

**EFFECTIVENESS OF MYOFASCIAL RELEASE TECHNIQUE TO REDUCE  
CERVICOGENIC PAIN**

Mst. Sohana Akter

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

DU Roll no: 935

Reg. no:1741

Session: 2011-2012

BHPI, CRP, Savar, Dhaka-1343



**Bangladesh Health Professions Institute (BHPI)**

Department of Physiotherapy

CRP, Savar, Dhaka-1343

Bangladesh

August, 2016

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

**EFFECTIVENESS OF MYOFASCIAL RELEASE TECHNIQUE TO REDUCE  
CERVICOGENIC PAIN**

Submitted by **Mst. Sohana Akter**, for partial fulfilment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc. PT).



.....  
**Mohammad Anwar Hossain**  
Associate Professor & Head  
Department of Physiotherapy  
CRP, Savar, Dhaka  
**Supervisor**



.....  
**Mohammad Habibur Rahman**  
Assistant Professor  
Department of Physiotherapy  
BHPI, CRP, Savar, Dhaka



.....  
**Ehsanur Rahman**  
Assistant Professor  
Department of Physiotherapy  
BHPI, CRP, Savar, Dhaka



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



.....  
**Md. Obaidul Haque**  
Associate Professor & Head  
Department of Physiotherapy  
BHPI, CRP, Savar, Dhaka

## DECLARATION

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

**Signature:**

**Date:**

Mst. Sohana Akter

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## Acknowledgement

At first I want to pay my thankfulness to Almighty Allah who gave me the passion to complete the study.

I am very much grateful to my honorable teacher and supervisor **Mohammad Anwar Hossain**, Associate Professor & Head, Department of Physiotherapy, CRP, Savar, Dhaka, for permitting me to collect data from the clinical setting of Musculoskeletal Unit, Physiotherapy Department, CRP, Savar as well as for giving me his valuable time, his thoughtful supervision excellent guidance without which I could not able to complete this research project.

I would like to express my gratitude to **Md. Obaidul Haque**, Associate Professor & Head, Department of Physiotherapy, BHPI, CRP, Savar for recommend me to begin the study procedure and for giving me the courageous to conduct the study. I am specially indebted to Md. Shofiqul Islam, Assistant Professor of Physiotherapy department for his valuable class and guidelines. I am also obligated to Assistant Professor Md. Habibur Rahman, Assistant Professor Md. Ehsanur Rahman, and Assistant Professor Md. Millat Hossain, Dept. of physiotherapy for sharing their precious knowledge that empowered me to fine-tune various aspects concerning this study.

I would like to thanks all of Clinical Physiotherapist, Musculoskeletal Unit, Department of Physiotherapy for helping me at the data collection session.

I would like to give special thanks to my Husband Md. Ashrafuzzaman for his occupied cooperation.

I would like to express my gratitude to men and women with Cervical pain, who gave me their valuable time and provided the information, related to my study and helped me to make my work successful. I would like to give thanks all of my group mate Tanha Nosin Nanni, Md.Nuruzzaman & Sharmin Akter for their togetherness & cooperation.

## Contents

Acknowledgement	i
Contents	ii-iii
List of table	iv
List of figure	v
List of Abbreviations or Symbols	vi
Abstract	vii
<b>INTRODUCTION-I</b>	1-7
1.1 Background	1-3
1.2 Justification	4
1.3 Aim	5
1.4 Objectives	5
1.5 Operational definition	6
1.6 List of variable	7
1.7 Hypothesis	7
<b>LITERATURE REVIEW-II</b>	8-15
<b>METHODOLOGY-III</b>	16-29
3.1 Study design	16
3.2 Study area	18
3.3 Study population	18
3.4 Sampling technique	18
3.5 Sample size	18
3.6 Inclusion criteria	19
3.7 Exclusion criteria	19
3.8 Treatment protocol	20
3.9 Data processing	20-22
3.9.1 Data collection tools	20
3.9.2 Measurement tools	21
3.9.3 Data collection procedure	22
3.10 Data Analysis	22

3.10.1 Statistical test	23-28
3.11 Ethical considerations	29
<b>RESULTS-IV</b>	30-45
<b>DISCUSSION-V</b>	46-51
<b>CONCLUSIONAND</b>	52
<b>RECOMMENDATION-VII</b>	
<b>REFERENCES</b>	53-60
<b>APPENDIXES</b>	viii-xxiv

## List of Tables

<b>Table No.</b>	<b>Title</b>	<b>Page No.</b>
Table – 1:	Treatment Protocol of experimental group	20
Table – 2:	Dallas questionnaire (Initial & final assessment-paired t-test)	25
Table – 3:	Oswestry Disability Index (Initial & final - paired t-test)	26
Table – 4:	Dallas Questionnaire (Final assessment-Un-paired t-test)	28
Table – 5:	Mean Age of the Participants	30

## List of Figures

<b>Figure No.</b>	<b>Title</b>	<b>Page No.</b>
Figure – 1:	Age Range of the Participants with percentage	31
Figure – 2:	Gender Distribution with percentage	32
Figure – 3:	Occupation of the Participants with percentage	33
Figure – 4:	Educational level with percentage	34
Figure – 5:	Religion of the Participants with percentage	35
Figure – 6:	Participants Body Mass Index	36
Figure – 7:	Disability among the participants	45



## Acronyms

<b>ADL</b>	Activity of Daily Living
<b>BHPI</b>	Bangladesh Health Professions Institute.
<b>CRP</b>	Centre for the Rehabilitation of the Paralysed
<b>df</b>	Degree of Freedom
<b>IRB</b>	Institutional Review Board
<b>IRR</b>	Infra-Red Radiation
<b>MFR</b>	Myofascial Release
<b>ODI</b>	Oswestry Disability Index
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>VAS</b>	Visual Analogue Scale
<b>WHO</b>	World Health Organization

## Abstract

*Purpose:* The study was conducted to identify the therapeutic effectiveness of the Myofascial Release technique, along with the Conventional physiotherapy for the treatment of Cervicogenic pain. *Objectives:* To evaluate the effect of pain after introducing Myofascial Release in Cervical spine by Dallas questioner, to measure the functional disability by using Oswestry Neck Disability Index questioner (ODI), to explore the socio-demography of the participants, to investigate the effect on reducing discomfort and functional disability after introducing Myofascial Release. *Methodology:* The study was piloted with a design of randomized control trial. Total 12 samples were selected in this study. Data was collected by using two structured questioners related to Cervical pain and disability. Socio-demographic data were collected by a semi-structured questionnaire. Data was analyzed by using SPSS software version 20.0 which focused through column, pie chart, bar diagram, paired t-test and also unrelated t-test of the parametric test.

*Result:* The results in paired t-test shows both groups improvement is achieved but the better improvement among most of the indicators in the Myofascial release treatment group ( $p < 0.05$  or higher than  $p < 0.05$ ) in final assessment which indicate that the effectiveness of Myofascial Release is superior to the Conventional physiotherapy for Cervical pain patients. In unrelated t-test there is no significant difference shown in between both treatment approach. *Conclusion:* So, Myofascial Release technique may be considered as beneficial for Cervical pain patients. Therefore, Physiotherapist may suggest applying this intervention for Cervicogenic pain to improve their condition.

**Key words:** Cervicogenic pain, Myofascial Release, Conventional physiotherapy

### 1.1 Background

Bangladesh is one the most density populated country in the world. According to the official census held in 2009, the total population was 123.2 million of the least development and compared to 109.9 million as recorded in 1991 censuses (Bangladesh Bureau of statistics, 2009). Neck pain is a common musculoskeletal symptom in the world. It is estimated that in the general population the point prevalence for neck pain varies between 9.5% and 22% (Griffiths et al., 2009). It is most common symptom at approximately 50 years of age and is more common in women than Men (Kanlayanaphotporn et al., 2009).

Neck pain is a well-recognized and most common disorder in adults with prevalence up to 71%. Correspondingly not uncommon in elderly populations, with a prevalence range between 8.8% and 11.6% and the global life-time (Fejer et al., 2006). Recent studies have shown that individuals with lost-time claims for neck pain account for approximately 11.3% of lost-time claims among workers in Ontario in Netherlands. The total costs of neck pain were estimated to be 0.1% of that country (Vonk et al., 2009).

The vast population 32.3% people are suffering from musculoskeletal pain among them cervical pain is very common. Pain and stiffness can make it difficult to turn around. Symptoms may appear suddenly, as when someone wakes up with a stiff and painful neck, or gradually (Çakıt et al., 2009). The pain may be limited to the neck or may be accompanied by headaches brachialgia, and dizziness, or pain and pins and needles down the arm or hand (Guzman et al., 2008). Neck pain can be severely disabling and costly. Limited range of motion and which is often precipitated or aggravated by neck movements or sustained neck postures (Hoving et al., 2011).

Neck pain can result from many causes—for example, trauma, infections or inflammatory conditions, rheumatic diseases, and congenital diseases (Quintner & Cohen, 2015). Most often, however, no specific cause can be identified, and the symptoms are labeled nonspecific. Neck pain can originate from disorders in the neck, such as neural tissue, uncovertebral or intervertebral joints, discs, bones, periosteum, muscles, and ligaments (Kovacset et al., 2008). Most cervical pain does not have one simple cause, but is a result

of a range of conditions that affect joints, muscles, tendons and the other tissues in the cervical region. Factors that can contribute include tension and sustained or repetitive activity, such as using the telephone a lot, sitting at computer screens or in front of the television, playing a musical instrument, and long distance driving ( Leaver et al., 2010).

It has been acknowledged (Moffett & Mclean, 2006) that, cervical pain is responsible for huge personal and societal costs, and major cause of work disability. Traditionally it is belief that cervical pain is a problem that always resolves. (Leaver et al., 2010) acknowledged that many treatments are available to treat the cervical pain patient. These are included medication, physiotherapy and education of the patient. Manual therapies are commonly used in the treatment of nonspecific neck pain the most common forms of manual therapy are manipulation and mobilization.

Various physiotherapy treatment options have been established such as, stretching, mobilization, traction, Myofascial release and electrical modalities like- ultrasound, TENS etc. Myofascial release is one of the physical therapy treatment is given in the chronic condition that reduces the tightness and restriction in soft tissues, improve the asymmetrical muscle weakness due to peripheral neuropathy and in inflexible rib cage due to chronic respiratory disease and also reduce cervical pain (MacDonald et al., 2013).

Myofascial release (MFR) has been described as an umbrella term for a wide variety of manual therapy techniques in which pressure is applied to muscle and fascia (McKenney et al., 2013).

