur. In most SCI cases, the spinal cord is intact, but the damage to it results in loss of function (Palmer et al., 2008).

Shoulder pain occurring in patients with SCI's is of interest group attributable to their dependence on their higher extremity for the essential activities of daily living like chair propulsion, transfers, and dressing. The incidence of spinal cord injury (SCI) varies from 10.4 to 83% per million per worldwide, among of them third have tetraplegia, an entire lesion is 500, 33 years (range 16–50) is mean age at injury and men/women distribution is 3.8/1(Robertovich et al., 2017).

Shoulder pain may be one in all the foremost common contractile organ pain issues among individuals with SCI's. It will be acute or chronic, will be localized or diffuse, and might have several etiologies (Aydin et al., 2016).

The shoulder mechanism may be advanced system that consists of the clavicula, scapula, arm, bone and also the thorax. during this quality, a movement of the shoulder is thus really a movement in four joints: the sternoclavicular, acromioclavicular and glenohumeral joints and also the scapulothoracic in gliding plane (Gutierrez *et al.*, 2007). The arm correlate via the affiliation to the shoulder blade and therefore the structure of the

glenohumeral joint and therefore the glenoid, the saucer of this joint, is comparatively tiny compared to the top of the arm bone, so the joint needs continuous muscle activity to stabilize it (Khalid Mohammed et al., 2014). SCI could be a four-dimensional unwellness that not solely ends up in loss of sensory or motor capabilities however additionally causes different common issues like frequent infections in bladder, kidneys, viscous issues, and viscous and metabolic process dysfunctions. of these devastating conditions impart sturdy impact on the social, psychological and physical standing of SCI patients (Yu and He, 2015).Moreover, lack of any specific, economical treatment for SCI any adds to the miseries of SCI patients. the sole choice until currently accessible for the SCI patients was principally palliative in nature including bar of injury progression, management of pain syndromes, implementation management of pain syndromes, implementation of viscous moreover as bladder coaching regimens, management of complications because of sensory loss (Robinson, Seah and Akhtar, 2011).

Functional Independence Measure (FIM) is a functional assessment tool and is used to assess the impact of SCI on the patient's functional abilities.

The seven levels rating of FIM are (ASIA/IMSOP, 2005):

Independent (no human assistance is required):

7= Complete independence: The activity is typically performed safely, without modification, assistive devices or aids, and within reasonable time.

6= modified independence: The activity requires an assistive device and/or more than reasonable time and/ or is not performed safely. Dependent (human supervision or physical assistance is required):

5=Supervision or setup: No physical assistance is needed, but cuing, coaxing or setup is required.

4=Minimal contact assistance: Subject requires no more than touching and expends 75% or more of the effort required in the activity.

3=Moderate assistance: Subject requires more than touching and expends 50 ± 75% of the effort required in the activity.
2=Maximal assistance: Subject expends 25 ± 50% of the effort required in the activity.
1=Total assistance: Subject expends 0 ± 25% of the effort required in the activity.
It appears to be the best functional outcome scale used to describe disability among SCI patients, both early and late after injury. It is easy to administer and is valid and reliable.

Effective Independence measurement (FIM) was designed to provide a consistent data collection tool. In addition, an FIM attempts to establish a way to collectively rehabilitate information. Designers were designed to do FIM so that they could track the effectiveness of their patients through care and follow-up. FIM result management equipment is widely used in such nursing facilities as settings; acute, sub-acute , and rehabilitation hospitals (Douglas et al., 2010).

SCI causes various impacts on physical, psychological, social, emotional and cultural aspects in individuals with spinal cord injuries. A person with SCI may be dependent on others for support to do many tasks of ADLs such as toileting, bathing, brushing dressing, grooming, eating, community access, and leisure activities. These changes as often as possible have obliging impacts on the spinal cord injury patient's social connections. The changes cause different sorts of long lasting impacts and impact in each and each angle in a person's life. As a result, the predominance of life of people with spinal cord injury gets to be problematical. They might feel inconsolable and frantic approximately their future and they do not need to end up burdens for others with their sentiments (Jain et al., 2010).

CHAPTER –III METHODOLOGY

This research was a cross sectional study design to identify the safety measure used by the Spinal cord injury patient at CRP. The aims of the study were make a sense about the use of safety equipment among the SCI patient. Questionnaire will be used as measurement tools for measuring the pain severity and associated functional limitation issue among SCI patient at CRP.

3.1Study design

A cross-sectional descriptive study in which disease and exposure status is measured simultaneously in a given population. Cross-sectional studies can be thought of as providing a "snapshot" of the frequency and characteristics of a disease in a population at a particular point in time (Environmental Health Investigations branch, 2009).The study design was appropriate to find out the objectives. The objectives of the study has demanded the association between pain intensity and functional limitation, for this reason cross sectional study is the best way to find out the relation between those. The data was collected all at the same time or within a short time frame. The most important advantage of cross sectional studies is that in general they are quick and cheap.

3.2Study Site

The researcher was collected data from the SCI unit of CRP, Savar, Dhaka.

3.3 Study Population

Researcher select the SCI patient who have an involvement with Spinal cord lesion.

Researcher select the SCI patient including Paraplegia and tetraplegia.

3.4 Sample Size

The equation of sample size calculation are given below-

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

Here,

Z $(1-\frac{\alpha}{2})$ =1.96

P=0.51

q=1-p

=1-0.51=0.49

d=0.05

According to this equation the sample should be more than 286 people but due to time limitation the study sample was 60 patients with spinal cord injury.

3.5 Sample Technique

Purposive sampling technique was used for sample selection. Purposive sampling starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose. A small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn. Researcher selected paraplegia and tetraplegia patient according to their pain severity and associated functional limitation.

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

3.6 Inclusion criteria

- SCI patient who have shoulder pain.
- SCI patient both Paraplegia and tetraplegia.
- SCI patient male, female and children.

3.7 Exclusion Criteria

- SCI patient who do not have shoulder pain
- SCI patient who are unwilling to participate in this research.
- SCI patient outside of CRP.
- SCI patient with psychological disturbances

3.8 Data Processing

3.8.1 Data Collection Tools

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

3.8.2 Data analysis

The data was collected using structural questioner. And for the analysis of data descriptive statistics was used. Use the graph technique for analyzing data, calculated as percentages, and presented this using bar, column, table and pie charts by SPSS software version 20.0. SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses. Then crosstabs is used to find out the relation between the shoulder pain severity and their associated functional limitations.

3.9 Ethical consideration

The proposal was submitted to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) & approval was obtained from the board. The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines and World Health Organization (WHO) Research guidelines. Verbal and written inform consent was taken from every participants. And ensure every participants that they can leave any time during data collection, & it was ensured that participants were not influenced by data collector. The researcher strictly maintained the confidentiality regarding participant's condition.. The study was conducted in a clean and systematic way. Every subject had the opportunity to discuss their problem with the senior authority or administration of CRP and have any questioned answer to their satisfaction. Data collection was started and completed within the allocate time frame. All information was kept in secure.

