EXPERIENCE OF PAIN AMONG PEOPLE WITH TRAUMATIC SPINAL CORD INJURY

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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

EXPERIENCE OF PAIN AMONG PEOPLE WITH TRAUMATIC SPINAL CORD INJURY

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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 declare that for any publication, presentation or dissemination of information of the study, I would be bound to take written consent from the department of physiotherapy of Bangladesh Health Professions Institute (BHPI).

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CONTENTS

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Acronyms

AIS:	ASIA Impairment Scale
ASIA:	American Spinal Injury Association
BMRC:	Bangladesh Medical Research Council
CBT:	Cognitive Behavioral Therapy
CI:	Confidence Interval
CRP:	Centre for the Rehabilitation of the Paralysed
DN4:	Douleur Neuropathique 4
DVT:	Deep Vein Thrombosis
fMRI:	Functional Magnetic Resonance Imaging
IRB:	Institutional Review Board
ISAP:	The International Association for the Study of Pain
ISCIP:	International Spinal Cord Injury Pain
ISNCSCI:	International Standards for Neurological Classification of Spinal Cord Injury
MDT:	Multidisciplinary Team
NSAIDs:	Nonsteroidal Anti-Inflammatory Drugs
SCI:	Spinal Cord Injury
TCES:	Transcranial Electrical Stimulation
TENS:	Transcutaneous Electrical Nerve Stimulation
tSCI:	Traumatic Spinal Cord Injury
VAS:	Visual Analogue Scale
WHO:	World Health Organization

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Abstract

Purpose: The purpose of the study was to explore the pain experience of traumatic spinal cord injury patients.

Objectives: To find out the pain experience of patients with traumatic spinal cord injury.

Methodology: A cross sectional research design was carried out in this study, the convenience sampling method was used to collect data and data was collected by face to face interview from 58 subjects. To find out pain experience the spinal cord injury pain questionnaire was used.

Results: The findings of the study was 93.3% of participants experiencing pain following traumatic spinal cord injury. Among of the total participants 89.7% were male and 10.3% were female where mean pain severity was 6.45 in VAS and most of the participants 50% (n=36) complained of moderate pain perception.

Conclusion: The finding result was 93.3% people with traumatic spinal cord injury experiencing pain which was comparable to the background study about the title. The results of this study may provide more valuable option to treat the SCI patients. The study results may also useful for the prevention of reducing the pain percentage.

Key words: Pain, traumatic spinal cord injury.

CHAPTER I INTRODUCTION

1.1 Background

Spinal cord injury (SCI) is not a common disorder but the result of it is devastative (Middleton et al., 2007). In that study it was mentioned that following spinal cord injury voluntary muscle of body are become permanent paralyzed and sensation loss in the below of lesion area; as a result of this reduction of mobility and functional activity, social and vocational tasks are impaired; thus an inverse effect on patient's health and well-being. As psychological impact of SCI is more and that's why many persons with SCI have certain levels of anxiety and depression (Migliorini et al., 2009). The average life satisfaction is generally below than that of the overall population (Post et al., 2012).

In the form of spinal cord injury can produce a collection of problems which includes chronic central pain, autonomic dysreflexia, and motor dysfunction (Deumens et al., 2008). Particularly central pain happens above and below the level of injury and is commonly thought to be produced by maladaptive plasticity later to the injury, thus resulting in increased excitatory and declined inhibitory input to dorsal horn neurons (Gwak et al., 2008).Patient with spinal cord injury (SCI) often experience chronic pain in which that is more than the other consequence of spinal cord injury (SCI) (Dijkers et al., 2009; Post et al., 2012). Mehta et al. (2014) concluded that pain has a major effect on quality of life for many SCI patients. They also indicated chronic pain develop over 50% of spinal cord injury (SCI) patients, the lower down the lesion the more severe pain is in the spinal cord and within the first 6-12 months pain begins in post SCI.

Therapeutically pain may be challenging and has a large roll on quality of life as well the predicted thought in the past relation of pain to depressive symptoms may not be too high (Hassanpour et al., 2012). Common phenomenon of shoulder pain due to trauma in the acute phase and in the chronic phase overuse, muscle weakness, and spasticity is common (Akbar et al., 2011). The most common examples of nociceptive pain after traumatic spinal cord injury (SCI) are pain in the wrists and back, muscle contracture, heterotopic ossification and pain related to spasms, also visceral pain is present in only a bordering at the first 5 to 10 years after spinal cord injury (SCI) but it is reported that about 30% of patients with long-term SCI can be very hard to accomplish and it is also mentioned that

visceral pain seems to be a comparative symptom of constipation (Finnerup et al., 2008). The most excepted SCI classification is International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) given by the American Spinal Injury Association (ASIA) Impairment Scale (AIS) (Basbaum et al., 2009). In this classification a Complete SCI, AIS A, is described as both motor and sensory function aren't preserved in the sacral segments S4 and S5. In AIS B is sensory incomplete SCI; AIS C and AIS D mention motor incomplete SCI. On that classification it is also defined the neurological level as the most caudal segment with normal motor and sensory function to light touch and pinprick.

The incidence of spinal cord injury (SCI) varies from 10.4 to 83 per million per year worldwide, among of them one-third have tetraplegia, a complete lesion is 50%, 33 years (range 16–50) is mean age at injury and men/women distribution is 3.8/1. (Wyndaele & Wyndaele, 2006). In 2010 a study had showed in Netherlands the surviving incidence of a traumatic SCI in acute phase has been appraised at 11.7 per million per year, among them 69% have tetraplegia, 38% have a complete lesion, 62 years (range 13–96) is average age at injury and men/women distribution is 2.8/1.3 and the non-traumatic incidence of spinal cord injury SCI is unknown in the Netherlands (Nijendijk et al., 2014). The worldwide SCI prevalence approximation is not known where 5 studies on the prevalence of SCI reviewed only and all of the studies are taken from developed countries (Wyndaele & Wyndaele, 2006). Dijkers et al. (2009) reported that the percentage of persons with SCI who develop chronic pain from 11 to 94% for 'pain' and 18 to 63% for 'severe disabling pain'.

1.2 Rationale

Physiotherapy plays a vital role in the management of SCI patient. This study is designed to explore the experience of those SCI patients with pain. It will be helpful for physiotherapist in working in this area for delivering treatment service. As a result patients become more benefited. Thus the study might create a future prospect of physiotherapy profession in Bangladesh. This study also will be helpful in making physiotherapist to aware about the pain problem of SCI patients. And to aware the people and professionals about the spinal cord injury and its complications.

Now a days the evidence of spinal cord injury is increased in Bangladesh with increased population. Due to increasing population and decreasing the working opportunities they are undertaking risky work, as a result they are falling in spinal cord injuries. But still now there is no evidence that research has been done on this topic in Bangladesh. So I become interested to select this topic. Most of the spinal cord injury patients of Bangladesh come at CRP for treatment so I select the patients of CRP as my sample.

1.3 Research question

What is the experience of pain in traumatic spinal cord injury patients?

1.4 Objectives of study

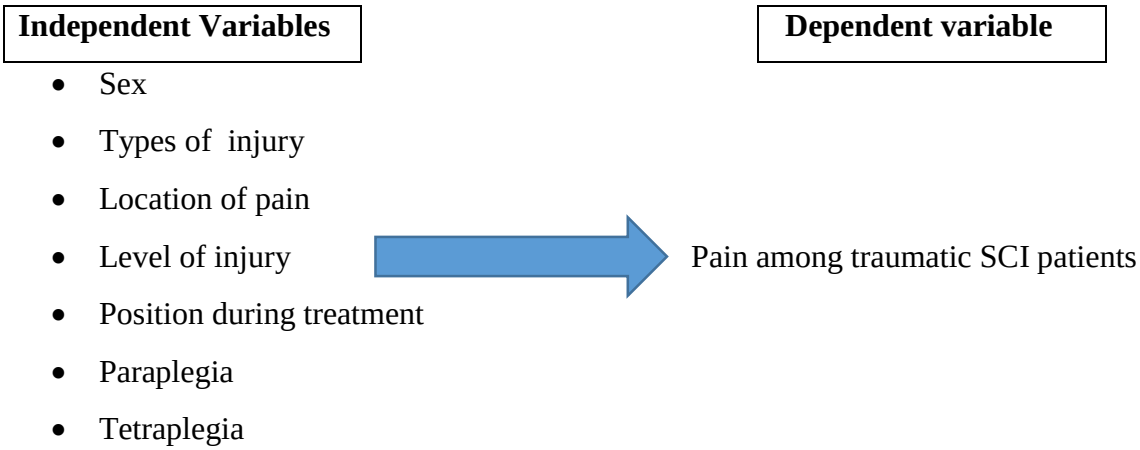
1.4.1 General objective:

The aim of this study is to explore pain experience of traumatic spinal cord injury (SCI) patients.

1.4.2 Specific objectives:

- To know the proportion of patient who has pain after traumatic spinal cord injury.
- To find out the association of pain with the duration of injury.
- To find out pain definition strictness (mild, moderate, severe).
- To find out the different pain perception.

1.5 Conceptual framework



1.6 Operational definition

Experience: Capability of understanding the situation through individuals own pattern and can express the condition by any means.

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

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

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

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

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

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

CHAPTER II LITERATURE REVIEW

Traumatic spinal cord injury (SCI) includes a high prevalence of persistent pain conditions which has shocking physical and emotional significances (Felix, 2014). After SCI pain is often spontaneous but it can also happen as an exaggerated pain aroused by a noxious stimulus (hyperalgesia) or pain from normally harmless sensations (allodynia) in a lower threshold result (McMahon et al., 2013; Masri & Keller, 2012). The prominent symptoms of neuropathic pain are hyperalgesia and allodynia (Jensen & Finnerup, 2014). These pain conditions can be the net effect of a number of simultaneous factors together with increased peripheral receptor sensitivity, activation of glial cells, central sensitization or hyperexcitability, nerve root damage, disruption of communication via interneurons and through long axon tracts, comprising those that play a role in descending pain control mechanisms (Szczudlik et al., 2014; Gwak & Hulsebosch, 2011, Bedi et al., 2010). Mechanisms that is underlined also can be determined by on whether the pain is below at/or above the level of injury. The origins of pain are consequently complex and particular to each person, and are predictable to influence which treatments are most actual (Felix, 2014; Baron et al., 2012). Nevertheless, determining the underlying mechanisms that presents in a considerable challenge because the assessment methods recently showing only the net resulting pain condition. Bryce et al. (2012) proposed that functional magnetic resonance imaging (fMRI) may be able to provide valuable additional information by non-invasive assessments of pain to support treatment choices and monitoring the outcomes.

Widerström-Noga et al. (2007) were able to identify 3 subgroups after studied in 190 patients with SCI and chronic pain. The identified first group was defined as ‘dysfunctional’, categorized by higher pain severity, life interference, affective distress scores and lower levels of activities scores and life control. In that study the second identified group was defined as ‘interpersonally supported’, categorized by moderately high pain severity, and higher life control, activities scores, solicitous response, support from significant other and distracting responses. The final group was defined as ‘adaptive copers’, categorized by lower pain severity, affective distress, distracting responses, life interference, support from significant others, solicitous responses, higher life control scores and activities. Paralleled with dysfunctional subgroup, the interpersonally supported group

reported considerably larger social support (Widerstrom-Noga et al., 2007). In between pain after SCI and supraspinal changes relation has not been determined yet, the observed cortical changes are specious in some way connected to individual pain conditions. Besides, they occur because of following spinal cord injury and they appear to be the direct or indirect consequence of neural degeneration or changes in ascending signaling, as recommended by studies of phantom limb pain (Flor et al., 2006).

Due to incomplete documentation and allocations to tertiary institutions spinal cord injury causes serious injuries and everlasting impairments which creates a life frightening situation (Phalkey et al., 2011). The reason of spinal cord injury may describe as traumatic or non-traumatic (Chen et al., 2013). On that study it also mentioned that auto crash, including truck, jeep and bus, fall: including being pushed accidentally and jumping (not as an act of violence), gunshot wound, diving, motorcycle crash: 2-wheeled, medical/surgical complications: damage of spinal cord function consequential from adverse effects of medical, surgical or diagnostic measures and treatment, tricycles, bicycle, pedestrian, including falling/jumping into the road of a vehicle, glider kite, sledding, auto racing, slide, forklift, scuba diving, bulldozer, swimming, bungee jumping, kicked by an animal, tractor, lightning, machinery accidents, go-cart, tobogganing, steamroller, road grader, train, snow tubing, playing ice hockey, snowboarding may cause the spinal cord injury. Chen et al. (2013) also indicated that personal contact, falls as a result of being pushed, including existence hit with a blunt thing. Football as well other penetrating wounds: impalement, stabbing, para-sailing, boat and parachuting etc gymnastic activities water skiing, other than trampoline baseball/softball, basketball/volleyball, high jump, grenade, dynamite, gasoline and bomb may cause of the injury and these are traumatic cause. The non-traumatic cause is spinal tumor, transverse myelitis, tuberculosis of spine, physical weakness, physical assault etc (Chen et al., 2013). Hoque et al. (2012) indicated that in Bangladesh it is a common training to transport heavy load on the head. For that reason most of the SCI are taken place due to accidental fall while carrying heavy load. In Bangladesh during harvesting season the laborers and farmers carry their crops on their head and carriage them from reaping areas to local store houses or from one vehicle to additional place. Razzak et al. (2011) discussed that the common causes of SCI in Bangladesh are fall while carrying heavy load on head, road

traffic accidents, falling from an altitude, fall over a heavy object onto the neck or head, bull attack and diving into shallow water.

Grossman et al. (2012) mentioned that 79% male with a median age of 44 years and the leading causes of injury were falls (37%) and motor vehicle accidents (28%). On that study the dissemination of initial ASIA grades were A (40%), B (16%), C (15%), and D (29%). Among of them fifty-eight percent (58%) of patients sustained 1 or more severe, moderate, or mild complications. Associated complications were more severe with ASIA grade: 84% of patients with Grade A and 25% of patients with Grade D who had 1 complication at least. On the other hand seventy-eight percent of complications happened within 14 days of injury. The most recurrent types of complications were severe and moderate respiratory failure, pleural effusion, pneumonia, anemia, severe bradycardia, and cardiac dysrhythmia. Among of them the mortality rate was 3.5% and it was associated with the increase aged people and prior morbidity (Grossman et al., 2012). Aito et al. (2007) reviewed recent literature on DVT after SCI and they found an incidence 10%–30% of it. That study also found the prevalence of 4.1% of clinically outward DVT. It is documented that the incidence would have been higher if all patients had undertaken duplex ultrasound screening. They also suggested in another study in 2003 that the spinal units were also the rehabilitation facility for spinal cord injury patients. In that spinal units, they reported the following complications on admission and that's are the 15.5% of cases trophic skin changes in, 6.9% heterotopic ossification, 2.1% urinary, 9.4% respiratory, 1.3% DVT and only 1 case of pulmonary embolism.

Pain is a more common complication among the spinal cord injury patients (Dijkers et al., 2009). Many different types of pain classifications are given following SCI, which determinations to improve different treatment result. Mehta et al. (2014) concluded the most frequent forms of pain post SCI are: 1) a burning pain (as like neuropathic pain) usually localized to the anterior aspect of torso, legs or buttock or 2) an aching pain (as like musculoskeletal pain) usually localized to the shoulders, neck and back. To reach agreement on an international accepted classification, a conference was held, surveyed by article testing, widespread work, and circulation of a draft classification to prominent spinal cord injury and pain organizations. This classification is now issued as the International Spinal Cord Injury Pain (ISCIP) classification (Bryce et al., 2012). The Spinal Cord Injury

Pain Task Force of the IASP established a categorization or classification of SCI pain in which SCI-relevant pain is divided as either musculoskeletal, nociceptive or visceral pain, or neuropathic: above the SCI level, at the SCI level, or below the SCI level neuropathic pain (Bryce et al., 2012). Neuropathic pain of above the SCI level is less common (Mehta et al., 2013). Bryce et al. (2012) mentioned in the new classification the term ‘‘above-level pain’’ is omitted. They also noticed that above the neurological level of SCI patients do not experience neuropathic pain from their injury and this type of pain is used to define pain that not directly related to SCI: for example- due to pulling the wheelchair patients may suffer from carpal tunnel syndrome pain; following SCI surgery post thoracotomy pain or pain not related to the SCI, e.g. diabetic polyneuropathy pain. Though these categories of pain may happen also at and/or below injury level, this is now termed as ‘other neuropathic pain’ to distinguish from neuropathic pain as through consequence of the SCI (Bryce et al., 2012).