By extension, self-myofascial release (SMFR) is a type of MFR that is performed by the individual themselves rather than by a clinician, often using a tool. The most common tools used for SMFR are the foam roller (Kim et al., 2014).

Myofascial release is a soft tissue mobilization technique. If condition is treated in the acute stage, then symptoms will be aggravated. If treated in the chronic stage, the symptoms will alleviate (Shrivastava et al., 2015). Myofascial release techniques stem from the foundation that fascia, a connective tissue found throughout the body, reorganizes itself in response to physical stress and thickness along the lines of tension. By Myofascial release there is a change in the viscosity of the ground substance to a more fluid state which

eliminates the fascia's excessive pressure on the pain sensitive structure and restores proper alignment. and this has been clarified by (Suman et al., 2012).

## **1.2 Justification of the study**

Regional pain of Cervical basically treated as musculoskeletal pain that can appear from different musculoskeletal disorders. With the comparison of low back pain it is true that the percentage of neck pain patient is relatively low. But in modern science the rate of neck pain is gradually increasing day by day. Only medication or conservative treatment is not enough for managing neck pain. There will also require therapeutic measure. Neck pain can arise from different condition or injury. So for proper way to manage the patient, therapeutic intervention is needed along with medication.

Physiotherapy approaches and techniques play an important role in the treatment and improvement of symptoms in patients with Cervical pain. But there is insufficient evidence about approximate treatment technique using Myofascial release along with conventional physiotherapy.

There is no research investigation to find out the effectiveness of Myofascial release within conventional physiotherapy comparing with only conventional physiotherapy. This study will design to investigate the effectiveness of Myofascial release with conventional physiotherapy alone. The result of this study may help to guide Physiotherapists to give the best treatment in cervical pain. There are some researches and articles, which are published in this area. This are helps to know about Myofascial release and it effectiveness but researcher think the study get better result that make the therapist interested to apply this approach.

In Bangladesh, there is no published research on Cervicogenic pain directly comparing the two different treatment procedures mentioned above.

### **1.3 Aim**

The aim of the study is to assess the therapeutic effectiveness of myofascial release along with the Conventional physiotherapy for the treatment of Cervicogenic pain.

### **1.4 Objectives**

#### **General objective**

To identify and analyse the therapeutic effectiveness of the myofascial Release technique, given along with the conventional physiotherapy for the treatment of Cervicogenic Pain.

#### **Specific objective**

- i. To explore socio-demographic (age, gender, educational status, economic status) characteristics of patient with Cervicogenic Pain..
- ii. To assess the effect on pain after introducing Myofascial Release and conventional physiotherapy for Cervicogenic Pain.
- iii. To evaluate the outcome of pain in different functional position after receiving treatment.
- iv. To find out the functional disability state after introducing Myofascial release.
- v. To examine the actual outcome of Myofascial release in Cervicogenic pain.

### **1.5 Operational Definition: -**

**Cervicogenic pain:** Cervicogenic Pain named as Cervical pain is the sensation of discomfort in the neck area. Cervical pain can result from disorder of any structure in the neck, including the cervical vertebrae and vertebral disc, nerve, muscles, blood vessels, esophagus, larynx, trachea, lymphatic organ, thyroid gland or parathyroid gland. Cervical pain arises from numerous different conditions and is sometimes referred as neck pain. It is a pain full condition in the cervical and remote which may be localized or referred.

**Myofascial Release:** It is a safe and very effective hands-on technique that involves applying gentle sustained pressure into the Myofascial connective tissue restrictions to eliminate pain and restore motion. This essential “time element” has to do with the viscous flow and the piezoelectric phenomenon: a low load (gentle pressure) applied slowly will allow a viscoelastic medium (fascia) to elongate.



## 1.6 List of variables:

- Independent variable: Myofascial Release, Conventional Physiotherapy
- Dependent variable: Cervicogenic pain

## 1.7 Hypothesis and Null-Hypothesis

### Null hypothesis

$H_0 : \mu_1 - \mu_2 = 0$  or  $\mu_1 = \mu_2$ , where the experimental group and control group initial and final mean difference is same.

$H_0: \mu_1 = \mu_2$  or  $H_0: \mu_1 < \mu_2$

### Alternative Hypothesis

$H_a : \mu_1 - \mu_2 \neq 0$  or  $\mu_1 \neq \mu_2$ , where the experimental group and control group initial and final mean difference is not same.

$H_a: \mu_1 \neq \mu_2$  or  $H_a: \mu_1 > \mu_2$

Cervicogenic Pain named as Cervical pain is a common complaint mostly seen in practitioners who use variety of methods to treat the condition of mechanical nature in manual medicine, (Gemmell H & Miller P, 2010). Cervical pain is one of the most common, painful musculoskeletal conditions. Point prevalence's have been reported to vary between 10% and 22% and lifetime prevalence's as high as 67% and 71% have been reported (Hoving et al., 2006).

Cervical pain is also referred to as cervical pain. In a More than half of people develop about of neck pain at some time in their life. A survey done in the UK found that show that adults aged 45-75 years, about 1 in 4 women and about 1 in 5 men had current neck pain (Neck pain in adults, 2006). The prevalence increases with longer prevalence periods and generally women have more NP than men. At least for 1-year prevalence, Scandinavian countries report higher mean estimates than in the rest of Europe and Asia (Fejer et al., 2006).

The West and the Midwest of the Asia are the regions where the prevalence of neck pain is highest; the South has the lowest prevalence. Prevalence of neck pain is highest among poor respondents. Age groups of 45 to 64 years, 65 to 74 years, and 75 years and older had a similar prevalence of neck pain that's range 31.1%–32.2%, but the group aged 18 to 44 years had a lower prevalence and which is 23.9%. White women had the highest rate of prevalence of neck pain (18.0%), followed by Hispanic women (16.8%), white men (13.2%), and African American women (12.6%) (Paul, 2008). western developed countries such as Sudan and Sri Lanka. In Sri Lanka, 36.7% of people with computer related worker have been affected on neck pain symptoms (Ranasinghe et al., 2011).

Cervical pain (NP) is common in the adult general population, with prevalence estimates of between 30 and 50% showing an incidence rate between 146 and 213 per 1,000 patients per year (Hogg et al., 2009). About 5% of adults were significantly disabled by neck pain in the general community. severity of neck pain and disability experience those people who have rarely perform physical activity, have a history of neck trauma, type with greater force, use the keyboard and mouse for greater than 6 hour per day, spend more than 2 hour

sitting at their workstation before taking a break and spend more than 2 h on computer-based tasks (Johnston, et al., 2008). Musculoskeletal pain in the cervicobrachial region is considered a major problem among adults of working age with unknown pathophysiology, pain tends to create a cluster of related problems such as chronic fatigue, sleep disturbance, excessive rest and withdrawal from activity and mood disorder (Korkmaz et al., 2011).

These disorders develop gradually, show a chronic course and often go untreated. many symptoms are associated with cervicogenic pain. Most notable symptoms is pain. Painful symptoms may worsen gradually and progress to loss of function. Pain and loss of function may persist for years (Coury et al., 2009). Some risk factors for developing neck pain among computer user are as duration of employment, body mass index, boring work, psychosocial troubles and chronic headache (Hagag et al., 2011).

Recent research has shown that neck pain-related disability alters the normal function of craniomandibular region. Furthermore, several epidemiological studies have reported that patients with NP often report pain in different conditions involving the temporomandibular joint (TMJ) and the craniofacial region. The risk of being diagnosed with pain in both regions is higher in women than men (Touche et al., 2016). Cervical pain comes from a number of disorders and diseases of any structure in the cervical. Chronic neck pain is a distressing condition with high emotional and personal costs, negatively impacting on quality of life (Akteret al., 2010). Cervical pain is a considerable economic burden and may result in substantial disability (Child et al., 2008).

About 15% of people in a hospital based physiotherapy service and 30% of patients in a chiropractic service are being treated for neck pain (Cohen, 2015). More than Half of the population develops about of neck pain at some time in their life. Acute (Sudden onset) bouts of neck pain are seen due to minor injuries or bad posture and full recovery occurs in most cases. The usual advice is to keep the neck active as possible. Chronic (Persistent) pain develops in some cases and future treatment may then be needed (Biag et al., 2015). In the condition of neck pain accounts for 15% of all soft tissue problems seen in general practice and are a common reason for referral for Physiotherapy treatment. In any one year, 30% of adults will report neck pain, and 5-10% will be disabled with it. Although neck pain has been regarded as self-limiting and benign, it consumes a substantial proportion of

healthcare resources. A recent survey of 10 community Physiotherapy departments in the east Yorkshire area has shown that of 7899 subjects referred, 1060 (13.4%), had neck complaints (Carroll et al., 2009). Work related neck pain is one of the common musculoskeletal disorders that affects millions of workers throughout the world across variant works or sectors of services. Most of them were married 72.3% when compared to 27.7% were single. In terms of age, between 18-29 years of age people, the rate of Neck pain is about 44.2%. In terms of BMI, 36% obese are most likely to have Neck pain (Mustafa & Sutan, 2013).

Pain is an unpleasant emotional state felt in the mind but identifiable as arising in a part of the body (Wilde, et al., 2007). Pain is a multivalent, dynamic, and ambiguous phenomenon; it is notoriously difficult to quantify (Goldberg & McGee, 2011).

Pain in the cervical is such an everyday event that it is often used to describe a situation, certain people an unpleasant job to be done, or an institution (Ozurumba et al., 2016). Neck is made up of bones, muscles, ligaments, nerves, and blood vessels that help to support the head. Muscles in the neck and shoulders play an important role in maintaining a healthy neck. Many different structures in the cervical are capable of causing pain. Poor posture, injuries, arthritis or stress may contribute to your neck problems, causing pain and Hunting the ability to perform the daily activities (Woodhouse et al., 2016).

Lifting or carrying loads, whole-body vibration, having a static posture for a long time and frequent bending and twisting have been proved to be the physical load risk factors consistently associated with work-related back and neck disorders. There is evidence for a causal relationship between low back and/or neck injuries and disorders (Shah & Dave, 2012). The bad posture can cause neck pain by putting extra strain on ligaments and muscles. Standing with the shoulders slouched and chin jutting forward, working with your head down for long periods of time, slumping while seated and sleeping face-down are common postural problems that affect the neck (Neck & shoulder pain, 2006).

Most patients who present with neck pain have "nonspecific (simple) neck pain," where symptoms have a postural or mechanical basis. Etiological factors are poorly understood and are usually multifactorial, including poor posture, anxiety, depression, neck strain, and sporting or occupational activities (Wirth et al., 2016).