3.10 Informed Consent

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

CHAPTER –IV RESULTS

The aim of the study is to explore the characteristics of shoulder pain and its associated functional limitation in patient with spinal cord injury at CRP. In this section coding is used to understand the participants statement and to generate the themes. The interview findings are given in each table below with coding. After completing data analysis, the researcher formulates general categories and themes. These are as follows-

In this study there were 60 participants. The analysis was done by the SPSS 20 version.

Socio-demographic Information

The demographic characteristics are shown in Table 1. Among the 60 participants (28%) 15 participants were between 11-20 years, (23%) 12 were between 21-30 years, (21%) 18 were between years 31-40 years,(16%) 7 were 41-50 years and (10%) 8 were 51-60 years. Among the 60 participants, 38 (82%) subjects were male and 22 (18%) were female. Among them 30 (50%) participants are married, 26 (48%) participants are unmarried and 4 (2%) participants are divorced.

Among the participants 50 (80%) lived in the rural community on the other hand 10 (20%) respectively lived in the urban areas. Among them (24%) 15 were illiterate, (37%) 20 primary, (25%) 15 were S.S.C,(4%) 2 were H.S.C,(8%) 3 were Graduate and (5%) 3 were masters.

On the other hand, 15 (32%) were service holder, 10 (14%) were businessman, 25 (40%) were housewife,5 (7%)were labor and 5 (7%) were Retired participants among 60 participants.

Table 1: Socio-demographical information:

Variables	Categories	Percentage(%)
Age	11-20 year	28%
	21-30 year	23%
	31-40 year	21%
	41-50 year	16%
	51-60 year	10%
Sex	Male	82%
	Female	18 %
Marital Status:	Married	50%
	Unmarried	48%
	Divorce	2%
Residential area	Rural	80%
	Urban	20%
Educational level	Illiterate	24%
	Primary	37%
	SSC	25%
	HSC	4%
	Graduation	8%
	Masters	5%

Variables	Categories	Percentage(%)

Occupation	Service hold	32%
	Businessman	14%
	Housewife	40%
	Labor	7%
	Retired	7%

Type of Spinal Cord Injury:

Among this 60 spinal cord injury patients, researcher found that 58% (n=21) were traumatic paraplegia and 15% (n=35) Non-traumatic paraplegia, 25% (n=1) were traumatic tetraplegia and 2% (n=3) were Non-traumatic tetraplegia.

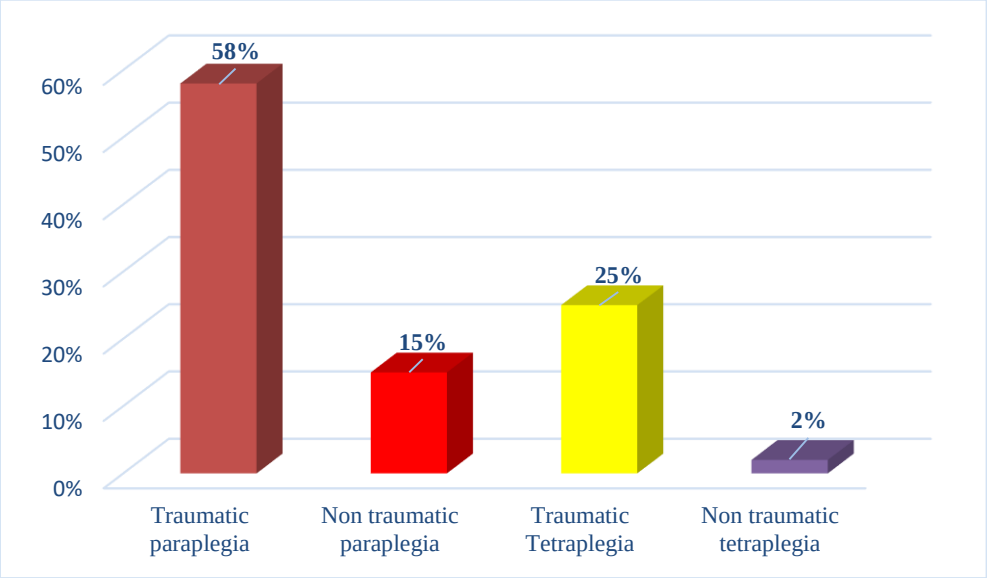


Figure 1: Type of spinal cord injury of the Participant

Table2-Severity of Shoulder pain:

Shoulder Pain severity on NRS during rest-

Among the affected participants who were suffering from shoulder pain after sci, the severity of pain in NRS scale was in between 0-3 (mild pain) in 10% (n=6) shoulder pain, in between 4-6 (moderate pain) in 80% (n=48) shoulder pain and there were 10% (n=6) participants who had score in between 7-10 (severe pain) in NRS scale.

Severity in NRS scale	**Number (n)**	**Percentage (%)**
Mild (0-3)	6	10 %
Moderate (4-6)	48	80 %
Severe (7-10)	6	10 %
Total	**60**	**100 %**

Table 2.1: Severity of the Shoulder joint pain by NRS scale of the participants.

Pain severity on NRS during movement-

Among the affected participants who were suffering from shoulder pain after SCI, the severity of pain in NRS scale was in between 0-3 (mild pain) in 10% (n=6) shoulder pain, in between 4-6 (moderate pain) in 57% (n=34) shoulder pain and there were 33% (n=20) participants who had score in between 7-10 (severe pain) in NRS scale.

Severity in NRS scale	**Number (n)**	**Percentage (%)**
Mild (0-3)	6	10 %
Moderate (4-6)	34	57 %
Severe (7-10)	20	33 %
Total	**60**	**100 %**

Table 2.2: Severity of the Shoulder joint pain by NRS scale of the participants.

Distribution about nature of Pain of respondents:

Among the 60 participants, researcher found that 40% (n=24) feel aching pain, 13% (n=8) feel burning pain, 12% (n=7) feel dull pain,5% (n=3) feel electric shocks, 8% (n=5) feel tender,3% (n=2) whereby pins and needles feels pain,12% (n=7) feel tingling pain and 7% (n=4) feel sharp pain.