Table: 1 International Spinal Cord Injury Pain Classification

International Spinal Cord Injury Pain Classification (Bryce et al. 2012):

Pain type	**Pain subtype**	**Primary pain source and/or pathology**
Nociceptive	Musculoskeletal	e.g. comminuted femur fracture, glenohumeral arthritis, quadratus lumborum muscle spasm, lateral epicondylitis.
	Visceral	e.g. cholecystitis, myocardial infarction, abdominal pain due to bowel impaction.
	Other nociceptive pain	e.g. surgical skin incision, migraine headache, autonomic dysreflexia headache.
Neuropathic	At Level SCI pain	e.g. spinal cord compression, cauda equine compression, nerve root compression.

	Below level pain	e.g. spinal cord compression, spinal cord ischemia.
	Other neuropathic pain	e.g. diabetic polyneuropathy, carpal tunnel syndrome, trigeminal neuralgia,.
Other pain	-	e.g. Complex Regional Pain Syndrome type-I, fibromyalgia, irritable bowel syndrome, interstitial cystitis.
Unknown pain	-	-

ISAP stated that neuropathic pain is described as a pain that caused by damage, injury or diseases affecting the central or peripheral nervous system. After spinal cord injury (SCI) most of patients undergo in long-term moderate to severe pain (Tate et al., 2013; Kumru et al., 2013; Sharp et al., 2012). Neuropathic pain will persevere unless the injured area is restored or pain reduction lanes are improved, so researchers are searching to repair the injured nerve cells (Yousefifard et al., 2016). There is limited intrinsic regeneration of the injured nerves in the central nervous system, so scientists are trying to reduce the neuropathic pain by building new nervous contacts at the location of injury (Hama & Sagen, 2007). Therefore, it is thought that cell transplantation may be a suitable treatment for SCI, as a result in recent years many research has been completed in this arena and the results of them which displays a strong influence of stem cell transplantation in functional rescue after SCI (Sahni & Kessler, 2010; Kabu et al., 2015).

The IASP defined the neuropathic pain as “pain that is caused by a disease or lesion of the somatosensory nervous system” (Bryce et al., 2012). Baastrup et al. (2008) suggested that after SCI neuropathic pain is more common (20–75%), which impacts greatly on these patients in the quality of life. Post-SCI NP is more common refractory to treatment (Caedenas & Felix, 2009) and patients are disappointed with the level of knowledge that family physicians have of it (Norman et al., 2010). As for example neuropathic pain is pronounced as burning, itching, stabbing, shooting, pricking, tingling sensations and pain that is electric shock like and painful cold, often convoyed by allodynia (pain due to a stimulus which does not usually irritate pain) and hypoesthesia (reduced sensation of touch) (Bryce et al., 2012). There is the most popular and authenticated questionnaires to

conclude neuropathic pain is the Douleur Neuropathique (neuropathic pain) 4 questions (DN4) (Bouhassira et al., 2005). In the pain classification as neuropathic pain with the DN4 it is necessary to answer 'yes' 4 or more than 4 questions out of the 10 questions and the questions are 3 from about the pain characteristics, 4 from pain related with symptoms in the same region, 2 from hypoesthesia to touch or prick in the pain region and 1 from pain that is resulted or increased by brushing in the painful region (Perez et al., 2007). Neuropathic pain can be separated into central pain and peripheral pain. Central pain occurs as an outcome of the spinal lesion is below-level pain, on the other hand at-level pain may be produced by root or spinal cord lesion and may consequently have both central and peripheral pain components. As in other neuropathic pain conditions, patients with SCI may report spontaneous and/or stimulus-evoked pain (Finnerup et al., 2007). They also suggested that pain may be called in terms such as pins and needles, burning/hot, painful cold, shooting and squeezing. Hyperalgesia and allodynia is frequently present at level and below level injury in incomplete lesion patients (Finnerup et al., 2007).

SCI neuropathic pain mechanisms are multiple and not completely understood. These mechanisms may vary among patients to patients and, thus far, no simple test that can clarify the mechanisms accountable for neuropathic pain in the particular patient. About 50% of SCI patients have experience in neuropathic pain (Werhagen et al., 2004), which is comparable to the 50% prevalence of central pain in operculo-insular strokes patients and these give rise to separated sensory loss with spinothalamic tract insufficiencies (Garcia-Larrea, 2012). Still it is an open question that why pain develops in one-half of patients with spinothalamic tract injury and the rest of one-half of patients don't develop so.

For spontaneous recovery from a SCI neuroplasticity plays an important role, but it may produce adverse magnitudes as like spasticity, neuropathic pain, and autonomic dysreflexia (Brown & Weaver, 2012). Central nervous system's sensitization is considered to be the key cellular change responsible for the central pain and manifested by a better response to synaptic inputs, reduced threshold and development of receptive fields (Woolf, 2011). Basbaum et al. (2009) suggested that the central sensitization may contain processes by which response from low threshold Ab mechanoreceptors expansion access to pain-transmitting systems, which may cause generally non-painful stimuli to be supposed as

painful. Therefore the clinical representation is allodynia, hyperalgesia and after-sensations (Basbaum et al., 2009 & Woolf, 2011). Woolf, (2011) discussed that the continuing discharges in central pain paths are believed to cause spontaneous pain and reduced threshold in nociceptor excitation may cause continuing pain if the nociceptor is triggered by stimuli existent at physiological levels. In a current prospective study, sensory hypersensitivity (temporal summation of pain and mechanical allodynia) and hyperpathia were originated to precede continuing below the level pain in incomplete SCI patients, secondary a role of neuronal hyperexcitability in central pain (Zeilig et al., 2012).

Giardino et al. (2003) noted that pain-related exaggerating or catastrophizing the negative values of a situation has been related with greater intensity of pain, emotional distress and functional disability in chronic pain patient's conditions and spinal cord injury. It was thought to deliver partial support of catastrophizing for a "communal coping" model, where catastrophizing in persons with pain may perform as a social communication dedicated toward gaining social proximity, assistance or support.

Widerstrom-Noga & Turk (2003) showed that not surprisingly, found in SCI patients in more locations with more severe pain, those patients with hyperalgesia or allodynia and those in whom the pain was more likely to affect with activities were not unlikely usage pain medications. They also showed that trials of simple nonsteroidal anti-inflammatory drugs (NSAIDs), non-narcotic analgesics, non-narcotic 'muscle relaxants' or acetaminophen are more common clinical prescription in spinal cord injury pain. Unluckily, these drugs are not often effective in complete spinal cord injury neuropathic pain relief moreover, these have more risks of other complications like as gastric ulceration with long time use (Widerstrom-Noga & Turk, 2003).

Now-a-days gabapentin and pregabalin are considered as first-line drug for treatments of neuropathic pain (Moulin et al., 2007). Gajraj (2007) also showed that first line treatments for neuropathic pain in Canadian and international guidelines are gabapentin and pregabalin have been recommended. It is proved that in the central nervous system the mechanism of action for gabapentin and pregabalin are via binding with the alpha-2 delta receptors. In the presynaptic nerve terminals these type receptors are present. These receptors decrease the influx of calcium into the presynaptic terminal by certain amount of gabapentin or pregabalin and that's why it decreases the excitatory neurotransmitters

release (Gajraj 2007). Gabapentin and pregabalin seem to potentiate GABA effects centrally over enrichment of GABA release and synthesis and both of these are relatively well tolerated with only a limited transient side effects, lack of organ toxicity and there are no evidence of significant collaboration with other medications (Gajraj 2007). Rintala et al. (2007) was the only study to report that Gabapentin have no advantage over placebo in the spinal cord injury pain treatment. This study may have complicated by the point that the placebo treatment was dimenhydramine and a false inert placebo and the number of samples was only twenty two.

Table: 2 Summary of Anticonvulsant Pain Treatment Post SCI

Summary of Anticonvulsant Pain Treatment Post SCI (Mehta et al., 2014)

Study	Study type	N	Intervention	Type
Rintala et al. 2007	RCT	22	Gabapentin	+
Levendoglu et al. 2004	RCT	20	Gabapentin	+
Tai et al. 2002	RCT	07	Gabapentin	+
To et al. 2002	Non-RCT	44	Gabapentin	+
Ahn et al. 2003	Non-RCT	31	Gabapentin	+
Putzke et al. 2002	Non-RCT	21	Gabapentin	+
Cardenas et al. 2013	RCT	219	Pregabalin	+
Siddall et al. 2006	RCT	137	Pregabalin	+
Vranken et al. 2008	RCT	40	Pregabalin	+
Finnerup et al. 2002	RCT	30	Lamotrigine	+*
Finnerup et al. 2009	RCT	36	Levetiracetam	-

Note: *= in individuals with incomplete SCI

Following non-SCI causes tricyclic antidepressants are frequently suggested for the neuropathic pain management (Vranken et al., 2008). For that reason it is essential to study the use of tricyclic antidepressants in the management of post-SCI pain. Vranken et al. (2008) found individuals receiving duloxetine stated clinically significant (>2 units on VAS) progress on pain associated to those in a placebo control group. In an exciting study by Rintala et al. (2007) showed that amitripyline was worse than gabapentin in non-

depressed and depressed patients but was no worse than diphenhydramine for depressed patients only. Marciniak et al. (2008) treated 29 spinal cord injury patients with Botulinum toxin type A injections to manage focal spasticity. Via this method pain was improved by 83.3%.

There is contradictory level 2 evidence (one from randomized controlled trial; Hagenbach et al., 2007) for the usage of delta-9-tetra hydrocannabinol in decreasing spastic pain in SCI individuals. There is level 2 evidence (one from randomized controlled trial; Rintala et al., 2010) that stated that dronabinol is ineffective in decreasing pain intensity of post SCI.

Chun et al. (2011) reported that in between 2003 and 2008 there were 38 individuals treated with the surgical procedure. These subjects individually suffered from different types of neuropathic pain containing mechanical versus thermal, segmental versus diffuse or a combination of both, and intermittent versus continuous pain. They also showed that the previous treatment with medication had confirmed ineffective and after surgery, patients were surveyed for a period ranging in between 19 and 84 months (on average 42 months) to measure the grade of pain relief. It also showed that at follow-up stage, patients were asked to mark the intensity of their pain problem using the VAS. Pain release was considered by the biographers to be ‘good’ if pain was released by more than 75%, ‘fair’ if pain was released by 25-75% and ‘poor’ if it was released less than 25%. Each patient with intermittent pain and continuous pain reached high rates of good pain relief (correspondingly 78% - 80%) (Chun et al., 2011).

For musculoskeletal pain of post-SCI it is not be most effective treatment by the local heat and massage therapy (Mehta et al., 2014). On the other hand Norrbrink & Lundeberg (2004) in a survey of SCI subjects 3 years post-injury found that massage and heat therapy were the best non-pharmacological management. In a prospective controlled trial, where 30 subjects were separated into either an acupuncture group or massage therapy and each group got treatment for 6 weeks in two times a week and were followed up for 2 months. The study showed that the massage therapy group was ineffective in improving pain intensity linked to the acupuncture group. There is a crossover RCT, Chase et al. (2013) stated patients that received light touch and next massage were more likely report decrease in pain intensity than those that conventional massage and then light touch. That study did

not examine the effectiveness of either management compared to the alternative; hence, it is problematic to examine if one management itself is more effective than the other. Mehta et al. (2014) concluded that massage may not be helpful for post-SCI musculoskeletal pain and neuropathic pain.

Arienti et al. (2011) examined the use of osteopathic management in decreasing neuropathic pain of post SCI. Subjects were divided into one of three groups: first one the pharmacological group who received 600 mg of pregabalin every day; second one the combined with pharmacological and osteopathy group who received osteopathic treatment once in a week for the first month, once in every fortnight for the 2^{nd} month and once during the 3^{rd} month for 45 minutes along with the pharmacological management; the osteopathic group took only the osteopathic management schedule termed and the combined group took both active treatments. That study found verbal numeric scale (VNS) ratings were not considerably different among the groups from baseline to 8 weeks. Nevertheless, the combined management group had the uppermost pain relief associated to the pharmacological treatment alone ($p=0.05$) and the osteopathic treatment alone ($p=0.001$) groups from 13 to 24 weeks (Arienti et al., 2011). In another study Mehta et al. (2014) concluded that osteopathy alone may not be helpful for post-SCI neuropathic pain. In a prospective controlled trial study, subjects in the acupuncture group described significant drop in worst pain concentration and pain unpleasantness associated to those in the massage group at two month follow-up. No massive difference was seen in between the both groups on pain intensity that based on the Visual Analogue Scale (VAS) (Norrbrink & Lundeberg, 2011). An RCT by Yeh et al. (2010) found that patients who received acupoint electrical stimulation, it showed significant upgrading in pain intensity and average pain associated to those that took sham acupoint electrical stimulation management or no treatment ($p<0.01$). Enhancement in impact of pain on sleep was also stated in the acupoint electrical stimulation group associated to the other 2 groups ($p<0.05$). Ginis et al. (2003) studied SCI patients who were under a regular exercise program and compared them to spinal cord (SCI) patients who did not. Those patients who were under the regular exercise therapy program experienced a massive improvement in pain scores which in opportunity accounted for improved depression scores. Ditor et al. (2003) found that pain scores were not positively interconnected with adherence to a future exercise

program. Mehta et al. (2014) concluded in a study that regular exercise decreases both musculoskeletal and post-SCI neuropathic pain.

In a pre-post study Nash et al. (2007) reported that anaerobic power and strength of the upper limbs increased following sixteen (16) weeks of circuit training, while scores of shoulder pain decreased significantly ($p=0.008$). In another pre-post study Serra-Ano et al. (2012) found it was helped to reduce shoulder pain post SCI and improve shoulder functionality by an 8 week resistance training program. Finley and Rodgers (2007) studied 17 subjects including 9 spinal cord injury (SCI) patients with a special wheelchair like as MAGIC wheels 2-gear wheelchair and found that by using this specific chair shoulder pain reduced. Mehta et al. (2014) concluded in their study that a shoulder exercise program can reduce the intensity of post-SCI nociceptive shoulder pain and also MAGIC wheels 2-gear wheelchair can reduce nociceptive shoulder pain. Jensen et al. (2009) unsystematically allocated subjects into hypnosis or the biofeedback treatment group and subjects in the hypnosis group stated that there was a significant decrease in neuropathic pain severity compared to those of the biofeedback group ($p<0.01$). Except neuropathic pain no such effect was seen in between the two groups in individuals. A pre-post study among individuals with SCI pain by Jensen et al. (2013) found that biofeedback improved pain intensity.

Norrbrink et al. (2006), Heutink et al. (2012) and Burns et al. (2013) found that there was no improvement in pain intensity by cognitive behavioral therapy among individuals who receiving the treatment. But all that studies found significant improvement in connected psychosocial factors in post treatment. Norrbrink et al. (2006) also found there was significant improvement in anxiety, depression and sleep interference in post treatment. Burns et al. (2013) mentioned that the modification in life interference and locus of control. There was significant improvement in anxiety and participation in activities was seen in among individuals who received Cognitive Behavioral Therapy (CBT) (Heutink et al., 2012). There is level 1b conflicting evidence (one from randomized controlled trial, a chohort study and two pre-post studies; Moseley 2007; Gustin et al. 2008; Soler et al. 2010 & Kumru et al. 2012) showed that visual imagery may decrease at level neuropathic pain in post spinal cord injury for a small period.