Some neck pain results from soft tissue trauma, most typically seen in whiplash injuries. Rarely, disc prolapsed and inflammatory, infective, or malignant conditions affect the cervical spine and present as neck pain with or without neurologic features (Cohen, 2015). cervical pain after whiplash injury also fits into this category, provided no bony injury or neurological deficit is present. When mechanical factors are prominent, the condition is often referred to as "cervical Spondylosis," Randomized controlled trials identified by systematic reviews provide moderate evidence that various exercise regimens using proprioceptive, strengthening, endurance, or coordination exercises are more effective than usual care (analgesics, non-steroidal anti-inflammatory drugs, or muscle relaxants (Seferiadis et al., 2016).

Differential diagnoses include metastatic disease such as from a renal cell carcinoma and multiple myeloma. The patients have vertebral involvement, localized pain being the most significant clinical feature the recommended management includes surgical decompression. Assessment and treatment firstly done by a General Practitioner, but it could not be adequately assessed and managed by them. Furthermore, patient recovery mostly depends on a physiotherapist (Ludvigson & Ethovan, 2012).

Neck pain usually resolves within days or weeks but can recur or become chronic. In some industries, neck-related disorders account for as much time off work as low back pain. The percentage of people in whom neck pain becomes chronic depends on the cause but is, thought to be about 10 percent, 1 similar to low back pain. Neck pain causes severe disability in 5 percent of affected people (McLean et al., 2010). Most individuals are better in 1-2 weeks; more than 90% have no more pain after eight weeks if they continue treatment, avoid long term sitting with neck stretch. avoid smoking, maintain regular food habit and sleeping (Borenstein, 2011).

Painkillers are helpful in the medical management of neck pain. It is best to take painkillers regularly until the pain cases. This better than taking them now and again just when the pain is very bad. If you take them regularly, that may prevent the pain from getting severe (Kidd, 2013). There are few randomized controlled trials specifically testing drug treatments for neck pain. Paracetamol is safe and effective for the treatment of mild to moderate pain when used correctly (Blight et al., 2008). We found insufficient evidence on

the effects of analgesics, NSAIDs, antidepressants, or muscle relaxants for neck pain, although they are widely used (Kidd, 2013).

Elbert (2016) assigned that the physiotherapy profession is a very new and developing profession in Bangladesh, to mention about this we need to some up to date information that can help both the patient and therapist. Although there is very little research for neck pain patients in Bangladesh from the physiotherapy point of view, if this area is explored then it could produce good result for our profession.

Physical therapy is often the first treatment approach for patients with mechanical neck pain, and these patients account for approximately 25% of all physical therapy visits. Manual therapy is a treatment commonly used in the management of neck pain (González et al., 2009). Systematic reviews of commonly used treatments for neck pain, including medication, physiotherapy, exercise, local injections and patient education, have shown that their effectiveness remains open to question. At any specific time, 12% of the adult female population and 9% of the adult male population experience pain in the neck, with or without associated arm pain and 35% of people can recall an episode of neck pain (Kampe et al., 2008).

Thoracic spine thrust manipulation can be used for patients with primary complaints of Cervical pain. Thoracic spine thrust manipulation can also be used for reducing pain and disability in patients with neck and neck-related arm pain (Cleland et al., 2007). Strength training, high intensity neck strengthening exercise, stabilization exercise with elastic band, dynamic exercise for shoulder and upper extremities, aerobic and stretching exercise 3 times per week are very significant physiotherapy management (Velde et al., 2015). In the United States, it indicate that manual therapy techniques including mobilization/manipulation are appropriate treatment strategies for the management of neck pain, as are modalities and therapeutic exercise (Carpenter et al., 2009). Manual therapy techniques such as positional release therapy, trigger point release therapy, muscle energy technique, myofascial release therapy, Cyrix, spinal mobilization such as NAGS and SNAGS are the most commonly used manual therapy techniques in the treatment of mechanical Cervicogenic pain (Nitsure & Welling, 2014).

Myofascial therapy can be defined as “the facilitation of mechanical, neural and psycho physiological adaptive potential as interfaced by the myofascial system (Shah & Bhalara, 2012). Myofascial release (MFR) refers to the manual massage technique for stretching the fascia and releasing bonds between fascia and integuments, muscles, bones, with the goal of eliminating pain, increasing range of motion and balancing the body. The fascia is manipulated, directly or indirectly, allowing the connective tissue fibers to reorganize themselves in to a more flexible, functional fashion (Morrison et al., 2015). The purpose of the myofascial release is to release restrictions (barriers) within the deeper layers of fascia. This is accomplished by a stretching of the muscular elastic component of the fascia, along with the crosslink, and changing the viscosity of the ground substance of the fascia. Evidence shows that MFR is safe, effective and designated to be utilized with appropriate modalities, mobilization, exercise and flexibility programs, neurodevelopment treatment (NDT), sensory integration and movement therapy (Shah & Bhalara, 2012).

Myofascial Release is a safe and very effective hands-on technique that involves applying gentle sustained pressure into the Myofascial connective tissue restrictions to eliminate pain and restore motion. In the word “Myofascial,” “myo” refers to muscle and “fascia” is a continuous layer of connective tissue that spreads throughout the body. Fascia is like a three-dimensional web that extends from head to foot and protectively surrounds every muscle, bone, nerve, blood vessel, and organ in the body. A good way to envision fascia is to imagine slicing a grapefruit in half. After removing the fruit from the rind, it is easy to see all of the individual compartments that are left. These translucent walls give shape and definition to the object. Fascia in our bodies acts very similar to these compartment walls (Guimberteau, 2008). Myofascial Release is a very effective, gentle and safe hands-on method of soft tissue mobilization, that involves applying gentle sustained pressure to the subcutaneous and myofascial connective tissue (Barnes & Zeltwanger, 2006).

Myofascial release is a collection of techniques used for the purpose of relieving soft tissue from an abnormal hold of a tight fascia. Direct bodily effects range from alleviation of pain, improvement of athletic performance, and greater flexibility and ease of movement to more subjective concerns such as better posture. More indirect goals include emotional release, deep relaxation, or general feelings of connection and well-being (Beardsley &

Skarabot, 2015). Myofascial restriction means unwanted bonding may occur with inflammation, injury, postural stress (such as found in cerebral palsy) or lack of full, active range of motion. In an attempt to support the body, the system contracts and bonds to neighboring structures in the same shape and form as the asymmetrical skeleton (Sarin & Raj, 2015).

Concepts in Myofascial release technique explain firstly in this system is that of tight loose. This concept is tightness creates and weakness permits asymmetry. There are both biomechanical and neural reflexive elements to this tight loose concept. Increased stimulation causes an agonist muscle to become tight, and the tighter it becomes, the looser its antagonist becomes by reciprocal inhibition. **Secondly** palpation in myofascial pain syndromes. There are many diagnostic and therapeutic systems built upon peripheral stimulation. Palpation of the myofascial elements can frequently identify a safe site of initiation for myofascial pain which can be therapeutically addressed by the hands. The **third concept** deals with the neuro reflexive change that occurs with the application of manual force on the musculoskeletal system. The hands-on approach offers afferent stimulation through receptors, which require central processing at the spinal cord and cortical levels for a response. Afferent stimulation frequently results in efferent inhibition. The **fourth concept** is that of the “release” phenomenon. This concept is shared with other forms of manual medicine; particularly the cranio sacral technique and the ease bind principle of functional indirect technique (Balasubramaniam & Kandhasamy, 2016).

Release, in MFR concept, is the tissue relaxation, which follows the appropriate application of stress on the tissue. The tightness “gives way” or melts under the application of the load. Release becomes an enabling and terminal objective of the application of MFR. Release of tightness is sought to achieve improvement in symmetry of function and form (Ajimsha, 2016). Types of MFR refers to soft tissue manipulation techniques. It has been loosely used for different manual therapy, soft tissue manipulation work (connective tissue massage, soft tissue mobilization, Rolfing, strain-counter strain etc.) 1-Direct myofascial release, 2-Indirect myofascial release, 3-Self myofascial release (Taleb et al., 2016).

Self-myofascial release is when the individual uses a soft object to provide MFR under their own power. Usually an individual uses a soft roll, or ball (tennis ball, soccer ball) on



which to rest one's body weight, then, by using gravity to induce pressure along the length of the specific muscle or muscle groups (Peacock et al., 2014). Myofascial release treatment can help in Chronic pain, Backache and pelvic imbalance, Neck & shoulder pain & tension, Headaches, Jaw discomfort, teeth grinding & clenching, Sciatica, Carpal tunnel syndrome, Tennis & golfer elbow, General discomfort & muscular spasm, Trigger point formation, Muscle tightness and muscle spasticity, Dizziness and vertigo, Menstrual discomfort, Fibromyalgia, Planter fasciitis, Sports injuries, Frozen shoulder, Whiplash Post-surgical & injury scarring (Griev et al., 2015).

Absolute contraindications indicated that avoid MFR during the following conditions: Febrile states, Systemic or localized infections, Surgical incisions and open wounds, Healing fractures, Acute inflammation-Rheumatoid conditions, Cancer or tumors conditions, Aneurysm, Anti-coagulant therapy, Osteoporosis or advanced degenerative changes, Hypersensitivity to skin and Advanced diabetes (McKenney et al., 2013). Precautions should be taken in the following conditions: Osteoporosis, Hypotonic, Athetizes, Scar tissue release, Breathe Holding and disorganized swallowing patterns, should not demonstrate intent to stretch the tissue (Remvig et al., 2008).

Another study shows excluded group of MFT are Signs of neurological involvement (paresthesia, tingling, numbness), Cervical disc prolapse, Cervical spondylosis, Spinal stenosis, Previous spinal surgery, History of cervical trauma (whiplash disorder), Congenital torticollis, Frequent migraine, Carcinoma and Pregnancy. Study concludes that gross MFR is effective in reducing mechanical neck pain along with referred pain in unilateral upper limb and improving functional abilities. However Future studies are recommended with a larger sample size and comparative study on gross myofascial release and TENS on mechanical neck pain (Nitsure et al., 2014).