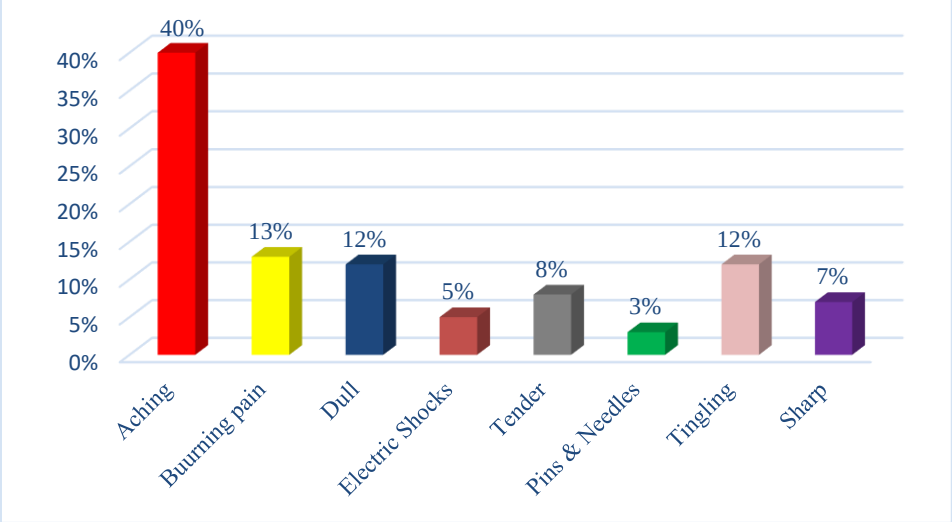


Figure 2: Nature of pain of Participants.

Participants feel worse during activities:

Among the 60 patient 55% (n=33) patient feel worse in wheel chair activities and 8% (n=5) feels worse in transferring, 20% (n=12) feels worse in ADL (Active daily livings) and last 17% (n=10) feels worse on others.

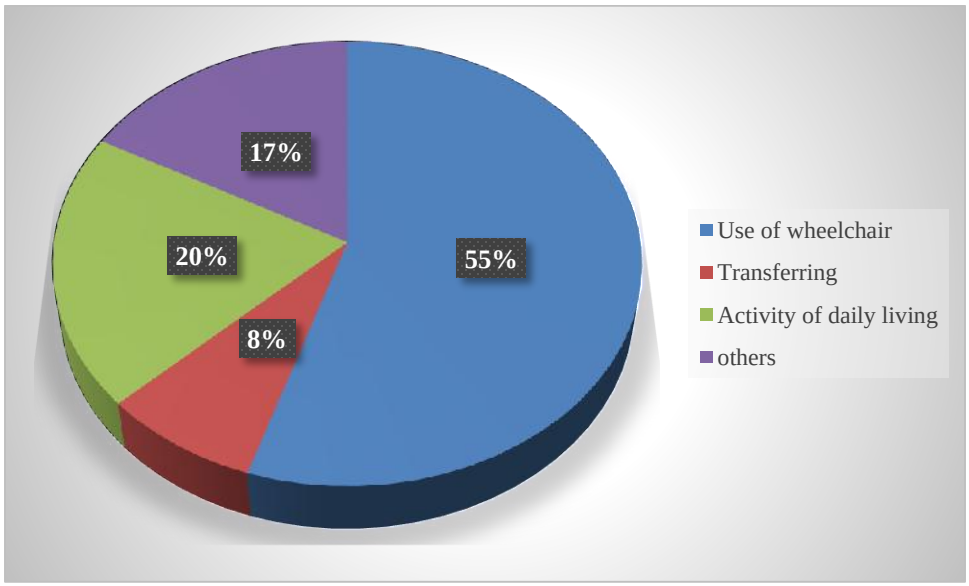


Figure 2: Worse factors of pain of the participants

Participants feel better during activities:

Among the 60 patient 82% (n=48) patient feel better during activities and 12% (n=8) feels better during movement, 3% (n=3) better during posture/positional change and last 3% (n=1) feels better on others.

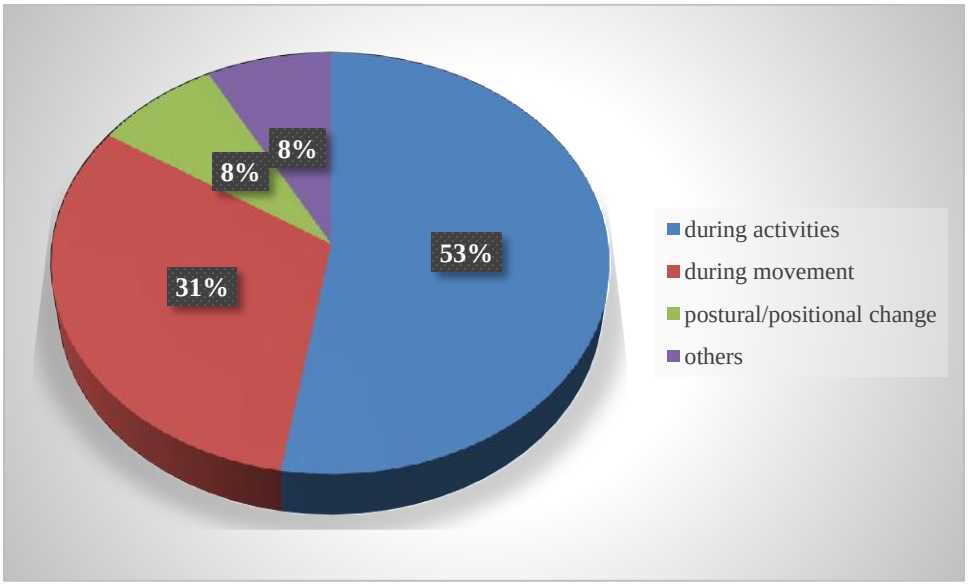


Figure 3: Better factors of pain of the participants

Percentage of Shoulder pain of the Participants:

From the 60 participants 58% (n=35) feel shoulder pain with radiation and only 42% (n=25) participants feel only shoulder pain without radiation.

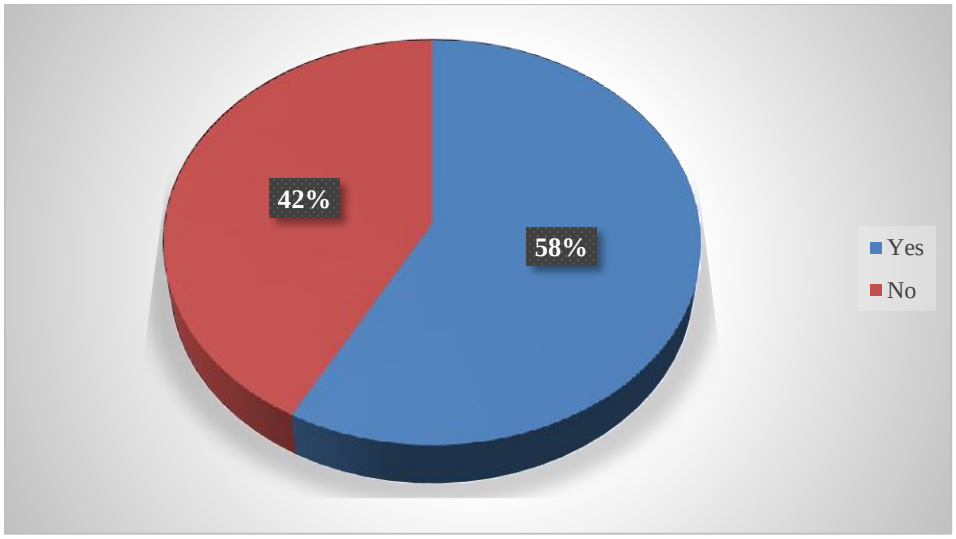


Figure 4: Pain Radiation from the shoulder of Participants.