There is strong level 1a evidence (four from randomized controlled trials; Fregni et al. 2006; Tan et al. 2006 & Soler et al. 2010) for the benefits of transcranial electrical stimulation (TCES) in decreasing musculoskeletal and neuropathic post-SCI pain. One prospective controlled study by Yoon et al. (2013) studied that 10 days of active transcranial direct current stimulation expressively improved pain severity associated to sham treatment.

Norrbrink (2009) in a crossover study examined the effect of low frequency (2Hz) and high frequency (80Hz) transcutaneous electrical nerve stimulation (TENS) and patients took either low or high frequency stimulation approximately for 30 to 40 minutes 3 times daily for 2 weeks followed by a 2 week washout period. After that he switched stimulation frequency groups and the author stated no significant difference between the two treatments in refining of neuropathic pain. However, the study did catch clinically significant decrease of pain severity, worst pain intensity and pain unlikableness in post treatment while compared to baseline scores. In that study 70% of participants there was a reduction of greater than 2 points in pain severity from baseline; where clinical significance was described as having a reduction of more than 1.8 points.

CHAPTER III METHODOLOGY

3.1 Study design

A cross sectional study was chosen to conduct the study. It is the simplest variety of descriptive or observational epidemiology are a useful way to gather information on important health-related aspects of people's knowledge, attitudes, and practices. A cross sectional is a research technique which involved collecting data from a large number of people, so that a general overview of the group could be obtained.

3.2 Study population

A population is the total group or set of events or totality of the observation on which a research is carried out. In this study, sample populations were selected from the participant of Centre for the Rehabilitation of the paralysed (CRP), Savar, Dhaka.

3.3 Study site

The study was conducted at the Centre for the Rehabilitation of the Paralysed (CRP) in Bangladesh.

3.4 Study area

Spinal cord injury (SCI) unit of the Centre for the rehabilitation of the paralysed (CRP).

3.5 Sampling

Purposive sampling technique was selected. Because purposive sampling involves the deliberate selection of individuals by the researcher based on predefine criteria and getting of those samples whose criteria will be concerned with the study purpose. Here another factor is resource limitation to get the sample in bigger aspect as well as the limitation of time. Participants are chosen purposively because the participants have some particular features or characteristics which are enable detailed exploration of the research objectives. This method contained some inclusion criteria to select the participant as to find out the actual snap of the situation.

3.6 Sample size

Sampling procedure for cross sectional study done by following equation-

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

Here,

n = sample size

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

p = expected prevalence (94% or 0.94)

q = 1- p (1- 0.94 or 0.06)

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

Here the actual sample size for this study is calculated 87. But as it is an educational research and had the time limitation so 58 SCI patients were taken as sample.

3.7 Data collection method and tools

The face to face interview method was used to accumulate data. To successfully complete the interview session and composed the valuable data from the patients the materials were used such as- consent form, question paper, pen, pencil, file, clip board etc. A structured questionnaire was used for collecting information associated to the study.

3.8 Inclusion criteria

- The patients attended at spinal cord injury (SCI) unit of CRP.
- Patients who were injured from any trauma.
- Both male and female patients were selected.
- Subject who were willing to participate in the study.

3.9 Exclusion criteria

- Subject who were medically unstable.
- Subject who had mental disorders.
- Non traumatic patients.
- Patients who were in acute stage.

3.10 Data analysis

Data were numerically coded using an SPSS 20.0 version software program. Data was analyzed through descriptive spastics which focused to table, bar chart and pie chart.

3.11 Ethical consideration

Research proposal was submitted and presented to the institutional review board (IRB) and Bangladesh health professions institute (BHPI) and approval was obtain from the board. World health organization (WHO) and Bangladesh medical research council (BMRC) guideline also followed to conduct the study. I also took the permission from New South Wales agency for clinical innovation authority for using their questionnaire. Then permission was taken from the In-charge of SCI unit for data collection from the patients by ensuring the safety of participants. The participant, who was interested to participate in the study, was informed verbally about the topic and purpose of study. I have received a written consent form each participant including signature or finger print who were not able to provide signature. They were informed about the number of interviews and length of interview. It was informed that there would be no risk or direct benefit to participate in the study. Each participant had the right to refuse to answer any question or withdraw them from the study. It was informed that the information given by participant will be published according to their permission and at this time their identities will be protected by using coding.

CHAPTER IV RESULTS

The aim of the study was to find out the experience of pain among people with traumatic spinal cord injury. Data were numerically coded using an SPSS 20.0 version software program. The collected data were calculated as percentages and presented by using graph and table charts. 58 participants were taken to find out the experience of pain among people with traumatic spinal cord injury.

Pain experience

In this study among the 58 participants 93.1% (n=54) of participants were experienced pain during the last week from the interview date and 6.9% (n=4) of participants were not experienced pain during that time (Figure: 1).

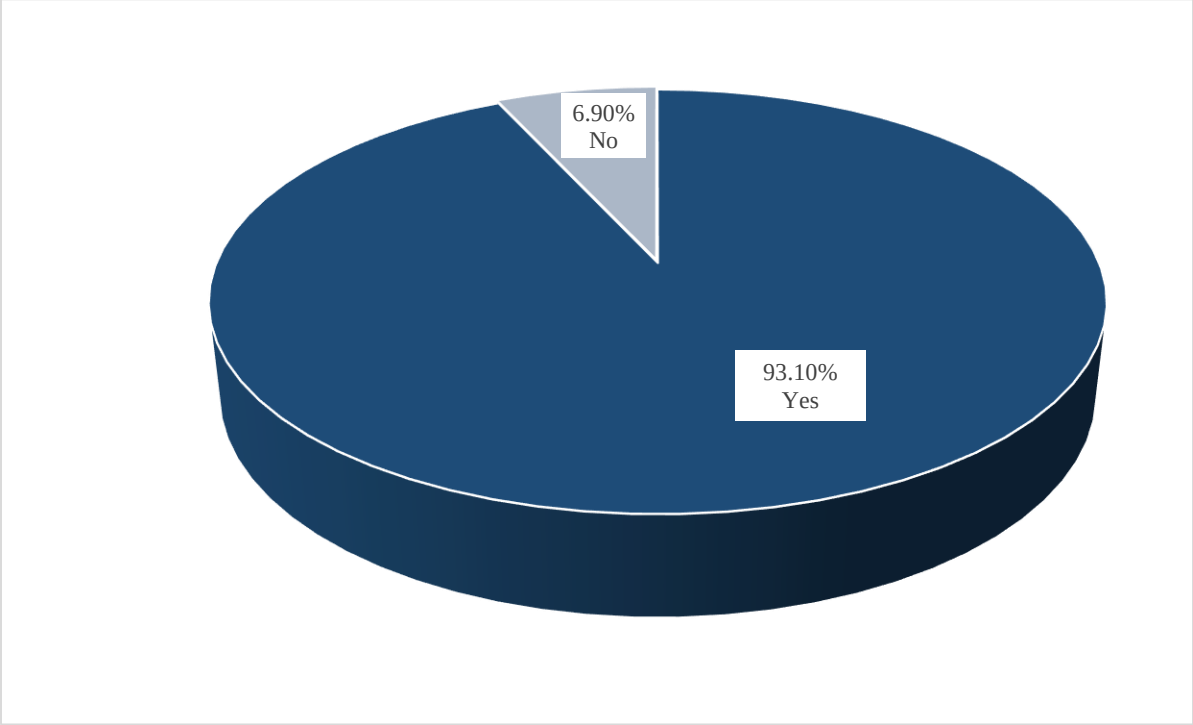


Figure 1: Experience of pain in Spinal cord injury patients

Gender

In the study from 58 participants 89.70% (n=52) were male and 10.30% (n=6) were female (Figure: 2). Among the participants 49 (84.5%) male and 6 (100%) female participants experienced pain within last week of interview.

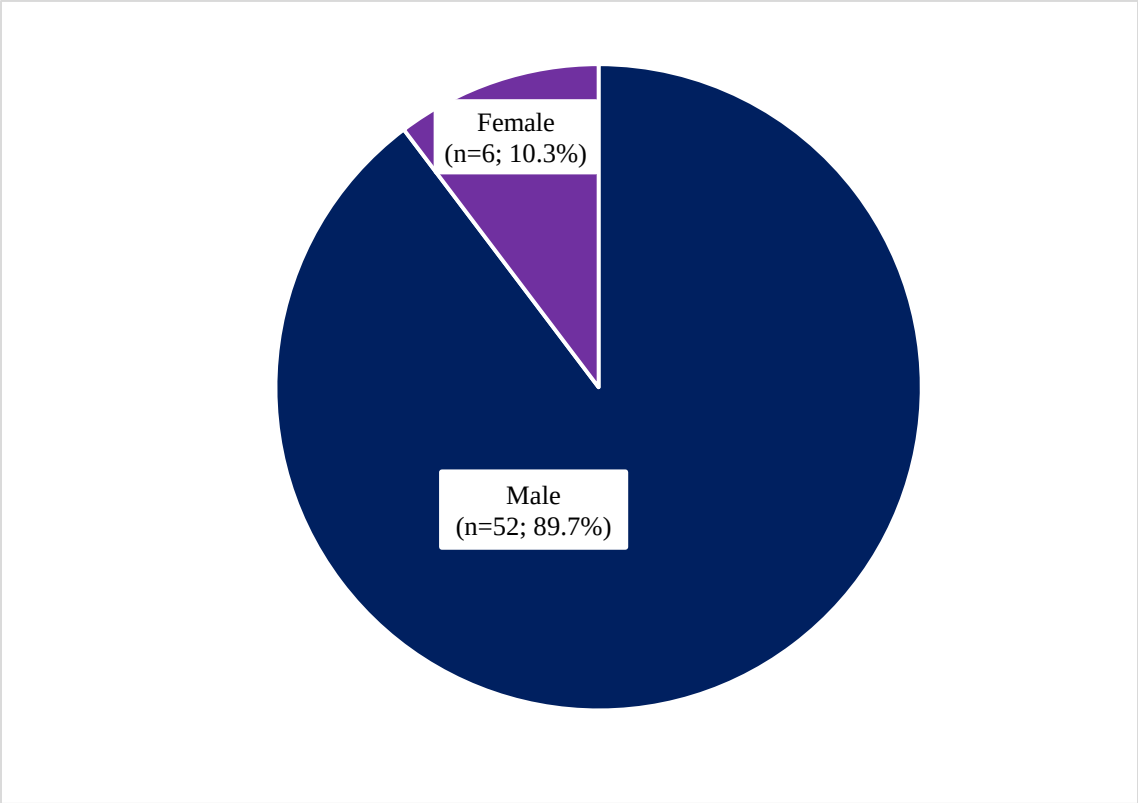


Figure 2: Male-female gender in spinal cord injury

Average pain intensity in both gender

In the study most of the male experience moderate pain (4-6) (n=27) in the past week of their interview. In addition, female also the same category of pain (4-6) experience (n=4) (Table 4).

Table 3: Male and female pain intensity in a week

Sex	Pain intensity											Total
	0	1	2	3	4	5	6	7	8	9	10	
Male	1	2	2	5	6	11	10	6	8	0	1	**52**
Female	0	0	0	0	0	1	3	0	1	1	0	**6**
Total	**1**	**2**	**2**	**5**	**6**	**12**	**13**	**6**	**9**	**1**	**1**	**58**

Pain perception

Among the total number of subjects 82.8% (n=48) patients felt that the pain was new following the injury and rest of the 17.2% (n=10) patients felt that the pain was not new following the trauma (Figure: 3).

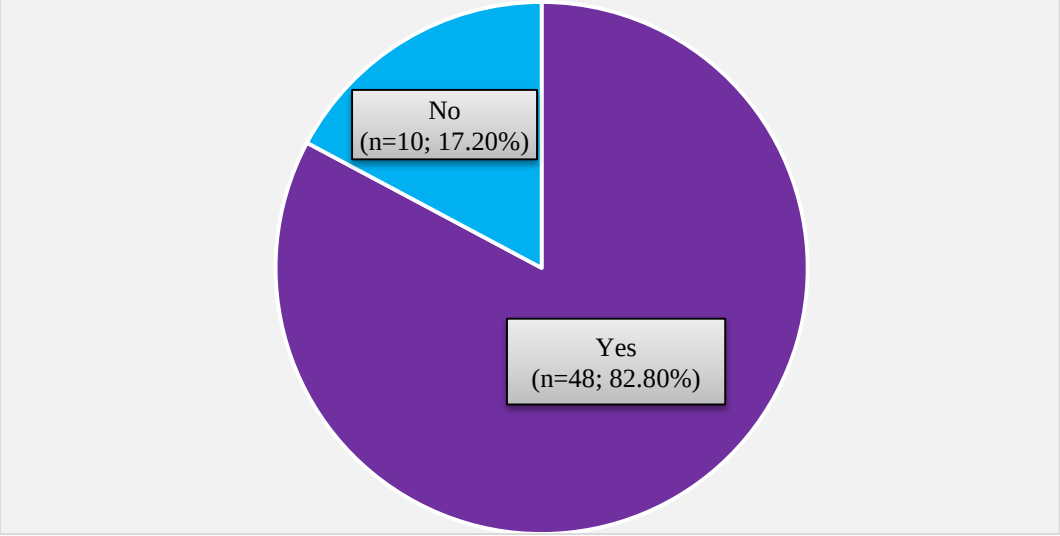


Figure 3: New pain perception

Health status

In the study participants' health status have showed in bar the chart below. There had multiple negative answer from the patients. From 58 participants 37 had recent sensation change, 28 had recent decrease muscle strength, 26 had fever and/or fever/chills, 19 had noticed nausea, a lack of appetite and/or weight loss, 14 had noticed a recent change in bladder function, 8 had recent change bowel function, 3 had current skin breakdown, 8 had recent fall/trauma and 5 had been an increase in muscle spasm (Figure: 4).