### 3.1 Study Design

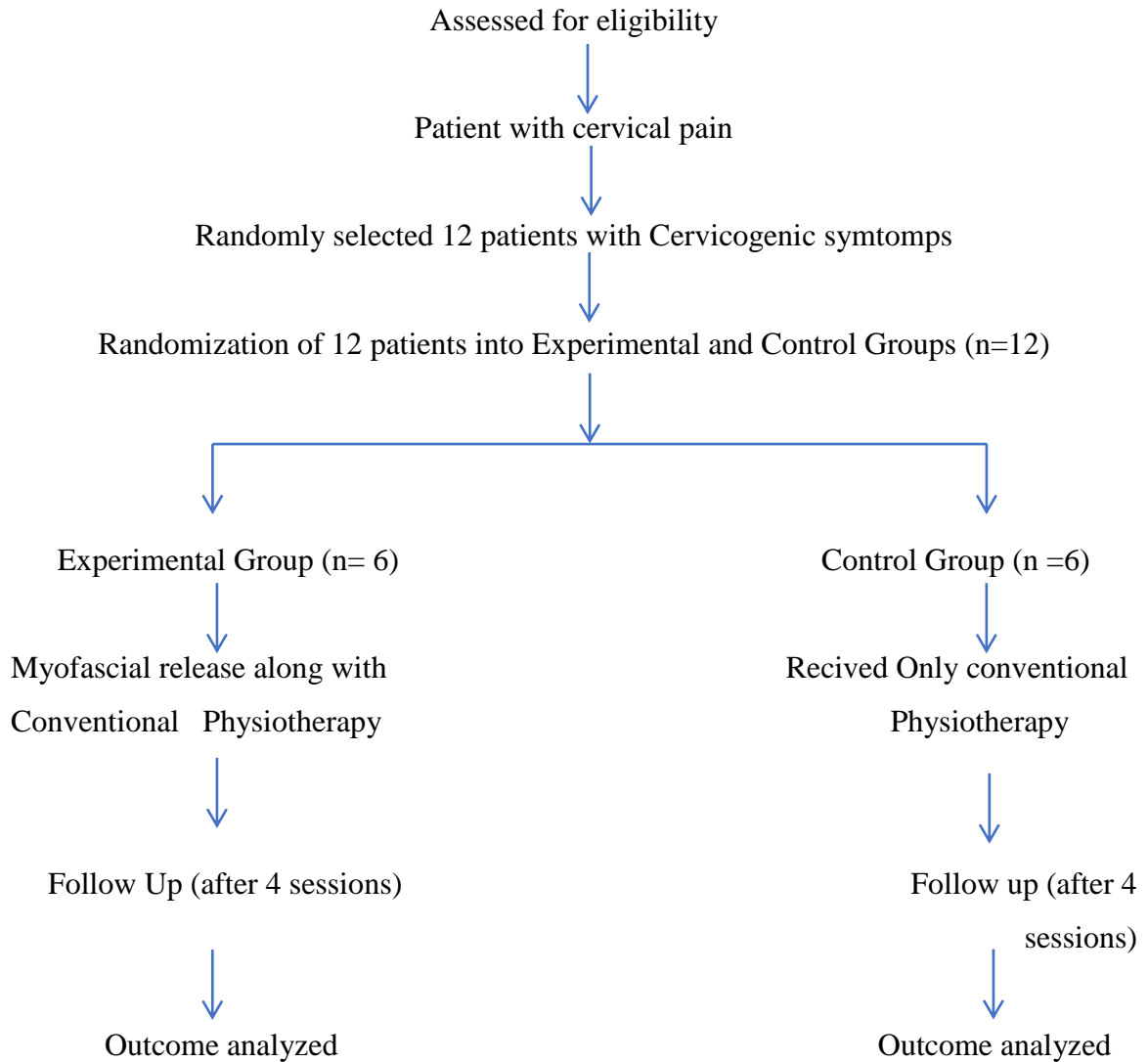
Experimental hypothesis predicts a relationship between two variables. The simplest way to find out whether this relationship actually exists is to alter one of these variables to see what difference it makes to the other. This is the basis of the experimental design. The alteration is known as manipulation of variables. The study was conducted by using an experimental design with two different subject groups.

The study was randomized control trial between different subject designs. Both groups received a common treatment regimen except one intervention. Only the experimental group received the myofascial release while in control group only conventional physiotherapy treatment program was given.

A pretest (before intervention) and posttest (after intervention) was administered with each subject of both groups to compare the pain effects before and after the treatment According to DePoy & Gitlin (2013) The design could be shown by-

Experimental Group	:	r	O <sub>1</sub>	X	O <sub>2</sub>
Control Group	:	r	O <sub>1</sub>		O <sub>2</sub>

## Flow-chart of the phases of Randomized Controlled Trial



### **3.2 Study Area**

Musculo-skeletal Unit of Physiotherapy Department at CRP, Savar, Dhaka.

### **3.3 Study Population**

The study population was the patients diagnosed with various type of cervicogenic pain attended in the Musculo-skeletal Unit of Physiotherapy Department at CRP, Savar, Dhaka.

### **3.4 Sampling Technique**

Simple random sampling technique was used for this study. 12 patients with Cervicogenic Pain were selected from outpatient musculoskeletal unit of physiotherapy department of CRP, Savar and then 6 patients were randomly assigned to Experimental group comprising of treatment approaches of Myofascial Release along with other Physiotherapy treatment and 6 patients to the only other Physiotherapy treatment for this study. The study was a single blinded technique. When the samples were collected, the researcher randomly assigned the participants into experimental and control group, because it improves internal validity of experimental research. The samples were given numerical number C1, C2, C3 etc. for the control group and E1, E2, E3 etc. for experimental group. Total 12 samples were included in this study, among them 6 patients were selected for the experimental group [received Myofascial Release along with conventional physiotherapy treatment] and rest 6 patients will be selected for control group (receive only conventional Physiotherapy treatment).

### **3.5 Sample Size**

Sample size was 12 participants. 6 participants was in experimental group and 6 participants in control group.

### **3.6 Inclusion criteria**

- Mechanical cause of cervical pain and its radiation to the arm, forearm, and hand.
- Age group: 18-60 year. McKenzie (1990) stated this age group for describing Cervical Derangement Syndrome.
- Both male and female were given same priority.
- Patients who experiences recurrent episodes of pain at neck or reference to upper or mid scapula or limb proximally or intermittent symptoms. McKenzie (1990) included the symptom for describing cervical syndrome or neck pain.
- Diagnosed cervicogenic headache. International Headache Society (1988).
- Those who were motivated and given consent to include in the study.

### **3.7 Exclusion Criteria**

- Patients with clinical disorder where Myofascial Release is contraindicated
- Diagnosis of secondary complications such as tumor, TB spine, fracture, dislocation and severe osteoporosis, Paget's disease.
- All sorts of infection, Rheumatoid Arthritis, Ankylosing Spondylitis
- Surgery to the neck spine.
- Vertebro-basillary artery insufficiency, Vascular abnormality.

### 3.8 Treatment Protocol

Neural mobilization was applied by a qualified physiotherapist who is expertized in neural mobilization technique to the patients of cervical pain.

**Table -1: Experimental Group Treatment Protocol**

Treatment option	Duration/Repetition
Myofascial Release	5 minutes in each session
Mackenze Approach	5 minutes in each session
IRR	10 minutes in each session
Mobilization with appropriate technique	5 repetition in each session

### 3.9 Data Processing

#### 3.9.1 Data Collection Tools

- Record or Data collection form
- Consent Form
- Structured questionnaire -Visual Analogue Scale and Oswestry Disability Index (ODI).
- Pen, Papers

### **3.9.2 Measurement Tools**

**Dallas pain questionnaire (DPQ):** In this study researcher used visual analogue scale for measuring the intensity of pain in different working position and also activities. The VAS is a simple and accurate way of subjectively assessing pain along a continuous visual spectrum. VAS consists of a straight line on which the individual being assessed marks the level of pain. The ends of the straight line are the extreme limits of pain with 0 representing no pain and 10 representing the worst pain ever experienced. According to Myles (1999), Scale extremities are labeled with specific words (e.g. no pain in left/all the time severe pain in right). For every specific question, the patient marks the point on the scale which represents his/her condition.

**Oswestry Disability Index (ODI):** This is a set of questionnaire that has been designed to provide information regarding how the patient's back pain affects his/her ability to manage in everyday life. The Oswestry disability index (ODI) was included 10 sections of questions. The sections had selected from experimental questionnaires that aimed to assess several aspects of daily living. The ODI domains were the following: pain intensity, personal care, lifting, walking, sitting, standing, sleeping, sex life and social life. Each section contained six statements that were scored from 0 (minimum degree of difficulty in that activity) to 5 (maximum degree of difficulty). If more than one statement was marked in each section, the highest score should be taken. The total score is obtained by summing up the scores of all sections, giving a maximum of 50 points.

### **3.9.3 Data Collection Procedure**

The study procedure was conducted through assessing the patient, initial recording, treatment and final recording. face to face interviews with closed ended question. Because structural questionnaire was helpful for the researcher to obtain all the required information at the same time giving freedom to the participants to responds and clarifies the concept (Minichiello et al., 1997). A structured closed ended questionnaire was developed for socio-demographic indicators by the researcher himself to find out the actual information from every aspect of the participant. Others questionnaire was followed by individuals 'questionnaire items and slightly changed for correlation with research topics.

Data was gathered through a pre-test, intervention and post-test and the data was collected by using a written questionnaire form which it formatted by the researcher. Pre-test was performed before beginning the treatment and the intensity of pain was noted with VAS score and functional ability with ODI questionnaire form. The same procedure was performed to take post-test at the end of 4 sessions of treatment. Researcher provided the assessment form to each subject before starting treatment and after 4 sessions of treatment patient was instructed to put mark on the line of VAS according to their intensity of pain. The researcher collected the data both in experimental and control group in front of the qualified physiotherapist in order to reduce the biasness. At the end of the study, specific test was done for statistical analysis.

### **3.10 Data Analysis**

Data was analyzed by using SPSS version 20.00 to compute the descriptive statistics using pie chart, bar chart and also percentage were conducted using paired t-test & unrelated t-test.

And everything was performed by using Microsoft Office Excel 2016 and scientific calculator.



### 3.10.1 Statistical Test

Premise test of mean difference between the experimental group and the control group, within groups and also between groups, presuming standard distribution of the parent population, two different and or independent variables, variables were measurable by projected interpreter of paired t-test or unrelated t-test.

According to Hicks (2009), experimental studies with the different subject design where two groups are used and each tested in two different conditions and the data is interval or ratio should be analyzed with unrelated  $t$  test. This test is used when the experimental design compares two separate or different unmatched groups of subjects participating in different conditions. When calculating the unrelated  $t$  test, you find the value called ' $t$ ' which you then look up in the probability tables associated with the  $t$  test to find out whether the  $t$  value represents a significant difference between the results from your two groups.