Area of Pain Radiation:

Among 60 participants, 47% (n=28) of participants pain radiation occurs from shoulder to elbow, 23% (n=14) from shoulder to below wrist and 3% (n=2) from shoulder to wrist and last 27% (n=16) is not applicable for pain radiation.

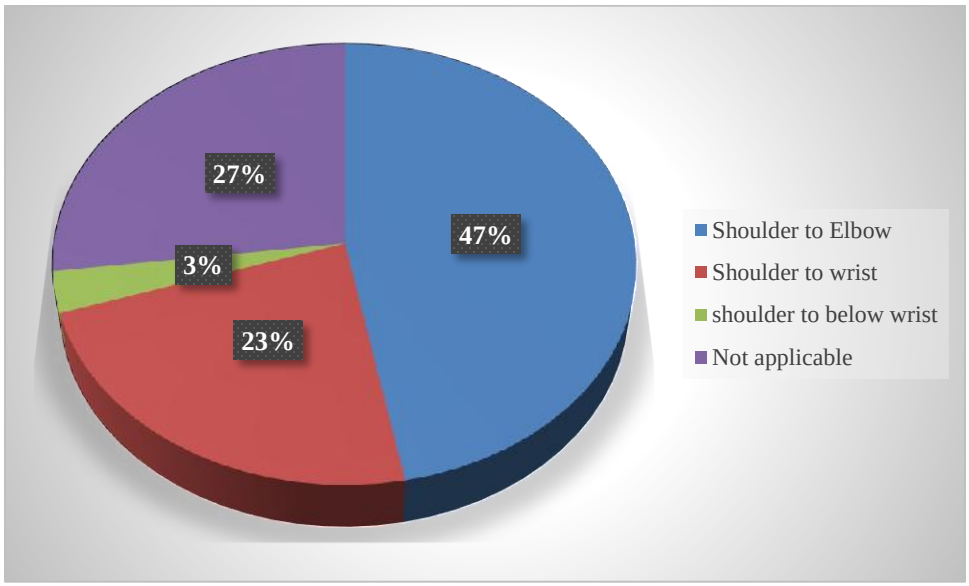


Figure 5: Pain radiation of the participants of shoulder pain

Functional limitation depend on FIM:

Distribution of Functional Independence during Eating activity

Among 60 participants 20% (n=12) needed Total assistance, 10% (n=6) needed Maximal assistance, 2% (n=1) needed moderate assistance, 7% (n=4) needed minimal assistance, 43% (n=26) needed Supervision, 18% (n=11) needed total independence to perform eating activity.

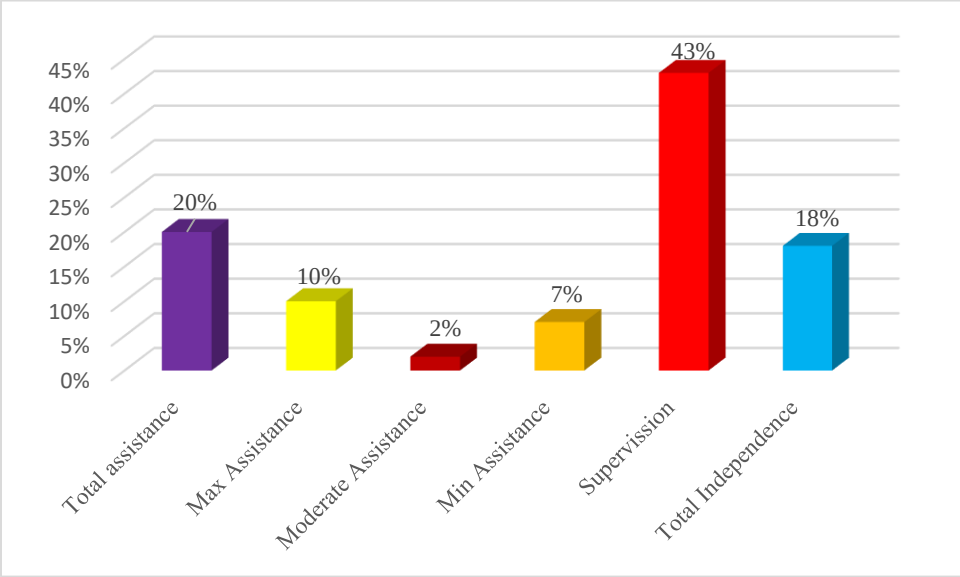


Figure 6: Functional Independence on measuring eating

Distribution of Functional Independence during Dressing activity:

Among 60 participants 20% (n=12) needed Total assistance, 12% (n=7) needed Maximal assistance, 3% (n=2) needed moderate assistance, 23% (n=14) needed minimal assistance, 27% (n=16) needed Supervision, 2% (n=1) needed modified Independence and 13% (n=8) needed total independence to perform dressing.

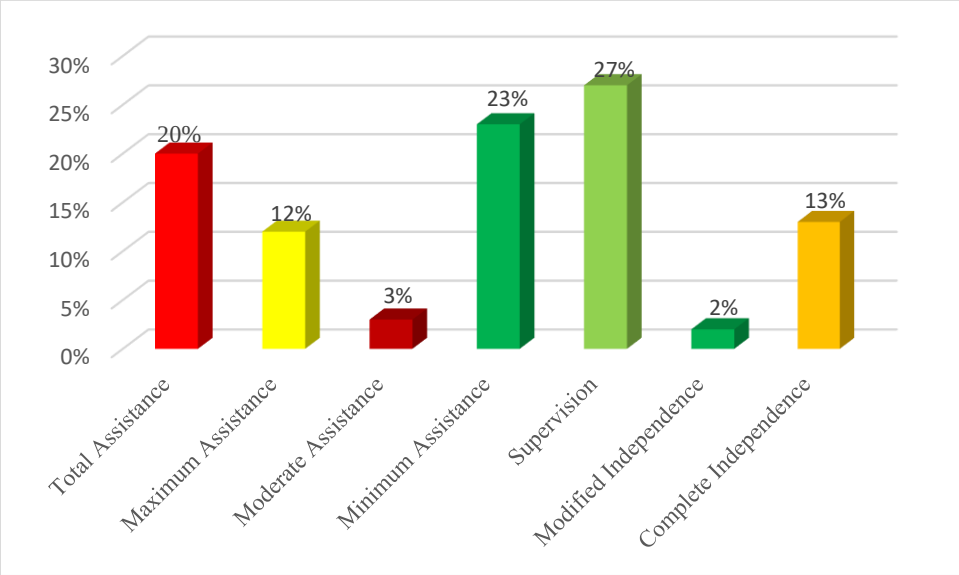


Figure 7: Functional Independence on measuring dressing

Distribution of Functional Independence during Toileting

Among 60 participants 15% (n=10) needed Total assistance, 12% (n=7) needed Maximal assistance, 2% (n=1) needed moderate assistance, 5% (n=4) needed minimal assistance, 33% (n=20) needed Supervision, 32% (n=16) needed modified Independence and 1% (n=2) needed total independence to perform toileting activity.