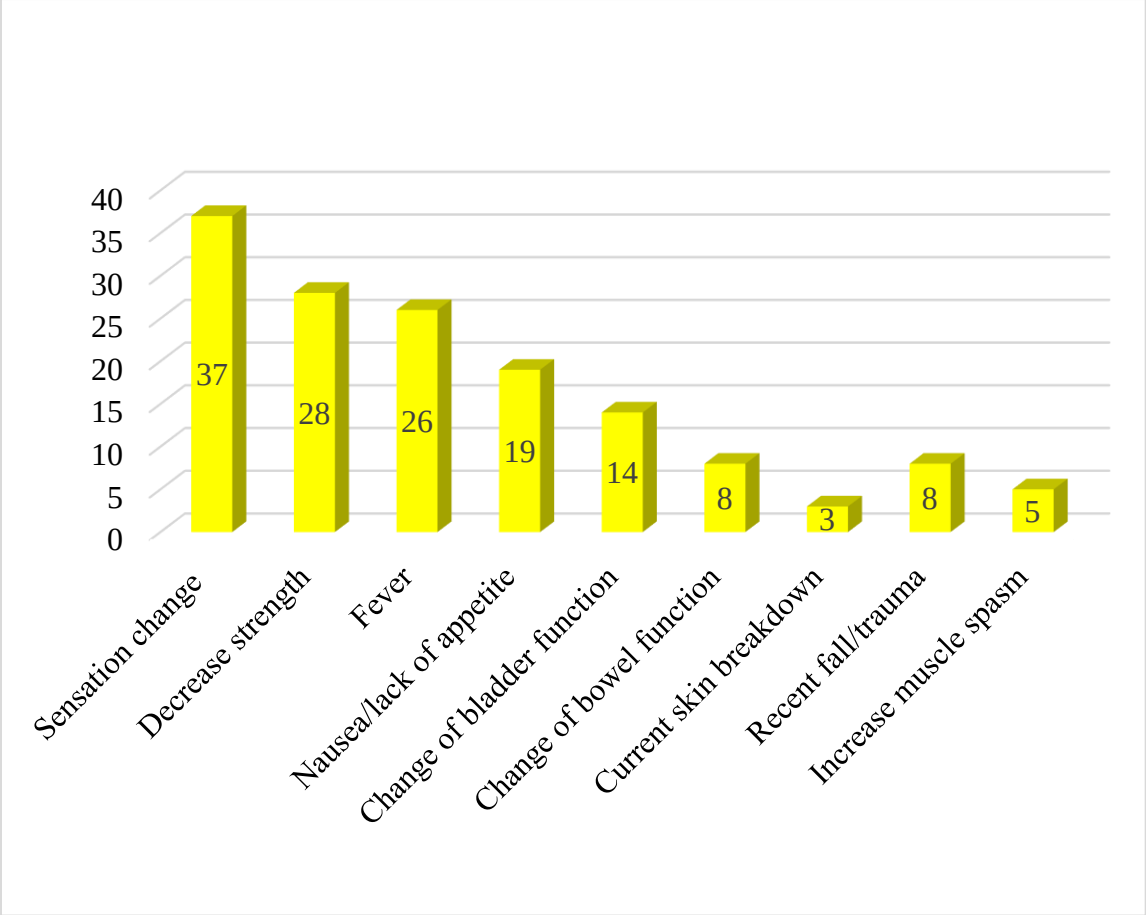


Figure 4: Health status of the participants

Pain severity

Among the 58 participants 15.5% (n=05) of participants felt mild pain, 50% (n=36) of participants felt moderate types of pain and rest of 34.5% (n=17) felt sever pain (Figure: 5).

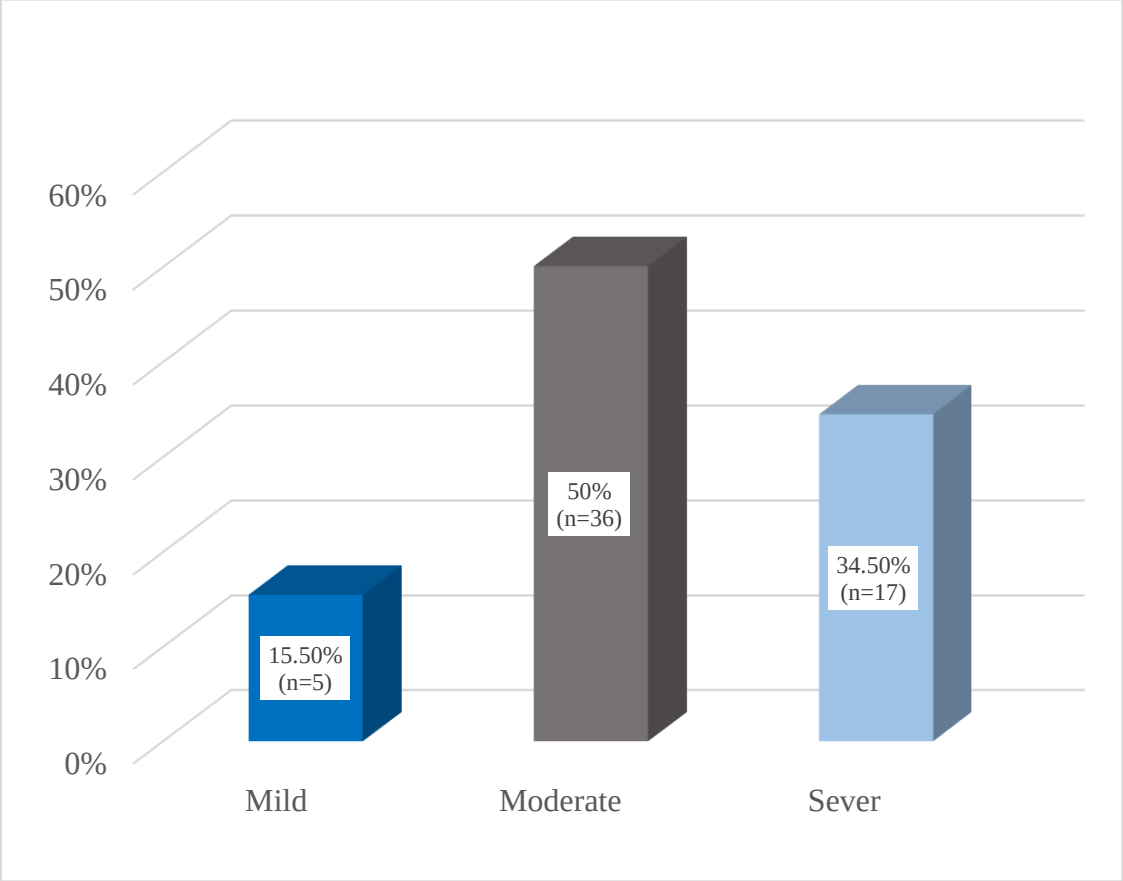


Figure 5: Severity of pain in spinal cord injury patients

Pain problem area

Here among the 58 participants 41 (70.7%) individuals mentioned that they had pain in only one area. On the other hand 15 participants (25.9%) told that they had pain in two different area of body and rest of 3 subjects (3.4%) said 3 different area of pain was located (Figure: 6).

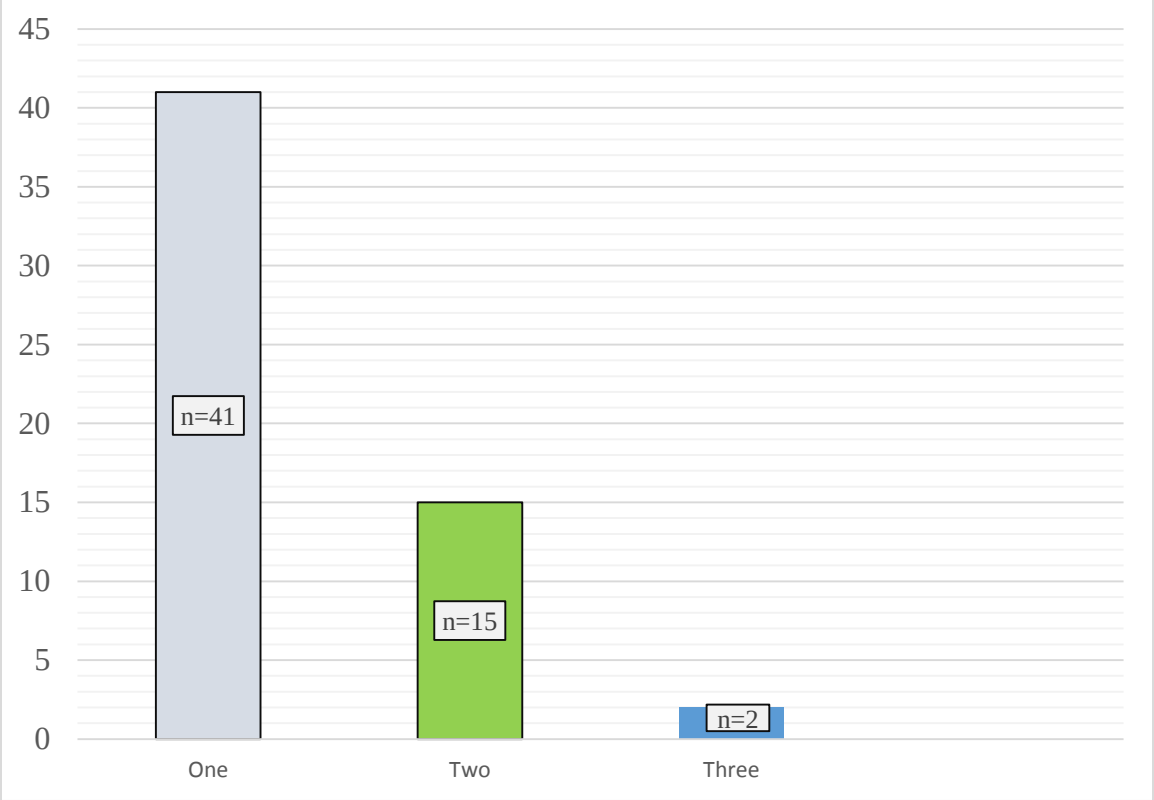


Figure 6: Frequency of painful area

Injury level

In the study level of the injury mostly were thoracic 65.8% (n=33) and then in cervical region 39.7% (n=23). On the other hand only 1.7% (n=01) was sacral level of injury. There was only one subject 1.7% (n=1) who had no specific spinal cord injury level (Table: 4).

Table 4: Level of spinal cord injury

Area	Number	Percentage
Cervical	23	39.7%
Thoracic	33	56.8%
Sacral	01	1.7%
Not obvious specific level (NOSL)	01	1.7%
Total	**58**	**100%**

Use of medications for pain management

In this study from the 58 participants 22 (37.9%) of them mentioned that they use medications for the management of pain and rest of 36 (62.1%) participants told they were not using any medication for their pain (Figure: 7).

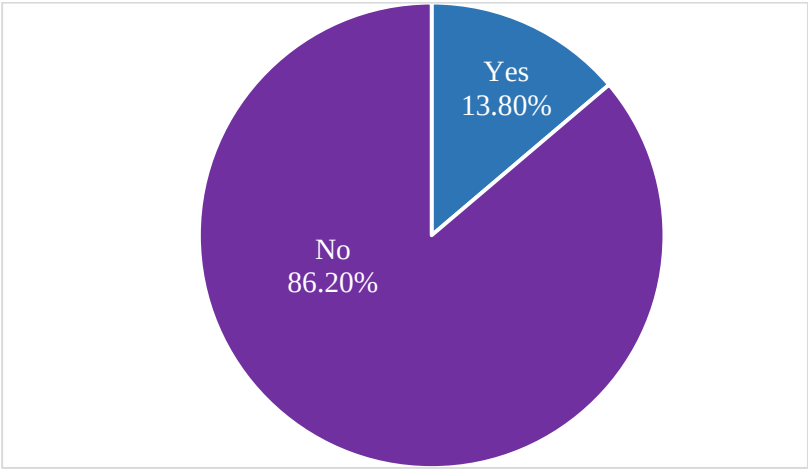


Figure 7: Medication use for pain management

Effects of medications:

Among the participants 13.8% (n=8) of patients told that they feel better from pain after taking medications and other 86.2% (n=50) had given the negative reply (Figure: 8).

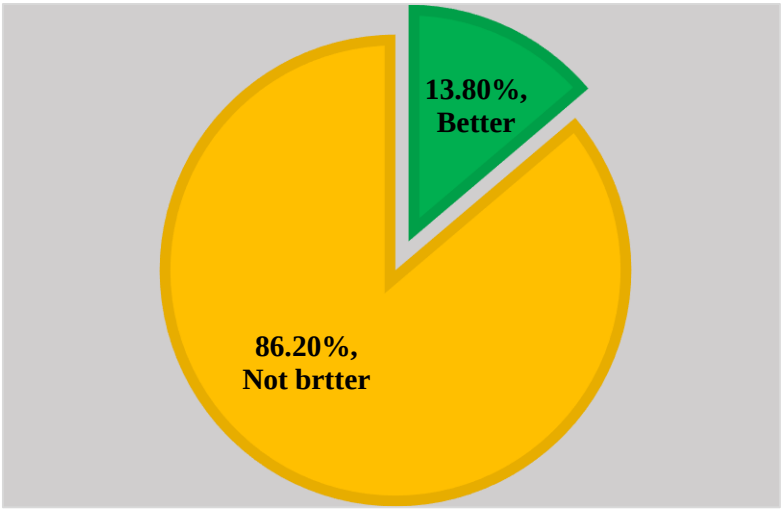


Figure 8: Effects of medications

Pain interfere in night sleep

Among the 58 participants 24.1% (n=14) of people told that they had no interfere of night sleep by the pain. On the other hand 27.2% (n=16) of participants said that they had faced mild interference of night sleep through the pain and 17.2% (n=12) people were moderate interfere of night sleep. The importantly that 31% (n=18) people had severe interfere of night sleep for the pain they had (Figure: 9).

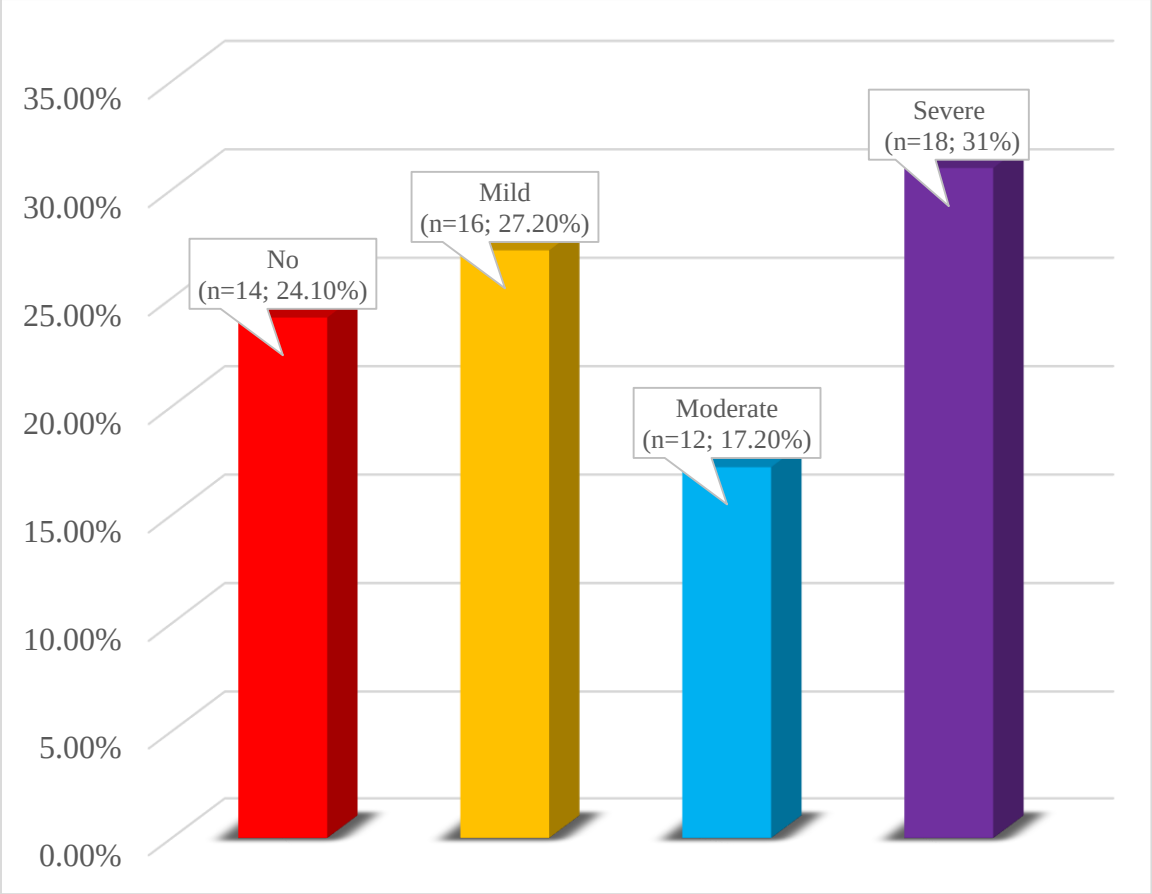


Figure 9: Pain interfere in night sleep

Location of pain experience

There shows of pain experience from the SCI level of the participants that among the total 58 subjects 29.3% (n=17) individual's pain above the SCI level and 63.8% (n=37) individual's pain was below the SCI level. In addition, almost 7% (n=4) experienced this type of pain following there injury (Table: 5).