### Hypothesis Test

#### Paired t test

Paired t-test was used to compare difference between means of paired variables. Selection of test of hypothesis is mean difference under t distribution.

#### Assumption

Paired variables

Variables were quantitative

Parent population of sample observation follows normal distribution

Formula: test statistic  $t$  is follows:

$$t = \frac{\bar{d}}{SE(\bar{d})} = \frac{\bar{d}}{\frac{SD}{\sqrt{n}}}$$

**Where,**

$\bar{d}$  = mean of difference (d) between paired values,

**SE** ( $\bar{d}$ ) = Standard Error of the mean difference

**SD** = standard deviation of the differences *d* and

**N** = number of paired observations.

Now according to *t* formula:

$$t = \frac{\bar{d}}{SE(\bar{d})} = \frac{\bar{d}}{\frac{SD}{\sqrt{n}}} = \frac{2.9}{\frac{1.218}{\sqrt{6}}} = \frac{2.9}{\frac{1.218}{2.449}} = \frac{2.9}{0.460} = 6.304$$

### **Level of Significance**

In order to find out the significance of the study, the “p” value was calculated. The p values refer to the probability of the results for experimental study. The word probability refers to the accuracy of the findings. A p value is called level of significance for an experiment and a p value of <0.05 was accepted as significant result for health service research. If the p value is equal or smaller than the significant level, the results are said to be significant.

**Table 2 : Dallas Questionnaire (Initial and Final assessment-paired t-test):-**

	Experimental group			df	Control group		
	T	Mean	Sig. (2 tailed)		T	Mean	Sig. (2tailed)
Pair 1 pre-How severe pain at your neck? - post how severe pain at your neck?	3.609	4.0167	.015	5	4.221	2.6167	.008
Pair 2 pre-how severe pain during sitting? - post how severe pain during sitting?	2.828	2.9333	.037	5	2.266	1.6000	.073
Pair 3 pre-how severe pain during lying? - post how severe pain during lying?	2.611	1.8833	.048	5	1.898	1.1167	.116
Pair 4 pre-how severe pain during forward bending? - post how severe pain during forward bending?	2.386	2.6667	.063	5	5.237	2.7333	.003
Pair 5 pre-how severe pain during walking? - post how severe pain during walking?	1.574	.8333	.176	5	1.543	.7333	.183
Pair 6 pre-how severe pain during lifting? - post how severe pain during lifting?	7.837	2.1833	.001	5	3.561	2.4833	.016
Pair 7 pre-how severe pain during reading? - post how severe pain during reading?	2.682	1.0333	.044	5	2.398	1.9667	.062
Pair 8 pre-how severe pain during traveling? - post how severe pain during traveling?	4.384	2.0167	.007	5	1.621	1.2667	.166
Pair 9 pre-how severe pain during working? - post how severe pain during working?	5.992	3.0000	.002	5	1.266	.8833	.261
Pair 10 pre-how severe pain during carrying? - post how severe pain during carrying?	9.073	2.5167	.000	5	7.720	2.5167	.001
Pair 11 pre-how severe pain during ADL? - post how severe pain during ADL?	3.576	2.1167	.016	5	1.543	.9000	.183
Pair 12 pre-how severe pain during rest? - post how severe pain during rest?	2.193	1.0500	.080	5	1.256	.6333	0.265

**Table 3: Oswestry Disability Index (Initial and final paired t-test):-**

Experimental group						
Control group						
Serial no	Variables	t	Sig. (2-tailed)	df	t	Sig. (2-tailed)
Pair 1	ODI (%) Initial- final	8.154	.000	4	7.319	.001

### **Unrelated t test**

To compare difference between two means of independent variables Unrelated t test was used. Selection of test of hypothesis was two independent mean differences under independent t distribution.

### **Assumption**

Different and independent variables

Variables were quantitative

Normal distribution of the variables

Formula: test statistic t is follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s \sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

**Where,**

$\bar{x}_1$ = Mean of the Experimental Group,

$\bar{x}_2$ =Mean of the Control Group,

$n_1$ =Number of participants in the Experimental Group,

$n_2$ = Number of participants in the Control Group

$s$  = Combined standard deviation of both groups

**Analysis of Sitting Pain Reduction:**

Subject	$x_1$	$x_1 - \bar{x}$	$(x_1 - \bar{x})^2$	Subject	$x_2$	$x_2 - \bar{x}$	$(x_2 - \bar{x})^2$
E1	-	2.52	6.35	C1	3.3	3.0	6.0
E2	5.1	2.58	6.66	C2	1.0	5.3	28.09
E3	-	2.52	6.35	C3	-	6.3	39.69
E4	4.5	1.98	3.92	C4	4.0	2.3	5.29
E5	1.5	1.02	1.04	C5	4.3	2.0	4.0
E6	4.0	1.48	2.19	C6	-	6.3	39.69
	$\bar{x} =$ 15.1		$\sum(x_1 - \bar{x})^2 =$ 26.5		$\bar{x} =$ 12.6		$\sum(x_2 - \bar{x})^2 =$ 122.76

$$n_1 = 4$$

$$n_2 = 4$$

$$\bar{x}_1 = \frac{15.1}{4} = 3.77$$

$$\bar{x}_2 = \frac{12.6}{4} = 3.15$$

Calculation unrelated t value for general pain intensity:

$$\text{Where, } S = \sqrt{\frac{\sum(\bar{x}_E - x_1)^2 + \sum(\bar{x}_C - x_2)^2}{n_1 + n_2 - 2}} = \sqrt{\frac{26.5 + 122.6}{10}} = \sqrt{\frac{149.1}{10}} = 3.86$$

**Here,**

$\bar{x}_E$  = Mean of the Experimental Group

$\bar{x}_C$  = Mean of the Control Group

$x_1$  = Individual value of the experimental group

$x_2$  = Individual value of the control group

$n_1$  = Number of participants in the Experimental Group

$n_2$  = Number of participants in the Control Group

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s \sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} = \frac{3.77 - 3.15}{3.86 \times \sqrt{.5}} = \frac{0.62}{1.93} = 0.321$$

Calculating the degree of freedom from the formula-

$$df = (n_1 - 1) + (n_2 - 1) = (6 - 1) + (6 - 1) = 10$$

All the t-value has calculated by this way and researcher presented all in the following tables –

**Table 4 : Dallas Questionnaire (Final assessment-Un-paired t-test):-**

	t	df	Sig. (2-tailed)
Pain intensity	1.037	10	.324
Pain intensity in lying	.146	10	.887
Interfere in sitting	.321	10	.849
Pain in forward bending	1.174	10	.267
Pain severity during walking	.127	10	.901
Pain Interference in lifting	2.178	10	.054
Pain due to reading	.711	10	.493
Presenting in travelling	.822	10	.430
Interfere with walking	.139	10	.892
Pain intensity in carrying	1.912	10	.085
Pain restrict ADL	.216	10	.834
Resting pain	.277	10	.787

#### **Oswestry Disability Questionnaire calculation**

Here score was stated as a percentage with the subsequent method:  $(\text{total score} / (5 \times \text{number of questions answered}) \times 100\%$ . Such as, if all 10 sections are completed the score is calculated as follows:  $16 (\text{total scored}) / 50 (\text{total possible score}) \times 100 = 32\%$ . If one section is missed (or not applicable) the score is calculated as follows:  $16 (\text{total scored}) / 45 (\text{total possible score}) \times 100 = 35.5\%$ . For every specific question, the patient marks the point on the scale which denotes his/her illness.

### **3.11 Ethical Issues**

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology was submitted and was taken from the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI). Again before the beginning of the data collection, the researcher obtained the permission ensuring the safety of the participants from the concerned authorities of the clinical setting and was allotted with a witness from the authority for the verification of the collected data. The researcher strictly maintained the confidentiality regarding participant's condition and treatments.

The researcher obtained informed consent to participate from every subject. A signed informed consent form was received from each participant. The participants were informed that they have the right to meet with outdoor doctor if they think that the treatment is not enough to control the condition or if the condition become worsen. The participants were also informed that they are completely free to decline answering any question during the study and are free to withdraw their consent and terminate participation at any time. Withdrawal of participation from the study should not affect their treatment in the physiotherapy department and they should still get the same facilities. Every subject had the opportunity to discuss their problem with the senior authority or administration of CRP and have any questioned answer to their satisfaction.

#### 4.1 Socio-Demographical variables

##### Mean Age of the Participants:

12 Patients with Cervical pain were included as sample of the study, among them Experimental group mean age 44 years and control group mean age 46 years. (Table-5)

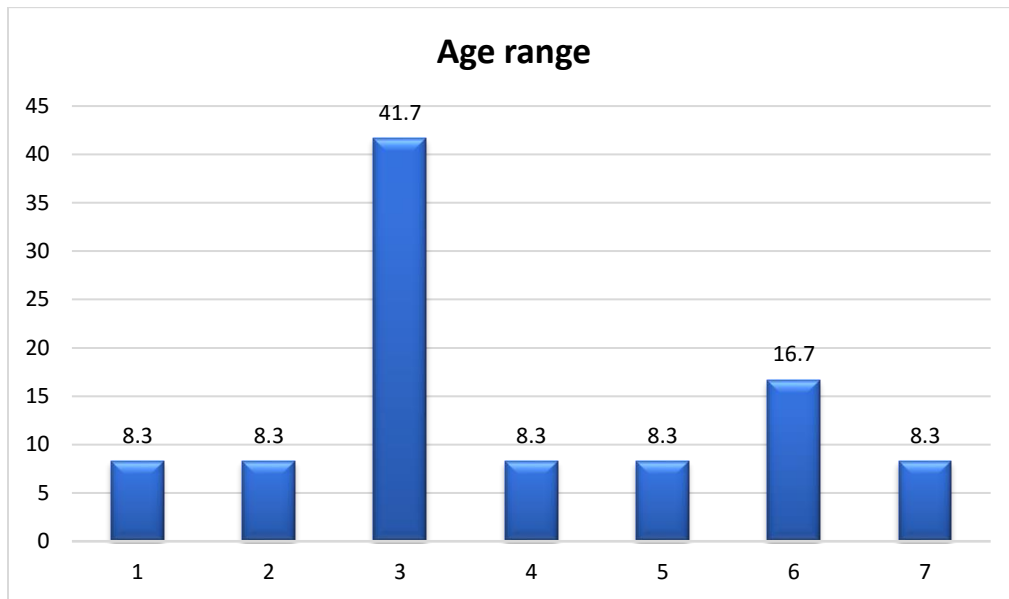
**Table - 5: Mean Age of the Participants: -**