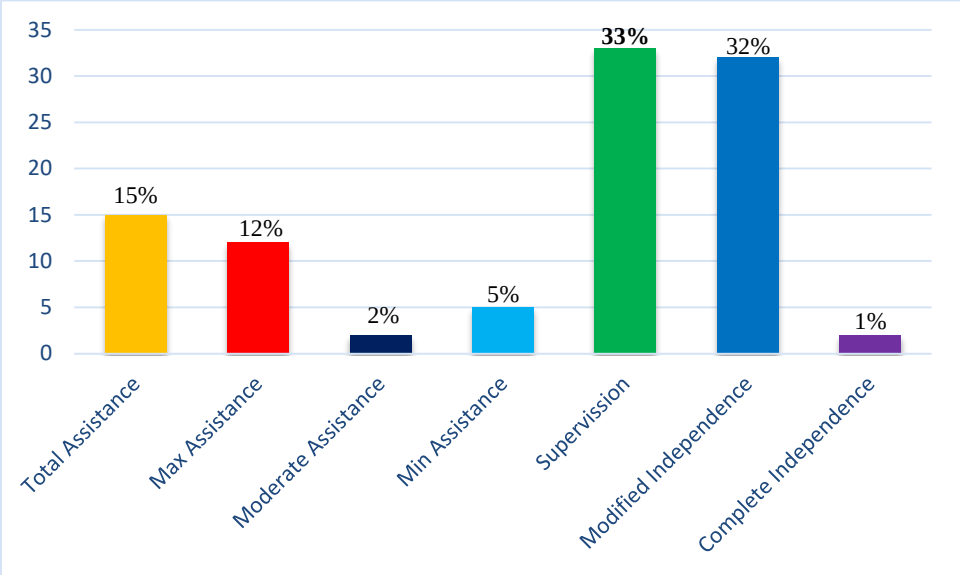


Figure 8: Functional Independence on measuring toileting

Distribution of Functional Independence during Transferring:

Among 60 participants 23% (n=14) needed Total assistance, 2% (n=1) needed Maximal assistance, 23% (n=14) needed moderate assistance, 20% (n=12) needed minimal assistance, 18% (n=11) needed Supervision, 2% (n=11) needed modified Independence and 12% (n=7) needed total independence to perform transferring activity.

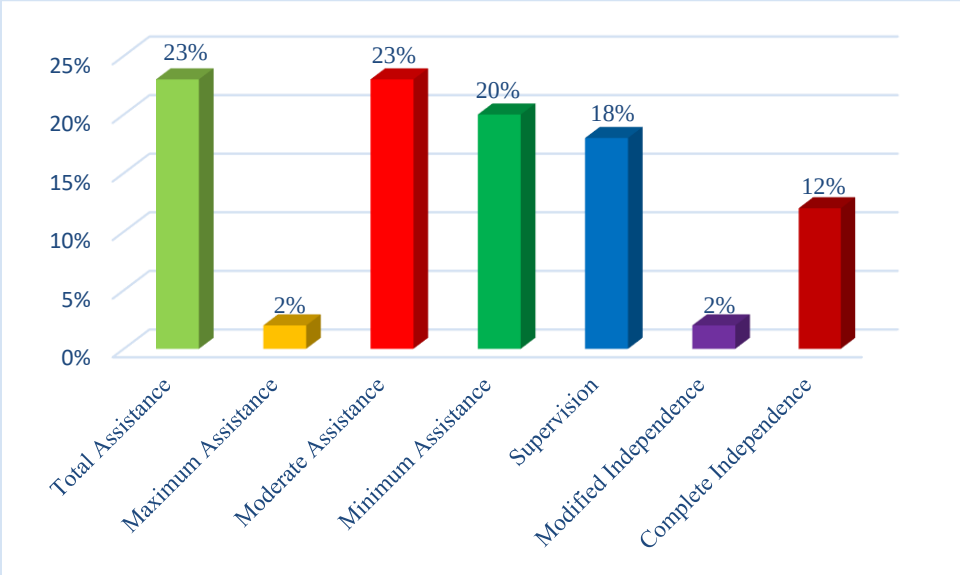


Figure 9: Functional Independence on measuring transferring

Distribution of Functional Independence during staring:

Among 60 participants 25% (n=15) needed Total assistance, 25% (n=15) needed Maximal assistance, 26% (n=15) needed moderate assistance, 8% (n=5) needed minimal assistance, 12% (n=7) needed Supervision, 2% (n=1) needed modified Independence and 2% (n=2) needed total independence to perform staring.

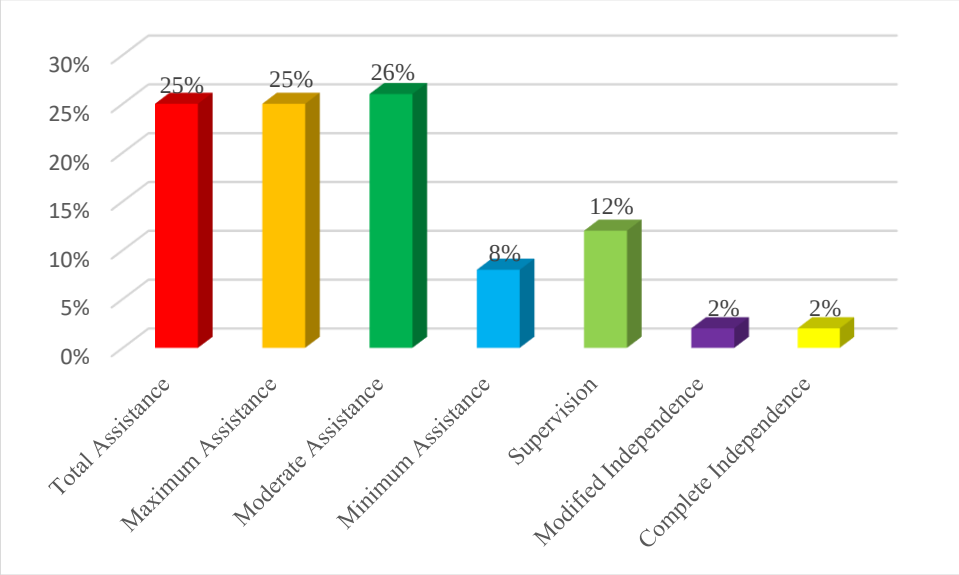


Figure 10: Functional Independence on measuring stairing

Table-3 Association between various age and Functional limitation:

Age Range	Functional Activities	Chi-value	P-Value	Significance
11-20	Eating	1.95	.582	Not Significant
	Dressing	5.32	.378	Not Significant
	Toileting	2.88	.823	Not Significant
	Transferring	2.75	.608	Not Significant
	Staring	5.87	.209	Not Significant
21-30	Eating	2.94	.568	Not Significant
	Dressing	3.48	.627	Not Significant
	Toileting	2.27	.518	Not Significant
	Transferring	3.28	.658	Not Significant
	Stairing	4.95	.422	Not Significant
31-40	Eating	3.77	.287	Not Significant
	Dressing	3.08	.544	Not Significant
	Toileting	2.26	.520	Not Significant
	Transferring	5.14	.273	Not Significant
	Stairing	1.71	.634	Not Significant
41-50	Eating	1.77	.777	Not Significant
	Dressing	1.77	.777	Not Significant

Age Range	Functional Activities	Chi-value	P-Value	Significance
41-50	Toileting	5.33	.149	Not Significant
	Transferring	2.89	.124	Not Significant
	Staring	1.33	.721	Not Significant
51-60	Eating	5.00	.172	Not Significant
	Dressing	4.31	.272	Not Significant
	Toileting	.139	.709	Not Significant
	Transferring	.500	.172	Not Significant
	Stairing	2.91	.233	Not Significant

The study showed that P-value between various age range and functional limitation is more than P≤ 0.05.This P value showed that means the result is not significance and there is no relation between various age range and functonal limitation of the participants. All the P value is more than 0.05 as like before.

Table 4-Distribution of the respondents of association between pain intensity of the participants and their functional limitation:

Table 4.1 Association between pain intensity at rest and associated functional limitation:

Association between pain intensity at rest and Functional limitation	Chi-square	p-value	significance
Eating	14.61	0.14	Not significant
Dressing	11.32	0.5	Not significant
Toileting	15.75	0.2	Not significant
Transferring	15.97	0.2	Not significant
Stairing	4.25	0.9	Not significant

From above Table, the observed Chi-square value was 14.61 and 5% level of significant P≥.05. The result was not significant. So there was no association between participant's pain intensity at rest and eating capacity. Whereby, all the observed chi-square value of table same as before. So, There was not found any association between Pain intensity on rest and functional capabilities (Dressing, Toileting, Transferring, Staring) according to FIM.

Table 4.2 Association between pain intensity at movement and associated functional limitation:

Association between pain intensity at movement and Functional limitation	Chi-square	p-value	significance
Eating	10.69	0.38	Not significant
Dressing	15.76	0.2	Not significant
Toileting	7.83	0.8	Not significant
Transferring	18.18	0.11	Not significant
Staring	13	0.17	Not significant

From above Table, the observed Chi-square value was 10.69 and P≥.05. The result was not significant. So there is no association between participant's pain intensity at movement and eating capacity. Whereby, all the observed chi-square value of table same as before. So, There was no association was found between pain intensity on movement and functional capabilities (Dressing, Toileting, Transferring, Staring) according to FIM.

CHAPTER –V DISCUSSION

This study examined the characteristics of shoulder pain and with its associated functional limitations among Paraplegia and tetraplegia patient. Here, 58% (n=35) Traumatic paraplegia, 18% (n=11) Non-Traumatic paraplegia and 23% (n=14) Traumatic Tetraplegia patient. This high prevalence rate was similar of many studies all over the world. For example: S. van Gorp et al (2014) have found that the shoulder pain affects over one half (51.4%) of tetraplegia and others (48%) paraplegia. 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%).

In Germany, a study by Foerch et al. (2009) found that mean age was 74 years and 20% of the participants were below 64 years and 73% were more than 74 years. In a study by Hossain et al. (2011) in Bangladesh found that peak incidence was between 51 to 70 years (69%). In this Analysis, Among the 60 cases, most affected gender is male. Among the 60 participants 80% were male and 20% were female who were suffered by shoulder pain. (Blanes et al. 2009) identified that age range more than 40% tetraplegia patients were contain higher prevalence rate. Curtis and Black (2002) found that near about two third (46.6%) male tetraplegia and (12.5%) participants showed greater prevalence of shoulder pain. The findings from this study showed that 80% male are affected in shoulder pain whether the female affected participants are 20%.

In this study, among the 60 affected participants, there were 80% (41) are lived in rural areas and only 20% (19) 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).

People with traumatic tetraplegia appear unmistakable designs of recuperation.

Factors that recognize homogeneous subgroups of the test are: severity of injury (level of injury, completeness) at pattern and change from a total to an inadequate harm. The anticipated functional level of independence of a individual with SCI will reach is emphatically related with the level and completeness of harm. The SCI Rehab project showed that the impact of therapy on functional change became more evident when analyzing injury groups of similar neurological level. Consistent with this, our results appeared a more grounded impact of hours of treatment on engine FIM alter in the damage gather of AIS D than the whole persistent populace. The test estimate of patients with AIS D was adequate to show as a partitioned bunch but that of the other AIS levels (A, B, C) was not. Expansive varieties still existed in terms of useful capacities as well as the hours of treatment gotten inside the AIS D group (Truchon et al., 2017).

Analyses showed that among the 60 participants 6 (10%) participants have mild symptoms and 48 (80%) participants had moderate symptoms and 6 (10%) have severe symptoms of pain during rest. Another So study shows that moderate pain was more than mild and severe pain.in another analysis showed that among the 60 participants 6 (10%) participants have mild symptoms and 34 (57%) participants had moderate symptoms and 20 (33%) have severe symptoms of pain during movement. 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 with functional limitation. Association between various age group of SCI and pain intensity according to NRS scale result are not significance, so, there is no association between pain intensity and functional limitation (Steeves et al.,2007) In functional limitation measuring on dressing 27% patient needs supervision where 3% patient need moderate assistance with moderate pain symptom .Similarly, in toileting 33% need supervision ,32% modified Independence and 15% need Total assistance.

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 found that most of the patient's pain was increased during movement with some limitation. That means there is a relation between shoulder pain severity and associated functional limitation. 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. Oliveria et al (2014) found that near about 1/3 tetraplegia patients and others are paraplegia patient suffered by radiating shoulder pain and maximum was shoulder with functional limitation.

Abdur Razzak et al (2011) found that there is relation between various age and their functional limitation due to pain. research , Researcher did not find any relation between various age and functional limitation .It may be due limitation participants and time limitation.

In this research,the first limitation of this study is sample size. Another major limitation is time. The period is very limited to conduct the research project on this topic. As the study period short so the adequate number of sample could not arrange for the study. As the study is conducted at Centre for the Rehabilitation of the paralyzed (CRP).

CHAPTER –VI CONCLUSION AND RECOMMENDATION

6.1 Conclusion

In conclusion, this study has found that there is no association between characteristic of pain and functional limitation of the SCI patient. There was also not found any association between age and functional limitation. It may be due to small amount of participant and time limitation. Physiotherapy treatment may play a vital role for the treatment of this type of patients after a successful study. So it is important to find out the association between nature of shoulder pain and with associated functional impairment of paraplegia and tetraplegia patient to provide treatment. But due to small amount of participants and time limitation goal of study was not full-filled.