Table 5: Location of pain experience

		Pain experience		Total
		Yes	**No**	
Location of pain from level of SCI	Above	17 (29.3%)	2 (3.4%)	**19**
	Below	37 (63.8%)	2 (3.4%)	**39**
Total		**54**	**4**	**58**

Mood interfere

Here the participants mentioned their overall mood that changes for the pain they were experienced. In the scenario of this that the most 37.9% participant (n=22) told there had moderate change of their overall mood. 34.4% (n=20) individual said maximum mood change for the pain and 22.4% (n=13) subjects said they had minimum change of overall mood for the pain. In addition, only 5.2% (n=3) individual mentioned that they had no interfere of their mood (Figure: 10).

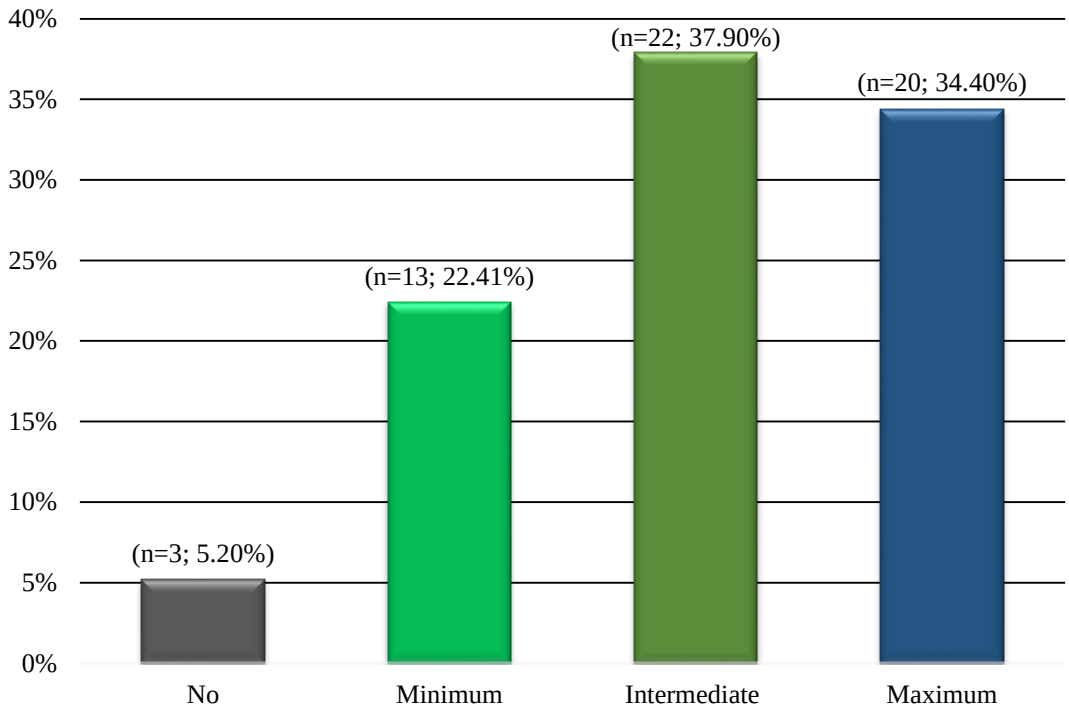


Figure 10: Overall mood interfere for pain

Pain change

Among the 58 subjects 33 (57%) were told that the pain they were experiencing was not change over the course of the day and rest of 25 (43%) subjects gave positive answer about the question of changing the pain over the course of the day (Figure: 11).

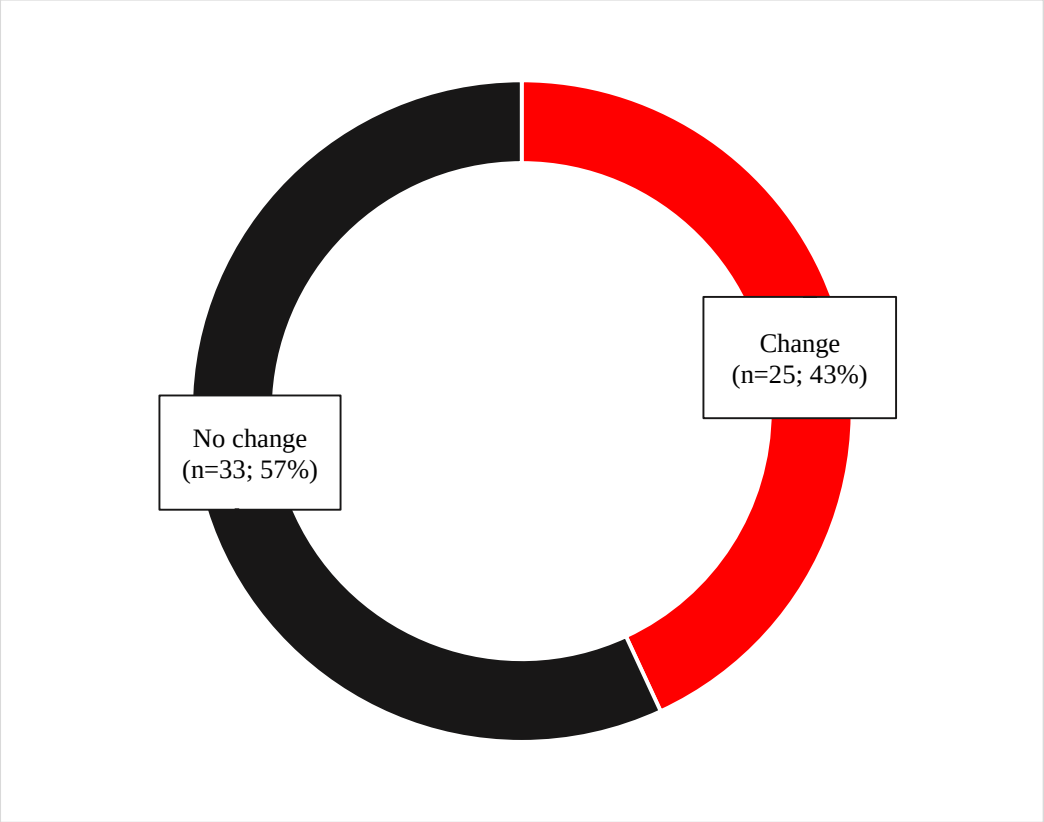


Figure 11: Change of pain over the course of the day

Location of the worst pain

Person with the worse pain, they complained in 14 different location of pain area. Among of them the most common area were chest region 22.44% (n=13). Following this, lumber area pain was common 15.62% (n=9) and immediate after that both shoulder and arm including forearm was common 10.34% (n=6). Additional locations of pain that participants were complained is given below in the (Figure 12).

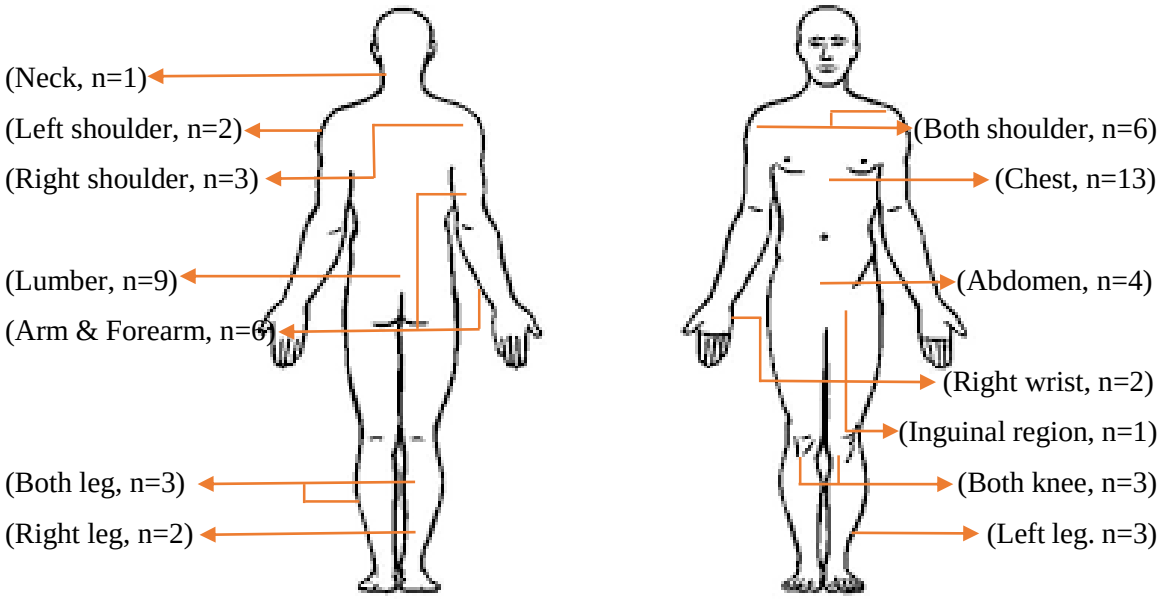


Figure 12: The worst pain location

Pain in male and female

Here the pain ratio in between the two sex were 98.7% (n=51) in male and 100% (n=6) in female (Figure: 13).

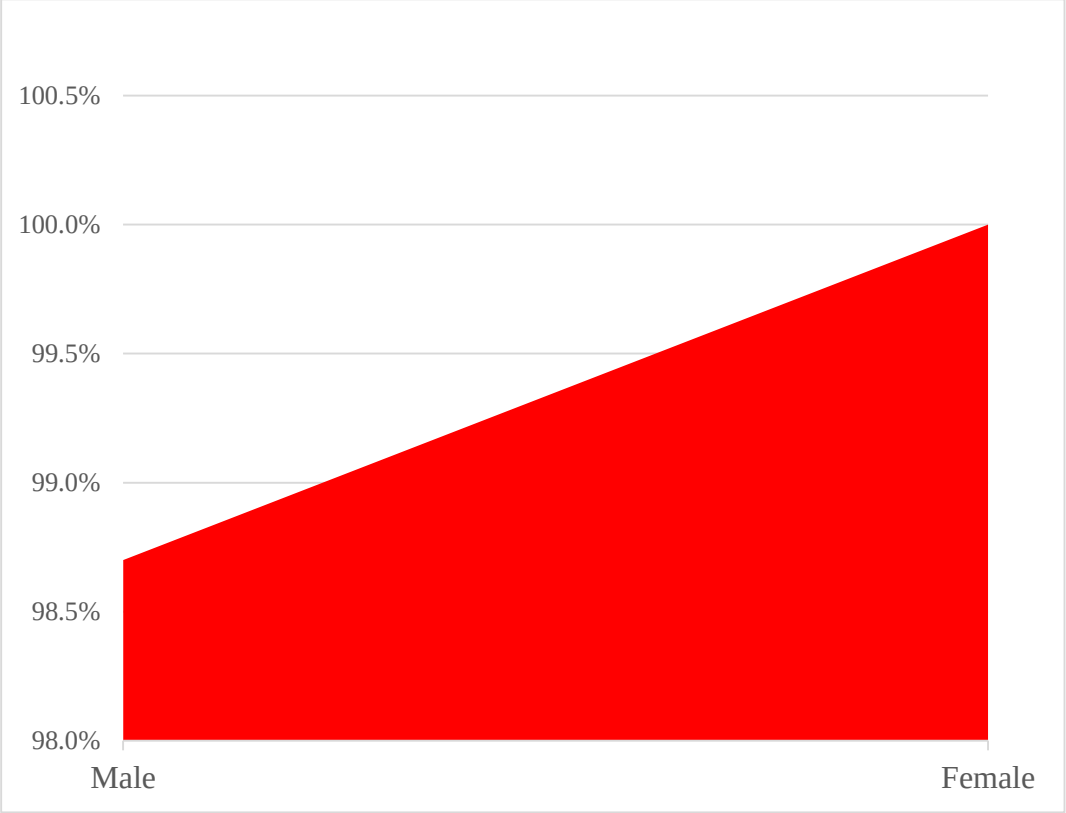


Figure 13: Pain in male-female participants

Pain with SCI type:

Among the 58 total number of participants 50 (92.6%) complete patients complained pain from 54. On the other hand from 4 (100%) incomplete patients everybody gave their positive answer about pain (Table: 6).

Table 6: Pain with SCI type

Types of SCI	**Pain experience**		**Total**
	Yes	No	
Complete A	50 (92.6%)	4 (7.4%)	**54**
Incomplete B	4 (100%)	0	**4**
Total	**54**	**4**	**58**

CHAPTER V DISCUSSION

The present study used a cross-sectional study design to find out the experience of pain among the traumatic SCI patients. The results of this study displayed that the experience of pain among the traumatic SCI patients was 93.10% which is comparatively equal to other studies. Dijkers et al. (2009) reported that the percentage of developing pain in traumatic SCI was 11%- 94%. They also mentioned that 18%-64% sever disabling pain may develop in SCI patient who were injured by trauma. Raissi et al. (2007) reported in their study that 96.2% SCI patient experienced pain. Donnelly & Eng, (2005) mentioned that 86.4% patients experienced pain in their study. Both of this data also displays the 95% confidence interval (CI) for the prevalence rates which reported by the studies. The 95 percent confidence interval depends mostly on the sample size; therefore, studies like that of Cardenas et al. (2004).

Mean pain severity was 6.45 in VAS which indicate the moderate type of pain were experiencing the participants. It is interesting to see that the most of participants (n=31) were replied of their pain question in between 4 to 6 in VAS which indicate that the most of the them were experiencing moderate type of pain. Pain ratio in between the two sex were 98.7% in male and 100% in female where male female ratio were 18.4:1. Rintala et al. (2004) reported in a study there was 64% (n=69) male and 96% (n=27) female were experiencing pain following SCI. In another study there was 60% (n=336) male and 74% (n=120) female were affected in the same condition during the accident subsequent period (Norrbrink et al., 2003).

Among the 58 total number of participants 50 (92.59%) complete patients complained pain from 54. On the other hand from 4 (100%) incomplete patients everybody gave their positive answer about pain where incomplete and complete ratio was 0.07. Yap et al. (2003) indicated in a study that 80% (n=15) of complete patient complained pain and 64% (n=25) incomplete patients complained pain where incomplete and complete ratio was 0.80. In another study 64% (n=144) of complete patients and 62% (n=318) of incomplete patients were experiencing pain followed by the injury where incomplete and complete ratio was 0.97.

For the worst pain of the 58 participants there were 14 different locations where pain was located such as chest, right wrist, abdomen, both knee, right leg, left leg, left shoulder, both leg, both shoulder region, lumber, arm and forearm, right shoulder, neck and inguinal region. For the second worst pain there were 11 location where 17 participants complained pain perception and the area were gluteal region, chest, both elbow, right knee, neck, both shoulder, leg, lumber, both hand, right shoulder and right elbow. Moreover for the third worst pain only 2 participants complained pain in 2 location and the area were hip and both knee. Stroman et al. (2016) mentioned in an article for their 16 SCI subjects there were 11 different location of pain such as fingers, toes, right shoulder, both elbows, both hands, upper back, both wrists, both buttocks and hips, left hand and neck.

In the study 82.8% (n=48) individual total that the pain they were experiencing was new following their injury. Rest of the 17.2% (n=10) participants said that this pain was not new. Among of the all participants 48.3% (n=28) patients told that the pain become flare up and 51.7% (n=30) said that the pain was same to continuous way or not to flare up of existing pain. From this evidence it clearly indicate that pain of individuals were experiencing directly related to either their injury or position of them during the resting period. As all the participants were receiving their treatment from a rehabilitation team like CRP MDT authority it clearly recognized to treatment protocol is well enough for the rehabilitation of each individuals.

Limitation of the study

Some limitations were noted for this study. First of all, time was limited which had a great deal of impact on the study. If enough time was available knowledge on the thesis could be extended. On the other hand, the result of the study cannot be widespread to the whole population of SCI patients in Bangladesh as the samples were collected only from the CRP and the data were collected from very small population. The number of subjects (58) was not sufficient for the study. This study has provided for the first time data on the experience of pain among people with traumatic spinal cord injury**.** No research has been done before on this topic. So there was little evidence to support the result of this project in the context of Bangladesh. The researcher was a 4th year B.Sc. in physiotherapy student and this was his first research project. He had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first survey of the researcher so might be there were some mistakes that overlooked by the researcher.