<b>Experimental Group</b>		<b>Control Group</b>	
<b>Subjects</b>	<b>Age (Years)</b>	<b>Subjects</b>	<b>Age (Years)</b>
E1	40	C1	40
E2	40	C2	55
E3	65	C3	40
E4	32	C4	46
E5	39	C5	40
E6	52	C6	55
<b>Mean Age</b>	<b>44 years</b>	<b>Mean Age</b>	<b>46 years</b>



**Age Range:**

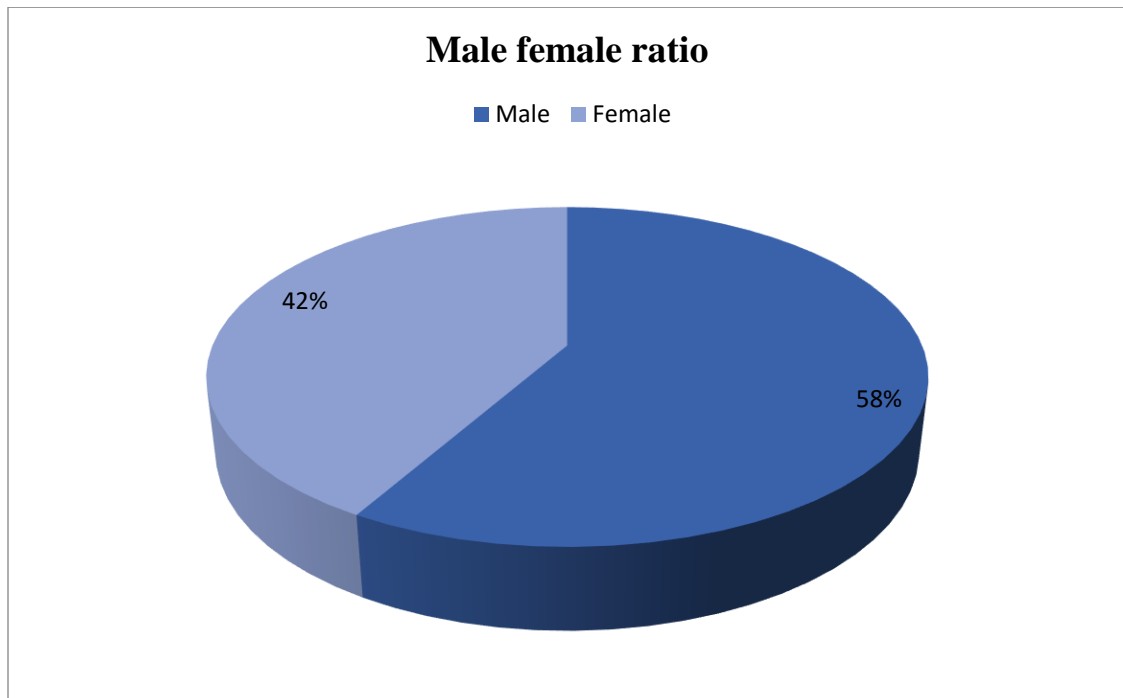
Among the participants, ages were in between 32-65 with mean age was 45.33 years (44 years in experimental group and 46 years in control group) where 42% (n=5) was 40 years, 17%(n=2) was 55 years, 9%(n=1) was 32 years, 8%(n=1) was 39 years, 8%(n=1) was 46 years, 8%(n=1) was 52 years, 8%(n=1) was 65 years. (Figure-1)



**Figure 1- Age Range**

**Sex of the Participants:**

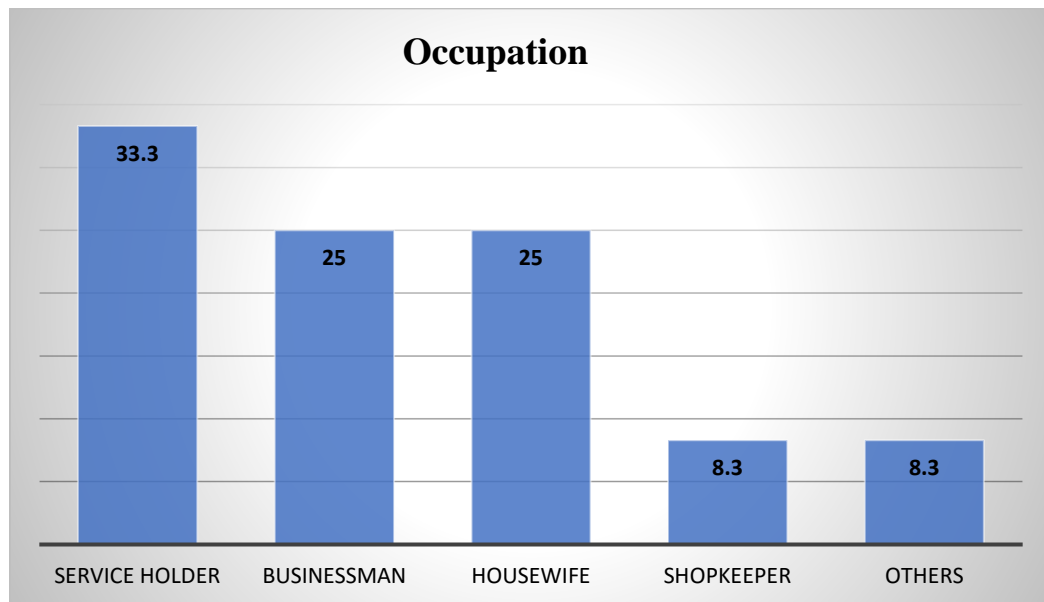
12 Patients with Cervical pain were included as sample of the study, among them almost 58% (n=7) were male and about 42% (n=5) were female. So, it is shows that according to gender discrimination male are mostly vulnerable group of carvicogenic pain then female but female was also highly vulnerable in cervical pain. (Figure-2)



**Figure 2-** Gender Distribution

**Occupation of the participants:**

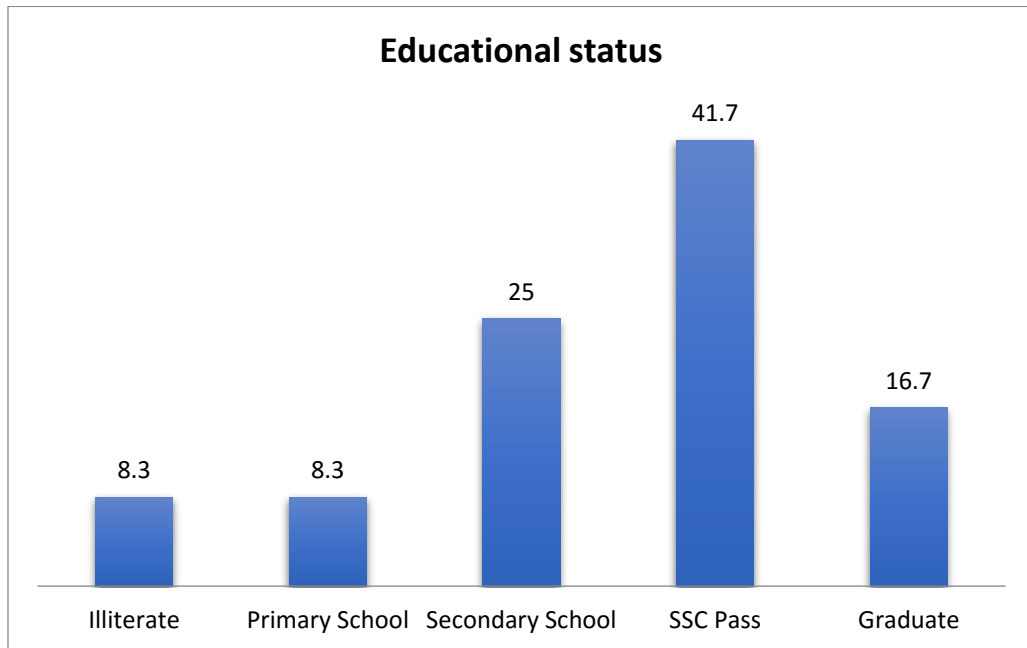
Among the 12 participants, 34% participants were Service holder, 25% participants were businessman, 25% participants were house wife, 8% participants were shopkeeper and 8% participants were others occupation. So it is shows that according to individual occupation service holder were mostly affected part. But cluster of profession has experienced cervical pain and occupation has great relation with cervicogenic pain. (Figure-3)



**Figure- 3:** Occupation of the participants.

**Educational level of the Participants:**

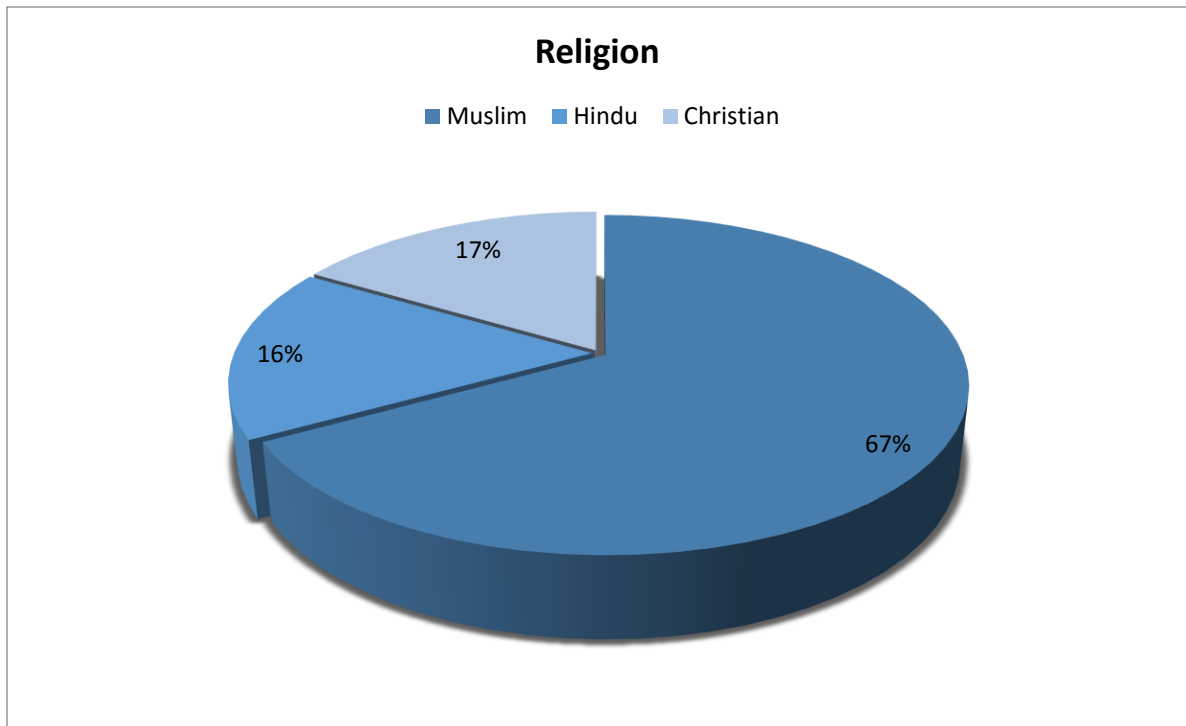
Among the 12 participants 8.3% participants were illiterate, 8.3% participants had some primary level education, 25% participants had completed secondary level education, 41.7% participants were SSC passed & 16.7% participants were graduated. So we can conclude as that SSC passed candidate were the most affected participant and it is not strongly related with neck pain. (Figure-4)