6.2 Recommendation

Further research should be done to show significant result between pain intensity and its associated functional limitation with more sample size and time.

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BANGLADESH HEALTH PROFESSIONS INSTITUTE

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

Ref. CRP-BHPI/IRB/11/18/1278

Date: 17/11/2018

To
Lamia Akter
B.Sc. in Physiotherapy
Session: 2013-2014 Student ID:112130228
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal **"Characteristic of shoulder pain and functional limitation in patient with Spinal Cord Injury at CRP"** by ethics committee.

Dear Lamia Akter
Congratulations.
The Institutional Review Board (IRB) of BHPI has reviewed the above mentioned dissertation, with yourself, as the Principal investigator. The Following documents have been reviewed and approved:

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

The purpose of the study is to find out the characteristic shoulder pain and functional limitation in patient with spinal cord injury. The study involves use of a self – administered questionnaire explore the result that may take 20 to 30 minutes to answer fill in the questionnaire, have no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 9.30 AM on 24th January 2018 at BHPI.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Assistant Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

21th July 2018

The Head
Department of Physiotherapy
Centre for the Rehabilitation of the paralysed (CRP),
CRP, Chapain, Savar, Dhaka-1343.

Through: Head, Department of Physiotherapy, BHPI.

Subject: Application for permission for data collection.

Dear Sir,

With due respect and humble submission to state that I am Lamia Akter, student of 4th Professional B.Sc in Physiotherapy at Bangladesh Health Professions Institute (BHPI).The ethical board of BHPI has approved my research project entitled on **"Charecteristics of shoulder pain and with its associated functional limitation of Spinal Cord Injured patients at CRP ".** To conduct this research, I want to collect data from Spinal Cord Injury Unit from SCI patients who has been suffering from shoulder pain and with its associated functional limitation . So, I need your permission and support for data collection. I would like to assure that anything of my study will not be harmful for the participants.

I therefore, pray and hope that you would be kind enough to give me the permission to make this research project successful.

Sincerely yours

Lamia Akter

Signature: Lamia Akter

4th professional B.Sc in physiotherapy
Class Roll 28, Session: 2013-2014
Bangladesh Health professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343.

Allow for data Collection at CRP unit Physio 31.07.18

MUZAFFAR HOSSAIN
Junior Consultant & HOD incharge
Physiotherapy Department
CRP, Savar, Dhaka-1343

21.07.18

Recommended & Forwarded
23.07.18
Prof. Md. Obaidul Haque
Head, Department of Physiotherapy
Bangladesh Health Profession Institute (BHPI)
CRP, Savar, Dhaka-1343

Approved
Hossain

Verbal Consent Statement

(Please read out to the participants)

Assalamualaikum/Namasker,

My name is Lamia Akter, I am conducting this study as a part of my academic work of B.Sc. in Physiotherapy under Bangladesh Health Professions Institute (BHPI), which is affiliated to University of Dhaka. My study title is "Charecteristics of shoulder pain and its associated functional limitationin patient with Spinal cord injury CRP". I would like to know about some personal and other related information regarding Spinal cord injury. You will need to answer some questions which are mentioned in this form. It will take approximately 20-25 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. All information provided by you will keep in a locker as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous and also all information will be destroyed after completion of the study.

Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with me and/or Mst.Fatema Akter, Senior Lecturer of Physiotherapy Department, Bangladesh Health Professions Institute (BHPI), Savar, Dhaka.

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

☐ **Yes:** **Date:**

☐ **No:** **Date:**

Signature of the Participant _____ Date:

Mobile No:

Signature of the Interviewer _____ Date:

মৌখিক অনুমতিপত্র/সম্মতিপত্র

(অংশগ্রহনকারীকে পড়ে শোনাতে হবে)
আসসালামুআলাইকুম,
আমার নাম লামিয়া আক্তার, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ্ প্রফেশনস ইনষ্টিটিউট (বিএইচপিআই)-এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত। আমার গবেষণার শিরোনাম হলো "মেরুরজ্জু তে আঘাতপ্রাপ্ত রোগীদের কাধের ব্যথার ধরণ এবং এর সাথে জড়িত কাজের বাধাসমূহ "। আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তিগত এবং আনুষঙ্গিক প্রশ্ন মেরুরজ্জু ক্ষতিগ্রস্থ সম্পর্কে করতে চাচ্ছি। এতে আনুমানিক ২০-৩০ মিনিট সময় নিবো।

আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্য কোন উদ্দেশ্যে ব্যবহৃত হবেনা। 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 স্বেচ্ছা প্রণোদীত 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 অধিকার ও আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং মোছাঃ ফাতেমা আক্তার লোপা, সিনিয়র প্রভাশক,ফিজিওথেরাপি বিভাগ, সিআরপি, সাভার, ঢাকা- ১৩৪৩ তে যোগাযোগ করতে পারেন।

আমি আপনার অনুমতি নিয়ে এই সাক্ষাৎকার শুরু করতে যাচ্ছি।

হ্যাঁ :

না :

১। অংশগ্রহনকারীর স্বাক্ষর.....

মোবাইল নাম্বারঃ

২। সাক্ষাৎগ্রহনকারীর স্বাক্ষর.....

Questionnaire

This is a modified questionnaire according to the different FIM to take the information about non-communicable disease. This questionnaire will provide the information about the characteristics of shoulder pain and associated functional limitation that are related to the identified characteristics.

Patient's Identification

Identification Number:

Name of respondents:

Age:

Sex:

Address:

Consent Taken:

Contract no:

Part – I: Socio Demographic Information

Please give tick (√) mark at the Right side box of the best correct answer

Question Number	**Questions/ Information on**	**Response of the participant with coding category**
1.	Sex	Male= ☐ Female= ☐
2.	Marital status	Married = ☐ Unmarried= ☐ Divorced= ☐
3.	Educational qualification	Illiterate= ☐ Primary= ☐ Secondary = ☐ HSC= ☐ Graduation= ☐
4.	Living area	Urban= ☐ Rural= ☐
5.	Level of injury	
6.	Have you feel any pain in the shoulder?	Yes= ☐ No= ☐
7.	Which shoulder you feel pain?	Right= ☐ Left= ☐ Both= ☐
8.	How severe is your pain on NRS Scale on rest?	0 1 2 3 4 5 6 7 8 9 10

9.	How severe is your pain on NRS Scale on movement?	0 1 2 3 4 5 6 7 8 9 10
10.	Onset of Pain	Sudden= ☐ Gradual= ☐
11.	What is the behaviour of pain?	Aching= ☐ Burning= ☐ Dull = ☐ Electric shock= ☐ Tender = ☐ Pins & needles = Tingling = Sharp =
12.	Does pain disturb your sleep?	Yes= ☐ No= ☐
13.	What are the aggravating factors of pain?	Using wheelchair = ☐ Transferring = ☐ Activity of Daily living = ☐
14.	What are the ease factors of pain?	Rest= ☐ Movement = ☐
15.	When do you notice the pain	As the day progress= ☐ Night= ☐
16.	Is the pain radiate?	Yes= ☐ No= ☐
17.	If radiate, where?	Shoulder to elbow= ☐ Shoulder to mid forearm= ☐ Shoulder to wrist= ☐