CHAPTER VI CONCLUTION AND RECOMMENDATION

6.1 Conclusion

The finding result was relatively same as the background study result of pain experience and the result was 93.1%. The estimated other results was also in same the category of the background study. The results of the study can help to the physiotherapy community to provide the different valuable information related to the title. By receiving the statistics of this study treatment procedure of pain in SCI patients may also be improved. To reduce the percentage of the pain perception among the patients with spinal cord injury some measures should have to follow by taking the info from the study.

6.2 Recommendation

Pain problem among the traumatic spinal cord injury patients is much common. But there is only few study in this area in Bangladesh. If there are more research in this sector, it would be a great achievement to manage the patients with spinal cord injury related pain. So it is needed more study in the SCI related pain or pain management.

References

- Aito, S., (2003). Complications during the acute phase of traumatic spinal cord lesions. Spinal Cord, 41(11):629-35.
- Aito, S., Abbate, R., Marcucci, R. and Cominelli, E., (2007). Endogenous risk factors for deep-vein thrombosis in patients with acute spinal cord injuries. Spinal Cord, 45(9):627-31.
- Akbar, M., Brunner, M., Balean, G., Grieser, T., Bruckner, T., Loew, M. and Raiss, P., (2011). A cross-sectional study of demographic and morphologic features of rotator cuff disease in paraplegic patients. Journal of Shoulder and Elbow Surgery, 20(7):1108-13.
- Arienti, C., Daccò, S., Piccolo, I. and Redaelli, T., (2011). Osteopathic manipulative treatment is effective on pain control associated to spinal cord injury. Spinal Cord, 49(4):515-19.
- Baastrup, C. and Finnerup, N.B., (2008). Pharmacological management of neuropathic pain following spinal cord injury. CNS drugs, 22(6):455-75.
- Baron, R., Förster, M. and Binder, A., (2012). Subgrouping of patients with neuropathic pain according to pain-related sensory abnormalities: a first step to a stratified treatment approach. The Lancet Neurology, 11(11):999-1005.
- Basbaum, A.I., Bautista, D.M., Scherrer, G. and Julius, D., (2009). Cellular and molecular mechanisms of pain. Cell, 139(2):267-84.
- Bedi, S.S., Yang, Q., Crook, R.J., Du, J., Wu, Z., Fishman, H.M., Grill, R.J., Carlton, S.M. and Walters, E.T., (2010). Chronic spontaneous activity generated in the somata of primary nociceptors is associated with pain-related behavior after spinal cord injury. The Journal of Neuroscience, 30(44):14870-882.
- Bouhassira, D., Attal, N., Alchaar, H., Boureau, F., Brochet, B., Bruxelle, J., Cunin, G., Fermanian, J., Ginies, P., Grun-Overdyking, A. and Jafari-Schluep, H., (2005). Comparison of pain syndromes associated with nervous or somatic lesions and development of a new neuropathic pain diagnostic questionnaire (DN4). Pain, 114(1):29-36.
- Brown, A. and Weaver, L.C., (2012). The dark side of neuroplasticity. Experimental Neurology, 235(1):133-41.

- Bryce, T.N., Biering-Sorensen, F., Finnerup, N.B., Cardenas, D.D., Defrin, R., Lundeberg, T., Norrbrink, C., Richards, J.S., Siddall, P., Stripling, T. and Treede, R.D., (2012). International spinal cord injury pain classification: Part I. Background and description. Spinal Cord, 50(6):413-17.
- Bryce, T.N., Biering-Sørensen, F., Finnerup, N.B., Cardenas, D.D., Defrin, R., Ivan, E., Lundeberg, T., Norrbrink, C., Richards, J.S., Siddall, P. and Stripling, T., (2012). International spinal cord injury pain (ISCIP) classification: part 2. Initial validation using vignettes. Spinal Cord, 50(6):404-12.
- Bryce, T.N., Biering-Sorensen, F., Finnerup, N.B., Cardenas, D.D., Defrin, R., Lundeberg, T., Norrbrink, C., Richards, J.S., Siddall, P., Stripling, T. and Treede, R.D., (2012). International spinal cord injury pain classification: Part I. Background and description. Spinal Cord, 50(6):413-17.
- Burkell, J.A., Wolfe, D.L., Potter, P.J. and Jutai, J.W., (2006). Information needs and information sources of individuals living with spinal cord injury. Health Information & Libraries Journal, 23(4):257-265.
- Burns, A.S., Delparte, J.J., Ballantyne, E.C. and Boschen, K.A., (2013). Evaluation of an interdisciplinary program for chronic pain after spinal cord injury. PM&R, 5(10):832-38.
- Cardenas, D.D. and Felix, E.R., (2009). Pain after spinal cord injury: a review of classification, treatment approaches and treatment assessment. PM&R, 1(12):1077-90.
- Cardenas, D.D., Bryce, T.N., Shem, K., Richards, J.S. and Elhefni, H., (2004). Gender and minority differences in the pain experience of people with spinal cord injury. Archives of Physical Medicine and Rehabilitation, 85(11):1774-1781.
- Chase, T., Jha, A., Brooks, C.A. and Allshouse, A., (2013). A pilot feasibility study of massage to reduce pain in people with spinal cord injury during acute rehabilitation. Spinal Cord, 51(11):847-51.
- Chen, Y., Tang, Y., Vogel, L. and DeVivo, M., (2013). Causes of spinal cord injury. Topics in Spinal Cord Injury Rehabilitation, 19(1):1-8.
- Chun, H.J., Kim, Y.S. and Yi, H.J., (2011). A modified microsurgical DREZotomy procedure for refractory neuropathic pain. World Neurosurgery, 75(3):551-57.

- Deumens, R., Joosten, E.A., Waxman, S.G. and Hains, B.C., (2008). Locomotor dysfunction and pain: the scylla and charybdis of fiber sprouting after spinal cord injury. Molecular Neurobiology, 37(1):52-63.
- Dijkers, M., Bryce, T. and Zanca, J., (2009). Prevalence of chronic pain after traumatic spinal cord injury: a systematic review. Journal of Rehabilitation Research and Development, 46(1):13.
- Ditor, D.S., Latimer, A.E., Ginis, K.M., Arbour, K.P., McCartney, N. and Hicks, A.L., (2003). Maintenance of exercise participation in individuals with spinal cord injury: effects on quality of life, stress and pain. Spinal Cord, 41(8):446-50.
- Donnelly, C. and Eng, J.J., (2005). Pain following spinal cord injury: the impact on community reintegration. Spinal Cord, 43(5): 278-82.
- Felix, E.R., (2014). Chronic neuropathic pain in SCI: evaluation and treatment.Physical medicine and rehabilitation clinics of North America, 25(3):545-71.
- Finnerup, N.B., Faaborg, P., Krogh, K. and Jensen, T.S., (2008). Abdominal pain in long-term spinal cord injury. Spinal Cord, 46(3):198-203.
- Finnerup, N.B., Sørensen, L., Biering-Sørensen, F., Johannesen, I.L. and Jensen, T.S., (2007). Segmental hypersensitivity and spinothalamic function in spinal cord injury pain. Experimental Neurology, 207(1):139-49.
- Flor, H., Nikolajsen, L. and Jensen, T.S., (2006). Phantom limb pain: a case of maladaptive CNS plasticity?. Nature Reviews Neuroscience, 7(11):873-81.
- Fregni, F., Gimenes, R., Valle, A.C., Ferreira, M.J., Rocha, R.R., Natalle, L., Bravo, R., Rigonatti, S.P., Freedman, S.D., Nitsche, M.A. and Pascual-Leone, A., (2006). A randomized, sham-controlled, proof of principle study of transcranial direct current stimulation for the treatment of pain in fibromyalgia. Arthritis & Rheumatism, 54(12):3988-3998.
- Gajraj, N.M., (2007). Pregabalin: its pharmacology and use in pain management. Anesthesia & Analgesia, 105(6):1805-15.
- Garcia-Larrea, L., (2012). Insights gained into pain processing from patients with focal brain lesions. Neuroscience Letters, 520(2):188-91.

- Giardino, N.D., Jensen, M.P., Turner, J.A., Ehde, D.M. and Cardenas, D.D., (2003). Social environment moderates the association between catastrophizing and pain among persons with a spinal cord injury. Pain, 106(1):19-25.
- Ginis, K.A.M., Latimer, A.E., McKechnie, K., Ditor, D.S., McCartney, N., Hicks, A.L., Bugaresti, J. and Craven, B.C., (2003). Using exercise to enhance subjective well-being among people with spinal cord injury: The mediating influences of stress and pain. Rehabilitation Psychology, 48(3):157.
- Grossman, R.G., Frankowski, R.F., Burau, K.D., Toups, E.G., Crommett, J.W., Johnson, M.M., Fehlings, M.G., Tator, C.H., Shaffrey, C.I., Harkema, S.J. and Hodes, J.E., (2012). Incidence and severity of acute complications after spinal cord injury. Journal of Neurosurgery: Spine, 17 (Suppl1):119-28.
- Gustin, S.M., Wrigley, P.J., Gandevia, S.C., Middleton, J.W., Henderson, L.A. and Siddall, P.J., (2008). Movement imagery increases pain in people with neuropathic pain following complete thoracic spinal cord injury. Pain, 137(2):237-44.
- Gwak, Y.S. and Hulsebosch, C.E., (2011). Neuronal hyperexcitability: a substrate for central neuropathic pain after spinal cord injury. Current Pain and Headache Reports, 15(3):215-22.
- Gwak, Y.S., Crown, E.D., Unabia, G.C. and Hulsebosch, C.E., (2008). Propentofylline attenuates allodynia, glial activation and modulates GABAergic tone after spinal cord injury in the rat. Pain, 138(2):410-22.
- Hagenbach, U., Luz, S., Ghafoor, N., Berger, J.M., Grotenhermen, F., Brenneisen, R. and Mäder, M., (2007). The treatment of spasticity with Δ9-tetrahydrocannabinol in persons with spinal cord injury. Spinal Cord, 45(8):551-62.
- Hama, A. and Sagen, J., (2007). Behavioral characterization and effect of clinical drugs in a rat model of pain following spinal cord compression. Brain Research, 1185:117-28.
- Hassanpour, K., Hotz-Boendermaker, S., Dokladal, P., Curt, A. and European Multicenter Study for Human Spinal Cord Injury Study group, (2012). Low depressive symptoms in acute spinal cord injury compared to other neurological disorders. Journal of Neurology, 259(6):1142-50.
- Heutink, M., Post, M.W., Bongers-Janssen, H.M., Dijkstra, C.A., Snoek, G.J., Spijkerman, D.C. and Lindeman, E., (2012). The CONECSI trial: results of a randomized controlled

trial of a multidisciplinary cognitive behavioral program for coping with chronic neuropathic pain after spinal cord injury. Pain, 153(1):120-28.

- Hoque, M.F., Hasan, Z., Razzak, A.T.M.A. and Helal, S.U., (2012). Cervical spinal cord injury due to fall while carrying heavy load on head: a problem in Bangladesh. Spinal Cord, 50(4):275-77.
- Jensen, M.P., Barber, J., Romano, J.M., Hanley, M.A., Raichle, K.A., Molton, I.R., Engel, J.M., Osborne, T.L., Stoelb, B.L., Cardenas, D.D. and Patterson, D.R., (2009). Effects of self-hypnosis training and EMG biofeedback relaxation training on chronic pain in persons with spinal-cord injury. Intl. Journal of Clinical and Experimental Hypnosis, 57(3):239-68.
- Jensen, M.P., Gertz, K.J., Kupper, A.E., Braden, A.L., Howe, J.D., Hakimian, S. and Sherlin, L.H., (2013). Steps toward developing an EEG biofeedback treatment for chronic pain. Applied Psychophysiology and Biofeedback, 38(2):101-8.
- Jensen, T.S. and Finnerup, N.B., (2014). Allodynia and hyperalgesia in neuropathic pain: clinical manifestations and mechanisms. The Lancet Neurology, 13(9):924-35.
- Kabu, S., Gao, Y., Kwon, B.K. and Labhasetwar, V., (2015). Drug delivery, cell-based therapies, and tissue engineering approaches for spinal cord injury. Journal of Controlled Release, 219:141-54.
- Kumru, H., Soler, D., Vidal, J., Navarro, X., Tormos, J.M., Pascual-Leone, A. and Valls-Sole, J., (2013). The effects of transcranial direct current stimulation with visual illusion in neuropathic pain due to spinal cord injury: an evoked potentials and quantitative thermal testing study. European Journal of Pain, 17(1):55-66.
- Kumru, H., Soler, D., Vidal, J., Tormos, J.M., Pascual-Leone, A. and Valls-Sole, J., (2012). Evoked potentials and quantitative thermal testing in spinal cord injury patients with chronic neuropathic pain. Clinical Neurophysiology, 123(3):598-604.
- Marciniak, C., Rader, L. and Gagnon, C., (2008). The use of botulinum toxin for spasticity after spinal cord injury. American Journal of Physical Medicine & Rehabilitation, 87(4):312-17.
- Masri, R. and Keller, A., (2012). Chronic pain following spinal cord injury. In Regenerative biology of the spine and spinal cord. Springer New York, :74-88.
- McMahon, S.B., Koltzenburg, M., Tracey, I. and Turk, D., (2013). Wall & Melzack's textbook of pain. Elsevier Health Sciences.

- Mehta, S., Orenczuk, K., McIntyre, A., Willems, G., Wolfe, D.L., Hsieh, J.T., Short, C., Loh, E., Teasell, R.W. and SCIRE Research Team, (2013). Neuropathic pain post spinal cord injury part 1: systematic review of physical and behavioral treatment. Topics in Spinal Cord Injury Rehabilitation, 19(1):61.
- Mehta, S., Teasell, R.W., Loh, E., Short, C., Wolfe, D.L. and Hsieh, J.T.C., (2014). Pain following spinal cord injury. Spinal Cord Injury Rehabilitation Evidence. Version, 5,:1-79.
- Middleton, J., Tran, Y. and Craig, A., (2007). Relationship between quality of life and self-efficacy in persons with spinal cord injuries. Archives of Physical Medicine and Rehabilitation, 88(12):1643-8.
- Migliorini, C.E., New, P.W. and Tonge, B.J., (2009). Comparison of depression, anxiety and stress in persons with traumatic and non-traumatic post-acute spinal cord injury. Spinal Cord, 47(11):783-88.
- Moseley, G.L., (2007). Using visual illusion to reduce at-level neuropathic pain in paraplegia. Pain, 130(3):294-98.
- Moulin, D.E., Clark, A.J., Gilron, I., Ware, M.A., Watson, C.P.N., Sessle, B.J., Coderre, T., Morley-Forster, P.K., Stinson, J., Boulanger, A. and Peng, P., (2007). Pharmacological management of chronic neuropathic pain–consensus statement and guidelines from the Canadian Pain Society. Pain Research and Management, 12(1):13-21.
- Nash, M.S., van de Ven, I., van Elk, N. and Johnson, B.M., (2007). Effects of circuit resistance training on fitness attributes and upper-extremity pain in middle-aged men with paraplegia. Archives of Physical Medicine and Rehabilitation, 88(1):70-75.
- Nijendijk, J.H., Post, M.W. and van Asbeck, F.W., (2014). Epidemiology of traumatic spinal cord injuries in the Netherlands in 2010. Spinal Cord, 52(4).
- Norman, C., Bender, J.L., Macdonald, J., Dunn, M., Dunne, S., Siu, B., Hitzig, S.L., Jadad, A.R. and Hunter, J., (2010). Questions that individuals with spinal cord injury have regarding their chronic pain: a qualitative study. Disability and Rehabilitation, 32(2):114-24.
- Norrbrink, C. and Lundeberg, T., (2011). Acupuncture and massage therapy for neuropathic pain following spinal cord injury: an exploratory study. Acupuncture in Medicine, 29(2):108-15.