**Figure- 4:** Educational level of participants.

**Religion of the participants:**

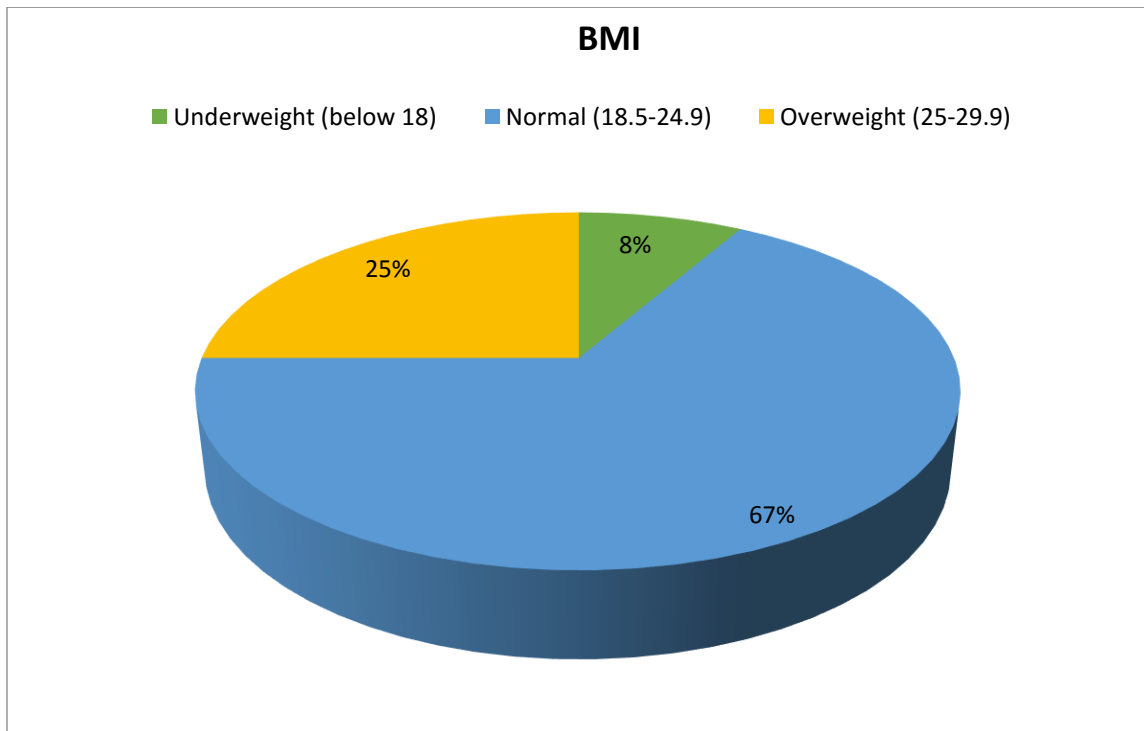
Among the 12 participants 67% participants were Muslim, 17% participants were Christian and 16% participants were Hindu. So, we appreciate that Muslim participants were most affected group of cervical pains but it is not strongly related with cervicogenic pain. (Figure-5)



**Figure-5:** Religion of the participants.

**Participants Body Mass Index:**

Among the 12 participants 67% participants were normal in range,25% participants were overweight and 8% participants were under weight. Here no patient was obese. So in BMI calculation it is proved that body weight is not strictly correlated with cervical pain. But sometimes it should be a prodigious factor for Cervicogenic difficulties. (Figure-6)



**Figure-6:** Participants body mass index.

## **4.2 Dallas questionnaire**

### **4.2.1 General pain intensity**

This study found that in the general pain intensity, observed t value was 3.609 ( $4.016 \pm 2.727$ ) in the experimental group at two tailed paired t test while this same variable for control group observed value was 4.221 ( $2.616 \pm 1.519$ ) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in general pain intensity in both groups which were greater than standard t value that meant null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of general pain intensity were significant at .015 % and .008% level. The mean difference of the experimental group was greater than the control group mean that means Myofascial Release for the Cervical pain patients was more effective than Conventional physiotherapy treatment for reducing general pain intensity. Using an Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 1.037. The observed t value was less than the table value that means null hypothesis was accepted and alternative hypothesis was rejected which indicate that Myofascial release therapy and Conventional Physiotherapy treatment were similarly effective as physiotherapy interventions.

### **4.2.2 Pain intensity in sitting**

This study found that in the pain intensity in sitting position, observed t value was 2.828 ( $2.93 \pm 2.54$ ) in the experimental group at two tailed paired t test while this same variable for control group observed value was 2.27 ( $1.6 \pm 1.72$ ) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in sitting pain intensity in both groups which were greater than standard t value in experimental group and less in the control group that means null hypothesis had rejected in experimental group and accepted in control group. alternative hypothesis was accepted in experimental group and rejected in the control group. Both groups in aspect of sitting pain intensity were significant at .037 % and .073% level. The mean difference of the experimental group was greater than the control group mean that means Myofascial release was more effective than Conventional physiotherapy treatment for reducing cervical sitting pain intensity. Using an Unrelated t test in between group at 5% level of significant and 10

degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.146. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which means there was no difference between Myofascial release and Conventional physiotherapy intervention.

#### **4.2.3 Pain intensity in lying**

This study found that in the lying pain intensity, observed t value was 2.611(1.883±1.766) in the experimental group at two tailed paired t test while this same variable for control group observed value was 1.898(1.116 ± 1.441) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in lying pain intensity in both groups which were greater than standard t value in experimental group and less in the control group that means null hypothesis had rejected in experimental group and accepted in control group; alternative hypothesis was accepted in experimental group and rejected in the control group. In experimental group was significant at 0.048% level. So, Myofascial Release for the Cervical pain patients was more effective than Conventional physiotherapy treatment for reducing lying pain intensity. The Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.195. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which means there was no difference between Myofascial release & Conventional physiotherapy intervention.

#### **4.2.4 Forward bending**

This study found that in the pain intensity in forward bending, observed t value was 2.386 (2.666 ± 2.737) in the experimental group at two tailed paired t test while this same variable for control group observed value was 5.237(2.733± 1.278) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in forward bending was 2.386 in experimental group and 5.237 in control group. The observed t value in experimental was less than the standard t value, so null hypothesis was accepted and alternative hypothesis was rejected, that indicated that Myofascial Release was not effective for reducing pain in this position. The observed t value in control group



was greater than standard t value that means null hypothesis was rejected and alternative hypothesis was accepted in the within group. In control group in aspect of forward bending position was significant at 0.003% level that means basic physiotherapy treatment for cervical pain patients was significantly effective than Myofascial Release in aspect of forward bending position. In Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 1.174. The observed t value was less than the table value that means null hypothesis was accepted and alternative hypothesis was rejected which indicate that Myofascial release therapy Conventional Physiotherapy treatment were similarly effective as physiotherapy interventions.

#### **4.2.5 walking**

This study found that in the pain intensity in walking, observed t value was 1.574 (.833±1.297) in the experimental group at two tailed paired t test while this same variable for control group observed value was 1.543 (.733± 1.163) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in walking was 1.574 in experimental group and 1.543 in control group. The observed t value in experimental and control was less than the standard t value, that meant null hypothesis was accepted and alternative hypothesis was rejected in both group in the within group. Both groups were not statistically significant. The mean difference of the experimental group was greater than the control group mean that means Myofascial Release for Cervical pain patients was more effective during walking than Conventional physiotherapy treatment. Using an Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.127. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which means there was no difference between Myofascial release and Conventional physiotherapy intervention in Cervical pain patient.

#### **4.2.6 Lifting**

This study found that in the lifting pain intensity, observed t value was 7.837(2.183 ±.682) in the experimental group at two tailed paired t test while this same variable for control group observed value was 3.561(2.483 ± 1.708) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in lifting pain intensity in both groups which were greater than standard t value that meant null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of lifting pain intensity were significant at .001 % and .016% level. The mean difference and significant level of the experimental group was greater than the control group mean significant level that means Myofascial Release for the Cervical pain patients was more effective than Conventional physiotherapy treatment for reducing lifting pain intensity. In Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 2.178. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which indicate that Myofascial release and Conventional physiotherapy intervention in Cervical pain patient.

#### **4.2.7 Pain intensity in reading**

This study found that in the reading pain intensity, observed t value was 2.682 (1.033 ±.943) in the experimental group at two tailed paired t test while this same variable for control group observed value was 2.398 (1.966±2.008) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in experimental was grater and control was less than the standard t value, so null hypothesis was rejected and alternative hypothesis was accepted. Both groups in aspect of reading pain intensity were significant at .044 % & .062% level. The mean difference and significant level of the experimental group was greater than the control group mean and significant level that means Myofascial Release was more effective than Conventional physiotherapy treatment for reducing Cervical reading pain intensity. Using an Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.711. The observed t value was less than the table value that meant null

hypothesis was accepted and alternative hypothesis was rejected which means there was no difference between Myofascial release and Conventional physiotherapy treatment for Cervical pain patient.