18.	Limited shoulder JROM	Yes= ☐ No= ☐
19.	If limited	Active= ☐ Passive= ☐

FIM scale:

1=Total Assistance

2=Maximum Assistance

3=Moderate Assistance

4=Minimum Assistance

5=Supervision

6=Modified Independence

7=Complete Independence

According to FIM Scale:

Self-care	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Eating							
Dressing							
Transferring							
Toileting							
Staring							

উপাধিঃ মেরুদন্ডের আঘাত জনিত কারণে ,কাধের ব্যথার ধরণ এবং কাজের সীমাবদ্ধতা।

প্রশ্নমালা

ক) ব্যক্তিগত বিবরণ :-

১। উত্তর দাতার নাম -

২। বয়স-

৩। লিঙ্গ

৪।ঠিকানা-

৫। ফোন নম্বর-

খ)সামাজিক জনসংখ্যা তাত্ত্বিক তথ্যসূত্রঃ-

প্রশ্নমালার নম্বর	প্রশ্নমালা / তথ্য	**উত্তর দাতার জবাব**
১	লিঙ্গ	পুরুষ= ☐ মহিলা = ☐
২	বৈবাহিক অবস্থা	বিবাহিত = ☐ অবিবাহিত= ☐ তালাকপ্রাপ্ত= ☐
৩	শিক্ষাগত যোগ্যতা	অশিক্ষিত = ☐ প্রাথমিক = ☐ মাধ্যমিক = ☐ উচ্চ মাধ্যমিক = ☐ স্নাতক = ☐ স্নাতকত্তর = ☐
৪	বাসস্থান	শহর = ☐ গ্রাম = ☐
৫	আঘাতের ধরণ-	ট্রমাটিক পেরাপ্লেজিয়া = ☐ নন- ট্রমাটিক পেরাপ্লেজিয়া = ☐ ট্রমাটিক টেট্রাপ্লেজিয়া= ☐ নন- ট্রমাটিক টেট্রাপ্লেজিয়া = ☐

৬	আপনি কি কাধে কোনো ব্যথা অনুভব করেন?	হ্যা= ☐ না = ☐
৭	কোন কাধে ব্যথা অনুভব করেন?	ডান = ☐ বাম = ☐ উভয়ই = ☐
৮	বিশ্রাম অবস্থায় আপনি আপনার ব্যথাকে NRS স্কেলের কত দিবেন?	০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০
৯	নাড়াচাড়া অবস্থায় আপনি আপনার ব্যাথাকে NRS স্কেলের কত দিবেন?	০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০
১০	ব্যথা শুরু হয়-	হঠাৎ = ☐ ধীরে ধীরে = ☐
১১	আপানার ব্যথার ধরণ কেমন?	ধরা ব্যথা= ☐ জালাপোড়া ব্যথা= ☐ নিস্তেজ= ☐ বৈদ্যুতিক ধাক্কা= ☐ সূক্ষ ব্যথা= ☐ খোচাঁ খোচাঁ ব্যথা= ☐ তীক্ষ্ণ ব্যথা= ☐

১২	আপনার ব্যথা কি ঘুমের ব্যাঘাত ঘটায়?	হ্যা = ☐ না = ☐
১৩	কি করলে ব্যথা বাড়ে?	হুইল চেয়ার ব্যবহার করলে= ☐ স্থানান্তরণের সময় = ☐ দৈনন্দিন জীবনযাত্রার কার্জকলাপে = ☐ অন্যান্য = ☐
১৪	কি করলে ব্যথা কমে?	বিশ্রামের সময় = ☐ নাড়াচাড়ার সাথে সাথে = ☐
১৫	আপনি ব্যাথ্যাটা কখন অনুভব করেন?	দিন বাড়ার সাথে সাথে= ☐ রাতে = ☐
১৬	ব্যথা কি ছড়িয়ে যায়?	হ্যা = ☐ না = ☐
১৭	যদি যায়,তাহলে কোথায়?	কাঁধ থেকে কনুই = ☐ কনুই থেকে কব্জি = ☐ কাঁধ থেকে কব্জির নিচে = ☐ গ্রহণযোগ্য নহে = ☐
১৮	কাধের সন্ধিদেশে সীমাবদ্ধতা আছে কি ?	হ্যা = ☐ না = ☐
১৯	যদি সীমাবদ্ধতা থাকে,তাহলে কাজ করেন কিভাবে?	নিজে নিজে = ☐ অন্যের সাহায্যে = ☐ গ্রহণযোগ্য নহে = ☐

ফাংশ্ নাল রেটিং স্কেলের রেটিং-

১=অক্ষম

২= খুব বেশী সাহায্য

৩=বেশী সাহায্য

৪=অল্প সাহায্য

৫=তত্তাবধায়নে

৬=সাহায্যকারী ডিভাইস এর সাহায্যে

৭= নিজে নিজে

ফাংশ্ নাল রেটিং স্কেলের উপর ভিত্তি করে-

২০।পোশাক পরিধানের ক্ষেত্রে -

ক) অক্ষম খ) খুব বেশী সাহায্য গ) বেশী সাহায্য ঘ) অল্প সাহায্য

ঙ) তত্তাবধায়নে চ) সাহায্যকারী ডিভাইস এর সাহায্যে ছ) নিজে নিজে

২১।খাওয়া-দাওয়ার ক্ষেত্রে –

ক) অক্ষম খ) খুব বেশী সাহায্য গ) বেশী সাহায্য ঘ) অল্প সাহায্য

ঙ) তত্তাবধায়নে চ) সাহায্যকারী ডিভাইস এর সাহায্যে ছ) নিজে নিজে

২২।প্রস্রাব-পায়খানার ক্ষেত্রে -

ক) অক্ষম খ) খুব বেশী সাহায্য গ) বেশী সাহায্য ঘ) অল্প সাহায্য

ঙ) তত্তাবধায়নে চ) সাহায্যকারী ডিভাইস এর সাহায্যে ছ) নিজে নিজে

২৩। বিছানা ,চেয়ার, হুইল চেয়ার স্থানন্তর এর ক্ষেত্রে -

ক) অক্ষম খ) খুব বেশী সাহায্য গ) বেশী সাহায্য ঘ) অল্প সাহায্য

ঙ) তত্তাবধায়নে চ) সাহায্যকারী ডিভাইস এর সাহায্যে ছ) নিজে নিজে

২৪। শিড়িতে উঠার ক্ষেত্রে -

ক) অক্ষম খ) খুব বেশী সাহায্য গ) বেশী সাহায্য ঘ) অল্প সাহায

ঙ) তত্তাবধায়নে চ) সাহায্যকারী ডিভাইস এর সাহায্যে ছ) নিজে নিজে