- Norrbrink, C.B., Kowalski, J. and Lundeberg, T., (2006). A comprehensive pain management programme comprising educational, cognitive and behavioural interventions for neuropathic pain following spinal cord injury. Journal of Rehabilitation Medicine, 38(3):172-80.
- Norrbrink, C.N.B. and Lundeberg, T., (2004). Non-pharmacological pain-relieving therapies in individuals with spinal cord injury: a patient perspective. Complementary Therapies in Medicine, 12(4):189-97.
- Norrbrink, C.N.B., Lund, I., Ertzgaard, P., Holtz, A., Hultling, C., Levi, R., Werhagen, L. and Lundeberg, T., (2003). Pain in a Swedish spinal cord injury population. Clinical Rehabilitation, 17(6):685-690.
- Norrbrink, R.P.T.C., (2009). Transcutaneous electrical nerve stimulation for treatment of spinal cord injury neuropathic pain.
- Perez, C., Galvez, R., Huelbes, S., Insausti, J., Bouhassira, D., Diaz, S. and Rejas, J., (2007). Validity and reliability of the Spanish version of the DN4 (Douleur Neuropathique 4 questions) questionnaire for differential diagnosis of pain syndromes associated to a neuropathic or somatic component. Health and Quality of Life Outcomes, 5(1):1.
- Phalkey, R., Reinhardt, J.D. and Marx, M., (2011). Injury epidemiology after the 2001 Gujarat earthquake in India: a retrospective analysis of injuries treated at a rural hospital in the Kutch district immediately after the disaster. Global Health Action, 4.
- Post, M.W.M. and Van Leeuwen, C.M.C., (2012). Psychosocial issues in spinal cord injury: a review. Spinal Cord, 50(5):382-89.
- Raissi, G.R., Mokhtari, A. and Mansouri, K., (2007). Reports from spinal cord injury patients: eight months after the 2003 earthquake in Bam, Iran. American Journal of Physical Medicine & Rehabilitation, 86(11):912-917.
- Razzak, A.T.M.A., Helal, S.U. and Nuri, R.P., (2011). Life Expectancy of Persons with Spinal Cord Injury (SCI) Treated in a Rehabilitation Centre at Dhaka, Bangladesh. Disability, CBR & Inclusive Development, 22(2).
- Rintala, D.H., Fiess, R.N., Tan, G., Holmes, S.A. and Bruel, B.M., (2010). Effect of dronabinol on central neuropathic pain after spinal cord injury: a pilot study. American Journal of Physical Medicine & Rehabilitation, 89(10):840-48.

- Rintala, D.H., Hart, K.A. and Priebe, M.M., (2004). Predicting consistency of pain over a 10-year period in persons with spinal cord injury. Journal of Rehabilitation Research and Development, 41(1):75.
- Rintala, D.H., Holmes, S.A., Courtade, D., Fiess, R.N., Tastard, L.V. and Loubser, P.G., (2007). Comparison of the effectiveness of amitriptyline and gabapentin on chronic neuropathic pain in persons with spinal cord injury. Archives of Physical Medicine and Rehabilitation, 88(12):1547-60.
- Serra-Ano, P., Pellicer-Chenoll, M., García-Massó, X., Morales, J., Giner-Pascual, M. and González, L.M., (2012). Effects of resistance training on strength, pain and shoulder functionality in paraplegics. Spinal Cord, 50(11):827-31.
- Sharp, K., Boroujerdi, A., Steward, O. and Luo, Z.D., (2012). A rat chronic pain model of spinal cord contusion injury. Pain Research: Methods and Protocols, 195-203.
- Soler, M.D., Kumru, H., Pelayo, R., Vidal, J., Tormos, J.M., Fregni, F., Navarro, X. and Pascual-Leone, A., (2010). Effectiveness of transcranial direct current stimulation and visual illusion on neuropathic pain in spinal cord injury. Brain, 184.
- Stroman, P.W., Khan, H.S., Bosma, R.L., Cotoi, A.I., Leung, R., Cadotte, D.W. and Fehlings, M.G., (2016). Changes in pain processing in the spinal cord and brainstem after spinal cord injury characterized by functional magnetic resonance imaging. Journal of Neurotrauma.
- Szczudlik, A., Dobrogowski, J., Wordliczek, J., Stępień, A., Krajnik, M., Leppert, W., Woroń, J., Przeklasa-Muszyńska, A., Kocot-Kępska, M., Zajączkowska, R. and Janecki, M., (2014). Diagnosis and management of neuropathic pain: review of literature and recommendations of the Polish Association for the Study of Pain and the Polish Neurological Society–part two. Neurologia i Neurochirurgia Polska, 48(6):423-435.
- Tan, G., Rintala, D.H., Thornby, J.I. and Yang, J., (2006). Using cranial electrotherapy stimulation to treat pain associated with spinal cord injury. Journal of Rehabilitation Research and Development, 43(4):461.
- Tate, D.G., Forchheimer, M.B., Karana-Zebari, D., Chiodo, A.E. and Kendall Thomas, J.Y., (2013). Depression and pain among inpatients with spinal cord injury and spinal cord disease: differences in symptoms and neurological function. Disability and Rehabilitation, 35(14):1204-12.

- Van Leeuwen, C.M., Post, M.W., van Asbeck, F.W., Bongers-Janssen, H.M., van der Woude, L.H., de Groot, S. and Lindeman, E., (2012). Life satisfaction in people with spinal cord injury during the first five years after discharge from inpatient rehabilitation. Disability and Rehabilitation, 34(1):76-83.
- Vranken, J.H., Dijkgraaf, M.G.W., Kruis, M.R., Van der Vegt, M.H., Hollmann, M.W. and Heesen, M., (2008). Pregabalin in patients with central neuropathic pain: a randomized, double-blind, placebo-controlled trial of a flexible-dose regimen. Pain, 136(1):150-57.
- Werhagen, L., Budh, C.N., Hultling, C. and Molander, C., (2004). Neuropathic pain after traumatic spinal cord injury–relations to gender, spinal level, completeness, and age at the time of injury. Spinal Cord, 42(12):665-73.
- Widerstrom-Noga, E.G. and Turk, D.C., (2003). Types and effectiveness of treatments used by people with chronic pain associated with spinal cord injuries: influence of pain and psychosocial characteristics. Spinal Cord, 41(11):600-09.
- Widerstrom-Noga, E.G., Felix, E.R., Cruz-Almeida, Y. and Turk, D.C., (2007). Psychosocial subgroups in persons with spinal cord injuries and chronic pain. Archives of Physical Medicine and Rehabilitation, 88(12):1628-35.
- Woolf, C.J., (2011). Central sensitization: implications for the diagnosis and treatment of pain. Pain, 152(3):S2-S15.
- Wyndaele, M. and Wyndaele, J.J., (2006). Incidence, prevalence and epidemiology of spinal cord injury: what learns a worldwide literature survey?. Spinal Cord, 44(9):523-29.
- Yap, E.C., Tow, A., Menon, E.B., Chan, K.F. and Kong, K.H., (2003). Pain during in-patient rehabilitation after traumatic spinal cord injury. International Journal of Rehabilitation Research, 26(2):137-140.
- Yoon, E.J., Kim, Y.K., Kim, H.R., Kim, S.E., Lee, Y. and Shin, H.I., (2013). Transcranial direct current stimulation to lessen neuropathic pain after spinal cord injury a mechanistic PET study. Neurorehabilitation and Neural Repair, p.1545968313507632.
- Yousefifard, M., Nasirinezhad, F., Manaheji, H.S., Janzadeh, A., Hosseini, M. and Keshavarz, M., (2016). Human bone marrow-derived and umbilical cord-derived mesenchymal stem cells for alleviating neuropathic pain in a spinal cord injury model. Stem Cell Research & Therapy, 7(1):1.

- Yu-Chu Chung RN, M.S.N. and Kang-Min Chen RN, M.S.N., (2010). Acupoint electrical stimulation reduces acute postoperative pain in surgical patients with patient-controlled analgesia: a randomized controlled study. Alternative Therapies in Health and Medicine, 16(6):10.
- Zeilig, G., Enosh, S., Rubin-Asher, D., Lehr, B. and Defrin, R., (2012). The nature and course of sensory changes following spinal cord injury: predictive properties and implications on the mechanism of central pain. Brain, 135(2):418-30.

APPENDIX

Institutional review board approval

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)

Bangladesh Health Professions Institute (BHPI)

(The Academic Institute of CRP)

Ref. CRP-BHPI/IRB/04/17/68

Date: 05/04/17

To
Khairul Islam
B.Sc in Physiotherapy,
Department of Physiotherapy
Session: 2011-2012, DU Reg. No.: 1725
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal – "Experience of Pain Among People with Traumatic Spinal Cord Injury" by ethics committee.

Dear Khairul Islam,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on before February 23, 2016 to conduct the above mentioned thesis, with yourself, as the Principal investigator. The Following documents have been reviewed and approved:

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

Since the study involves answering "the spinal cord injury pain questionnaire" that takes 10 to 15 minutes and have no likelihood of any harm to the participants and have possibility of benefit patients in their pain management and rehabilitation, the members of the Ethics committee has approved the study to be conducted in the presented form at the meeting held at 08:30 AM on February 25, 2016 at BHPI.

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

Best regards,

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

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

February 17, 2016
The Chairman
Institutional Review Board (IRB)
Bangladesh Health Professions Institute (BHPI)
CRP-Savar, Dhaka-1343, Bangladesh

Subject: **Application for review and ethical approval.**

Sir,

With due respect I would like to draw your kind attention that I am a student of Bachelor of Science in Physiotherapy at Bangladesh Health Professions Institute (BHPI)- an academic institute of CRP under Faculty of Medicine of University of Dhaka (DU). I have to conduct a thesis entitled, "Experience of pain among people with traumatic spinal cord injury" under honorable supervisor, Md. Shofiqul Islam, Assistant Professor, Department of Physiotherapy, Bangladesh Health Professions Institute (BHPI), CRP, Savar. The purpose of the study was to explore the pain experience of traumatic spinal cord injury patients.
Questionnaire will be used that will take about 10 to 15 minutes. Data collectors will receive informed consents from all participants. Any data collected will be kept confidential.

Therefore I look forward to having your kind approval for the thesis proposal and to start data collection. I can also assure you that I will maintain all the requirements for study.

Sincerely yours,
Khairul Islam.
Khairul Islam
Bachelor of Science in Physiotherapy (B.Sc PT)
Session: 2011-2012, DU Reg. No.: 1725
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Recommendation from the thesis supervisor:

.....Shofiq.....
Md. Shofiqul Islam
Assistant Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

Attachment: Thesis Proposal including process and procedure for maintaining confidentiality, Questionnaire (Bangla version), Information sheet & consent.

Permission letter for data collection

Permission Letter

3rd September 2016

Head of the Department

Department of the Physiotherapy

Center for the Rehabilitation of the Paralyzed (CRP), Chapain, Savar, Dhaka, 1343

Through: Head of the Department, Department of Physiotherapy,

Bangladesh Health Professions Institute (BHPI).

Subject: Permission for data collection.

Dear Sir,

I respectfully to state that I am a 4th year B.Sc in Physiotherapy student at Bangladesh Health Professions Institute (BHPI). In 4th year we have to do a research project and I have chosen a title that is **"Experience of pain among people with traumatic spinal cord injury"** and my supervisor is Md. Shofiqul Islam, Assistant Professor, Physiotherapy Department, BHPI. I would like to collect data from spinal cord injury (SCI) unit of your department.

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

Yours faithfully

Khairul Islam.

Khairul Islam.

4th year B.Sc in physiotherapy, BHPI.

Class roll: 21.

Session: 2011-2012

Seen
Shofiq
03.09.16

Approved
03/09/16
Mohammad Anwar Hossain
Associate Professor &
Head of Physiotherapy Dept.
CRP Chapain, Savar, Dhaka-1343

Forwarded
03/09/16
Md. Obaidul Haque
Associate Professor & Head of the Department
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

মৌখিক অনুমতি পত্র

(অংশগ্রহণকারীকে পড়ে শোনাতে হবে)

আসসালামুয়ালাইকুম/নমস্কার,

আমার নাম খায়রুল ইসলাম, আমি এই গবেষণা প্রকল্পটি বাংলাদেশ হেলথ্ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)-এ পরিচালনা করছি যা আমার ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপী কোর্সের অধিভুক্ত । আমার গবেষণার শিরোনাম হল-**"মেরুরজ্জুতে দুর্ঘটনায় আঘাত প্রাপ্ত ব্যক্তিদের ব্যথার অভিজ্ঞতা"**। আমি এক্ষেত্রে আপনাকে কিছু ব্যক্তিগত এবং মেরুরজ্জুর আঘাত সম্পর্কে আনুষাঙ্গিক কিছু প্রশ্ন করতে চাচ্ছি। এতে আনুমানিক ১০-১৫ মিনিট সময় লাগবে।

আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের অংশ এবং যা অন্যকোন উদ্দেশ্যে ব্যবহৃত হবে না। গবেষক সরাসরি এই স্নায়ুজ্ঞান অধ্যয়নের সাথে অন্তর্ভুক্ত নয়। তাই এই গবেষনায় আপনার অংশগ্রহণ বর্তমান ও ভবিষ্যৎ চিকিৎসায় কোন প্রকার প্রভাব ফেলবে না। 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 স্বেচ্ছাপ্রণোদীত এবং আপনি যে কোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজেকে প্রত্যাহার করতে পারবেন এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকারও আপনার আছে ।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে আথবা/এবং আমার সুপারভাইসর মোঃ সফিকুল ইসলাম, সহকারী অধ্যাপক, ফিজিওথেরাপী বিভাগ, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-তে যোগাযোগ করতে পারেন ।

সক্ষাৎকার শুরু করার আগে কি আপনার কোন প্রশ্ন আছে ?

আমি কি আপনার আনুমতি নিয়ে এই সাক্ষাৎকার শুরু করতে পারি ?

হ্যাঁ o না o

অংশগ্রহণকারীর স্বাক্ষর.....

মেরুরজ্জুতে দুর্ঘটনায় আঘাত প্রাপ্ত ব্যক্তিদের ব্যথার অভিজ্ঞতা

তারিখঃ

ব্যক্তিগত বিবরণ:

নাম	
ঠিকানাঃ	
মোবাইল নাম্বরঃ	

মেরুদণ্ডের আঘাতের বিবরনঃ

এস.সি.আই লেভেলঃ		আঘাতের তারিখঃ	
এস.সি.আই ধরনঃ	○ কমপ্লিট ○ ইনকমপ্লিট	এআইএস (AIS): (যদি জানা থাকে)	○ এ ○ বি ○ সি ○ ডি

স্বাস্থ্য পরীক্ষার প্রশ্নঃ

আপনার বর্তমান ব্যথার সাথে সম্পর্কিত সঠিক তথ্যে টিক দিনঃ

- ○ এটি একটি নতুন ব্যথা
- ○ এটি বিদ্যমান ব্যথা থেকে বেশি খারাপ
- ○ সাম্প্রতিক আমার অনুভুতি স্তরের পরিবর্তন হয়েছে
- ○ সাম্প্রতিক আমার মাংশপেশির শক্তি ও কাজ করার ক্ষমতা কমেছে
- ○ আমার জ্বর এবং/অথবা শরীর ঠান্ডা হয়
- ○ আমার বমি বমি ভাব, ক্ষুদামন্দা এবং/অথবা ওজন কমেছে

- ব্যথার কারনে আমার অটোনমিক ডিজরিফ্লেক্সিয়া'র লক্ষন দেখা দিয়েছে
- সাম্প্রতিক আমি আমার প্রস্রাবের থলির কার্যক্ষমতার পরিবর্তন লক্ষ্য করছি (লক্ষণগুলোর মধ্যে মূত্রাশয় সংক্রামণ, মূত্রাশয়ে ছিদ্র, মূত্রাশয় খালি হওয়ার সময় কষ্ট)
- সাম্প্রতিক আমি আমার অন্ত্রের/পায়খানার রাস্তার কার্যক্ষমতার পরিবর্তন লক্ষ্য করছি (লক্ষণগুলোর মধ্যে কোষ্ঠকাঠিন্য, অন্ত্রে দুর্ঘটনা, পেটব্যথা, মলদ্বারে রক্তক্ষরণ)
- সাম্প্রতিক আমার চামড়া'র কিছু অংশ ক্ষতিগ্রস্থ হয়েছে
- সাম্প্রতিক আমি পরে গিয়েছি অথবা আঘাত পেয়েছি
- আমার মাংসপেশি শক্ত হয়ে গিয়েছে

১। আজ সহ গত সাত (৭) দিনে আপনার কি কোন ব্যথা ছিল?	○ হ্যাঁ ○ না
২। ব্যথা গত সাত (৭) দিনে আপনার দৈনন্দিন কাজ কতটুকু ব্যাহত করেছে?	০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০ (যেখানে ০= কোন প্রভাব ছিল না এবং ১০= সর্বোচ্চ প্রভাব ছিল)
৩। ব্যথা গত সাত (৭) দিনে আপনার মেজাজের উপর কতটুকু প্রভাব ফেলেছে?	০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০ (যেখানে ০= কোন প্রভাব ছিল না এবং ১০= সর্বোচ্চ প্রভাব ছিল)
৪। ব্যথা আপনার রাতের স্বাভাবিক ঘুমের উপর কতটুকু প্রভাব ফেলে?	০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০ (যেখানে ০= কোন প্রভাব ছিল না এবং ১০= সর্বোচ্চ প্রভাব ছিল)
৫। গত সাত (৭) দিনে গড়ে আপনার ব্যথা কতটুকু ছিল?	০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০ (যেখানে ০= কোন ব্যথা ছিল না এবং ১০= তীব্র ব্যথা ছিল)
৬। আপনার কতগুলো ব্যথার সমস্যা আছে?	১ ২ ৩ ৪ ≥৫

ব্যথার পূর্ণ বিবরনঃ

৭। কোথায় ব্যথার অবস্থান?	
৮। ব্যথা এস ছি আই লেভেল এর কোথায়?	০ উপরে ০ নিচে
৯। ব্যথা কি কম অনুভুতিভুক্ত জায়গায়?	০ হ্যাঁ ০ না
১০। কখন থেকে ব্যথা শুরু হয়েছিল?(তারিখ)	/ /
১১। কোন কারনে কি ব্যথা বৃদ্ধি পেয়েছিল?	০ হ্যাঁ ০ না বিবরণঃ
১২। আপনার ব্যথার জন্য কোনটি প্রযোজ্য? (একাধিক হতে পারে)	০ ধরে থাকে ০ জ্বালাপোড়া ০ নিস্তেজ থাকে ০ বরফের মত ঠাণ্ডা ০ ক্রাম্পিং ০ বিদ্যুতের শক্ ০ টেন্ডার ০ সুচের মত ০ চাপ ধরে থাকে ০ টিংলিং ০ ধারালো ০ অন্যান্য.....
১৩। দিন বাড়ার সাথে সাথে কি ব্যথার পরিবর্তন হয়?	০ হ্যাঁ ০ না
১৪। কি আপনার ব্যথাকে আরো খারাপ করে?	০ নিজযত্ন ০ অবসাদ ০ গতিশীলতা- স্থানান্তর ০ অধিক চিন্তা ০ গতিশীলতা- হুইলচেয়ার ০ উদ্বেগ ০ গতিশীলতা- হাঁটা ০ কোষ্ঠকাঠিন্য ০ ব্যায়াম/খেলাধুলা/বিনোদন ০ শক্ত মাংশপেশি ০ মূত্রাশয় সংক্রামণ ০ অন্যান্য.....
১৫। কি আপনার ব্যথাকে ভাল করে?	০ বিশ্রাম ০ ঔষধ ০ অবস্থান পরিবর্তন ০ অমনোযোগ ০ চাঞ্চল্যপূর্ণ কাজ ০ ব্যায়াম ০ অন্যান্য.....

১৬। ব্যথার জন্য কি ঔষধ ব্যবহার করেন?				
ঔষধ	ডোজ	মাত্রা	সহায়ক	পার্শ্ব-পতিক্রিয়া
			o হ্যাঁ o না	
			o হ্যাঁ o না	
			o হ্যাঁ o না	
			o হ্যাঁ o না	
			o হ্যাঁ o না	
১৭। ব্যথার জন্য আপনি কি আর কোন ঔষধ ব্যবহার করেন? o হ্যাঁ o না				
১৮। <u>চিকিৎসার বিবরণঃ</u> (যদি ১৭ নং 'হ্যাঁ' হয়)				

<u>দ্বিতীয় ব্যথার পূর্ণ বিবরণঃ</u>

৭। কোথায় ব্যথার অবস্থান?	
৮। ব্যথা এস ছি আই লেভেল এর কোথায়?	o উপরে o নিচে
৯। ব্যথা কি কম অনুভুতিভুক্ত জায়গায়?	o হ্যাঁ o না
১০। কখন থেকে ব্যথা শুরু হয়েছিল?(তারিখ)	/ /
১১। কোন কারনে কি ব্যথা বৃদ্ধি পেয়েছিল?	o হ্যাঁ o না <u>বিবরণঃ</u>
১২। আপনার ব্যথার জন্য কোনটি প্রযোজ্য? (একাধিক হতে পারে)	o ধরে থাকে o জ্বালাপোড়া o নিস্তেজ থাকে o বরফের মত ঠাণ্ডা o ক্রাম্পিং o বিদ্যুতের শক্

	o টেন্ডার o সুচের মত o চাপ ধরে থাকে o টিংলিং o ধারালো o অন্যান্য.....
১৩। দিন বাড়ার সাথে সাথে কি ব্যথার পরিবর্তন হয়?	০ হ্যাঁ ০ না
১৪। কি আপনার ব্যথাকে আরো খারাপ করে?	o নিজযত্ন o অবসাদ o গতিশীলতা- স্থানান্তর o অধিক চিন্তা o গতিশীলতা- হুইলচেয়ার o উদ্বেগ o গতিশীলতা- হাঁটা o কোষ্ঠকাঠিন্য o ব্যায়াম/খেলাধুলা/বিনোদন o শক্ত মাংশপেশি o মূত্রাশয় সংক্রামণ o অন্যান্য.....
১৫। কি আপনার ব্যথাকে ভাল করে?	o বিশ্রাম o ঔষধ o অবস্থান পরিবর্তন o অমনোযোগ o চাঞ্চল্যপূর্ণ কাজ o ব্যায়াম o অন্যান্য.....
১৬। ব্যথার জন্য কি ঔষধ ব্যবহার করেন?	

তৃতীয় ব্যথার পূর্ণ বিবরণঃ

৭। কোথায় ব্যথার অবস্থান?	
৮। ব্যথা এস ছি আই লেভেল এর কোথায়?	০ উপরে ০ নিচে
৯। ব্যথা কি কম অনুভুতিভুক্ত জায়গায়?	০ হ্যাঁ ০ না
১০। কখন থেকে ব্যথা শুরু হয়েছিল?(তারিখ)	/ /

১১। কোন কারনে কি ব্যথা বৃদ্ধি পেয়েছিল?	○ হ্যাঁ ○ না বিবরণঃ
১২। আপনার ব্যথার জন্য কোনটি প্রযোজ্য? (একাধিক হতে পারে)	o ধরে থাকে o জ্বালাপোড়া o নিস্তেজ থাকে o বরফের মত ঠাণ্ডা o ক্রাম্পিং o বিদ্যুতের শক্ o টেন্ডার o সুচের মত o চাপ ধরে থাকে o টিংলিং o ধারালো o অন্যান্য.....
১৩। দিন বাড়ার সাথে সাথে কি ব্যথার পরিবর্তন হয়?	○ হ্যাঁ ○ না
১৪। কি আপনার ব্যথাকে আরো খারাপ করে?	o নিজযত্ন o অবসাদ o গতিশীলতা- স্থানান্তর o অধিক চিন্তা o গতিশীলতা- হুইলচেয়ার o উদ্বেগ o গতিশীলতা- হাঁটা o কোষ্ঠকাঠিন্য o ব্যায়াম/খেলাধুলা/বিনোদন o শক্ত মাংশপেশি o মূত্রাশয় সংক্রামণ o অন্যান্য.....
১৫। কি আপনার ব্যথাকে ভাল করে?	o বিশ্রাম o ঔষধ o অবস্থান পরিবর্তন o অমনোযোগ o চাঞ্চল্যপূর্ণ কাজ o ব্যায়াম o অন্যান্য.....
১৬। ব্যথার জন্য কি ঔষধ ব্যবহার করেন?	

VERBAL CONSENT STATEMENT (ENGLISH)

(Please read out to the participant)

Assalamualaikum/Namasker,

My name is Khairul Islam, I am conducting this study for a research project titled **"Experience of pain among people with traumatic spinal cord injury"** from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related questions about pain. This will take approximately 10 -15 minutes. I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related with this SCI area, so your participation in the research will have no impact on your present or future treatment. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous.

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 Khairul Islam, researcher and/ or my supervisor is Md. Shofiqul Islam, Assistant Professor, Physiotherapy Department, BHPI.

Do you have any questions before I start?

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

o YES

o NO

Signature of the Interviewer _____

Questionnaire (English)

Experience of pain among people with traumatic spinal cord injury

Date: _____/_____/_____

Personal Details:

Name:	
Address:	
Mobile:	

Spinal Cord Injury (SCI) Details:

Level of SCI:		Date of SCI:	_____/_____/_____
Type of SCI:	☐ Complete ☐ Incomplete	AIS # *(if known)*	☐ A ☐ B ☐ C ☐ D

Health Screening Questions:

In the table below tick all that apply to your current pain problem:

☐ This is a new pain (pain in a new location or pain that has new characteristics)
☐ This is a significant flare up (or worsening) of an existing pain
☐ There has been a recent change in my level of sensation
☐ There has been a recent decrease in my muscle strength or function
☐ I have had a fever and / or chills
☐ I have noticed nausea, a lack of appetite and/or weight loss
☐ This pain causes me to have symptoms of Autonomic Dysreflexia
☐ I have noticed a recent change in my bladder function (may include symptoms of bladder infection, bladder leakage, difficulty emptying)

☐ I have noticed a recent change in my bowel function (may include constipation, bowel accidents, abdominal pain, bloating, rectal bleeding)
☐ I have a current area of skin breakdown
☐ I have had a recent fall or trauma
☐ There has been an increase in my muscle spasms

1. Have you had any pain during the last 7 days including today?	☐ YES ☐ NO
2. In general, how much has pain interfered with your day-to-day activities in the last week?	0 1 2 3 4 5 6 7 8 9 10 *(where 0 = no interference and 10 = extreme interference)*
3. In general, how much has pain interfered with your overall mood in the last week?	0 1 2 3 4 5 6 7 8 9 10 *(where 0 = no interference and 10 = extreme interference)*
4. In general, how much has pain interfered with your ability to get a good night's sleep?	0 1 2 3 4 5 6 7 8 9 10 *(where 0 = no interference and 10 = extreme interference)*
5. How many different pain problems do you have?	1 2 3 4 ≥ 5
6. Average pain intensity in the past week?	0 1 2 3 4 5 6 7 8 9 10 *(where 0 = no pain and 10 = pain as bad as you can imagine)*

For your worst pain, provide the following details:

7. Where is the pain located?	
8. Is the pain above or below your level of SCI?	☐ Above ☐ Below
9. Is the pain in a region of reduced sensation?	☐YES ☐ NO
10. When did the pain start? (Date of onset)	_____/_____/_____
11. Was there an event that triggered the pain?	☐YES ☐ NO Details:_____
12. What words best describe your pain? (tick all that apply)	☐ Aching ☐ Burning ☐ Dull ☐ Icy cold ☐ Cramping ☐ Electric Shocks ☐ Tender ☐ Pins & Needles ☐ Squeezing ☐ Tingling ☐ Sharp ☐ Other: _____

13. How does pain change over the course of the day?	
14. What makes the pain feel worse?	☐ Personal care ☐ Mobility - transfers ☐ Mobility – wheelchair ☐ Mobility – walking ☐ Exercise/Sports ☐ Spasm ☐ _____ ☐ Fatigue ☐ Stress ☐ Anxiety ☐ Constipation ☐ Bloating ☐ Bladder infection ☐ _____
15. What makes the pain feel better?	☐ Rest ☐ Position/posture change ☐ Activity Pacing ☐ _____ ☐ Medications ☐ Distraction ☐ Exercise ☐ _____

16. What medications do you use for pain?

Medication	Dose	Frequency	Helpful?	Side effect
			☐ YES ☐ NO	
			☐ YES ☐ NO	
			☐ YES ☐ NO	
			☐ YES ☐ NO	
			☐ YES ☐ NO	

17. Are you using or receiving any treatments for your pain problem? ☐ YES ☐ NO

18. <u>Treatment Details:</u> (if 17 is YES)

For your second worst pain, provide the following details:

Where is the pain located?	
Is the pain above or below your level of SCI?	☐ Above ☐ Below
Is the pain in a region of reduced sensation?	☐YES ☐ NO
When did the pain start? (Date of onset)	_____/_____/_____
Was there an event that triggered the pain?	☐YES ☐ NO Details:_____
What words best describe your pain? (tick all that apply)	☐ Aching ☐ Burning ☐ Dull ☐ Icy cold ☐ Cramping ☐ Electric Shocks ☐ Tender ☐ Pins & Needles ☐ Squeezing ☐ Tingling ☐ Sharp ☐ Other: _____
How does pain change over the course of the day?	
What makes the pain feel worse?	☐ Personal care ☐ Fatigue ☐ Mobility - transfers ☐ Stress ☐ Mobility – wheelchair ☐ Anxiety ☐ Mobility – walking ☐ Constipation ☐ Exercise/Sports ☐ Bloating ☐ Spasm ☐ Bladder infection ☐_____ ☐ _____
What makes the pain feel better?	☐ Rest ☐ Medications ☐ Position/posture change ☐ Distraction ☐ Activity Pacing ☐ Exercise ☐ _____ ☐ _____
What medications do you use for pain?	

For your third worst pain, provide the following details:

Where is the pain located?	
Is the pain above or below your level of SCI?	☐ Above ☐ Below
Is the pain in a region of reduced sensation?	☐YES ☐ NO
When did the pain start? (Date of onset)	_____/_____/_____
Was there an event that triggered the pain?	☐YES ☐ NO Details:_____
What words best describe your pain? (tick all that apply)	☐ Aching ☐ Burning ☐ Dull ☐ Icy cold ☐ Cramping ☐ Electric Shocks ☐ Tender ☐ Pins & Needles ☐ Squeezing ☐ Tingling ☐ Sharp ☐ Other: _____
How does pain change over the course of the day?	
What makes the pain feel worse?	☐ Personal care ☐ Fatigue ☐ Mobility - transfers ☐ Stress ☐ Mobility – wheelchair ☐ Anxiety ☐ Mobility – walking ☐ Constipation ☐ Exercise/Sports ☐ Bloating ☐ Spasm ☐ Bladder infection ☐_____ ☐ _____
What makes the pain feel better?	☐ Rest ☐ Medications ☐ Position/posture change ☐ Distraction ☐ Activity Pacing ☐ Exercise ☐ _____ ☐ _____
What medications do you use for pain?	