#### **4.2.8 Travelling**

This study found that in the travelling pain intensity, observed t value was 4.384 ( $2.016 \pm 1.126$ ) in the experimental group at two tailed paired t test while this same variable for control group observed value was 1.621 ( $1.266 \pm 1.913$ ) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in experimental was grater and control was less than the standard t value, so null hypothesis was rejected and alternative hypothesis was accepted than standard t value that meant null hypothesis was rejected and alternative hypothesis was accepted in the within group. Experimental groups travelling pain intensity was significant at .007% level. The mean difference and significant level of the experimental group was greater than the control group mean and significant level that means Myofascial Release for the Cervical pain patients was more effective than Conventional physiotherapy treatment for reducing travelling pain intensity. In Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.822. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which means there was no difference between Myofascial release and Conventional physiotherapy treatment for Cervical pain patient.

#### **4.2.9 Working**

This study found that in the working pain intensity, observed t value was 5.992 (3.00 ±1.226) in the experimental group at two tailed paired t test while this same variable for control group observed value was 1.266 (.8833 ±1.709) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in experimental was grater and control was less than the standard t value, so null hypothesis was rejected and alternative hypothesis was accepted than standard t value that meant null hypothesis was rejected and alternative hypothesis was accepted in the within group. Experimental groups working pain intensity was significant at .002% level The mean difference and significant level of the experimental group was greater than the control group mean and significant level that means Myofascial Release for the Cervical pain patients was more effective than Conventional physiotherapy treatment for reducing working pain intensity. In Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.139. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which specify that Myofascial release therapy and Conventional Physiotherapy treatment similarly effective as physiotherapy treatment.

#### **4.2.10 Carrying**

This study found that in the carrying pain intensity, observed t value was 9.073 (2.516 ±.679) in the experimental group at two tailed paired t test while this same variable for control group observed value was 7.720 (2.516 ±.798) in within group. 5% level of significant at 5 (five degrees of freedom standard t value was 2.571 and observed t value in carrying pain intensity in both groups which were greater than standard t value that meant null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of carrying pain intensity were more significant at .000% and .001% level, the mean of the experimental group and the control group was same that means Myofascial Release and Conventional physiotherapy both are highly effective for the Cervical pain patients for reducing carrying pain. In Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 1.912. The

observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which indicate that Myofascial release therapy and Conventional Physiotherapy treatment were similarly effective as physiotherapy treatment.

#### **4.2.11 Pain intensity in ADL**

This study found that in the ADL pain intensity, observed t value was 3.576 ( $2.116 \pm 1.449$ ) in the experimental group at two tailed paired t test while this same variable for control group observed value was 1.543 ( $.900 \pm 1.428$ ) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in experimental was grater and control was less than the standard t value, so null hypothesis was rejected and alternative hypothesis was accepted than standard t value that meant null hypothesis was rejected and alternative hypothesis was accepted in the within group. Experimental groups ADL pain intensity was significant at .016% level The mean difference and significant level of the experimental group was greater than the control group mean and significant level that means Myofascial Release for the Cervical pain patients was more effective than Conventional physiotherapy treatment for reducing ADL pain intensity. Using an Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.216. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which means there was no difference between Myofascial release and Conventional physiotherapy treatment for Cervical pain patient.

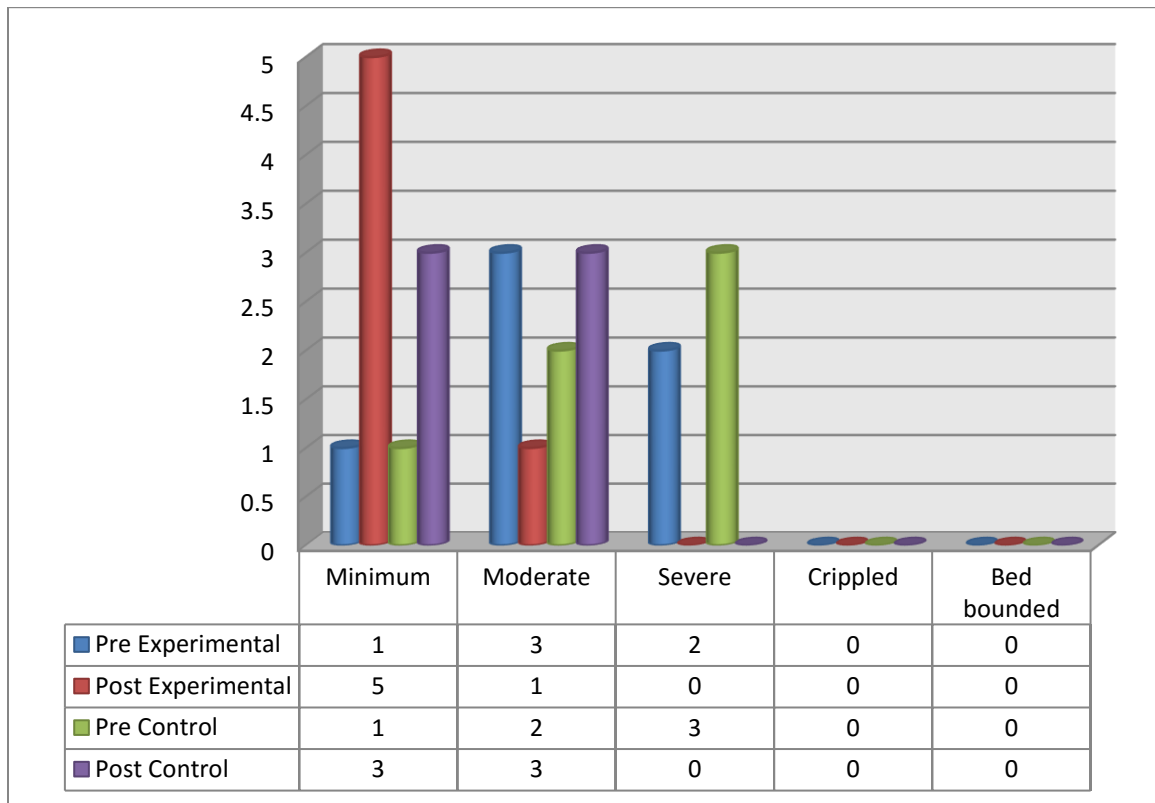
#### **4.2.12 Resting pain intensity**

This study found that in the pain intensity in rest, observed t value was 2.193 ( $1.050 \pm 1.172$ ) in the experimental group at two tailed paired t test while this same variable for control group observed value was 1.256 ( $.6333 \pm 1.235$ ) in within group. 5% level of significant at 5 (five) degrees of freedom standard t value was 2.571 and observed t value in walking was 2.193 in experimental group and 1.256 in control group. The observed t value in experimental and control was less than the standard t value, that meant null hypothesis was accepted and alternative hypothesis was rejected in both group in the within group. Both groups ware not significant at this level. The mean difference of the experimental group

was greater than the control group mean that means Myofascial Release for Cervical pain patients was more effective during rest than Conventional physiotherapy treatment. In Unrelated t test in between group at 5% level of significant and 10 degrees of freedom standard table value was 2.228 and at the same significant level and same degree of freedom observed t value was 0.277. The observed t value was less than the table value that meant null hypothesis was accepted and alternative hypothesis was rejected which means there was no difference between Myofascial release and Conventional physiotherapy treatment for Cervical pain patient during rest.

#### **4.3 Oswestry Neck Pain Disability Questionnaire**

In this study, among the participants (n=12), In experimental group (n=6) 1 had minimum disability,3 had moderate disability and 2 had severe disability in initial examination but in post-test after completing treatment session there was only 5 person had minimum disability and 1 person had moderate disability .On the other hand in control group (n=6) 1 had minimum disability,2 had moderate disability and 3 had severe disability in initial examination but in post-test 3 participants had remain minimum disability and 3 participants had remain severe disability .In control group 1 more participants had remain severe disability than experimental group. Both groups had no crippled and bed bounded participants on initial and final results.



**Figure 7: Disability among the participants**

In Oswestry Neck pain disability questionnaire, observed paired t test value was 8.154 ( $21.33 \pm 6.408$ ) in experimental group and 7.319 ( $20.00 \pm 6.693$ ) in control group and 5 degrees of freedom at 5 % significant level standard table value was 2.571 which was lesser than the observed t valve that null hypothesis was rejected and alternative hypothesis was accepted in within group. Both groups were significant at 0.000% and 0.001% level. Both groups were statistically significant but experimental group (0.000) was higher significant level than control group (0.001) which indicated that Myofascial release technique more reduced disability for Cervical pain patients than Conventional physiotherapy treatment.

The researcher was devoted to find out the effectiveness of Myofascial Release treatment approach for Cervical pain patients compared with Conventional physiotherapy treatment and the different measurement tools were used to examine the hypothesis and test the hypothesis whether the null hypothesis were accepted or not based on the smaller or larger p. Self-oriented semi-structural questionnaire was used to find out the socio-demographical indicators. Significant improvements occurred in most of the measures that were recorded before and after treatment. The result found that the mean age of both group was 45.33years (44 years in experimental group and 46 years in control group). The male was 58% and female was 42% in the both groups. 34% were service holder ,25% of the patients occupation were housewives, 25% were businessman, 8% patient were shopkeeper, and 8% patient were in the others Occupation. Out of the total participants among the 12 participants 8.3% participants were illiterate, 8.3% participants had some primary level education, 25% participants had completed secondary level education, 41.7% participants were SSC passed & 16.7% participants were graduated. Among all the participants 67% participants were normal in range,25% participants were overweight and 8% participants were under weight. Here no patient was obese. Among all the participants 67% participants were Muslim,17% participants were Christian and 16% participants were Hindu.

The VAS pain scale was measured for measuring pain and discomfort in different working position like general pain intensity experimental group significant level was  $p < .015$  and control group significant level was  $p < .008$ . Here both groups are significant in in paired t test ( $p < .05$  or more p value) but control group is more significant than experimental group .In sitting pain intensity experimental group significant level was  $p < .037$ , control group is not significant because  $p > .073$  in paired t test ( $p < .05$  or more p value) so experimental group is more significant than control group. Pain intensity in lying position experimental group significant level was  $p < .048$ , control group is not significant because  $p > .116$  in paired t test ( $p < .05$  or more p value) so experimental group is more significant than control group. Pain at forward bending activity experimental group is not significant because  $p > .063$  in paired t test ( $p < .05$  or more p value) , control group significant level was  $p < .003$ . So here control group is highly significant than experimental group. In walking



experimental group is not significant because  $p > .176$  and control group is not significant because  $p > .183$  in paired t test ( $p < .05$  or more p value). So here both groups are statistically not significant. In lifting intensity, experimental group significant level was  $p < .001$  & control group significant level was  $p < .016$ . Here both groups are significant in in paired t test ( $p < .05$  or more p value) but experimental group is highly significant than control group. In reading experimental group significant level was  $p < .044$ , control group is not significant because  $p > .062$  in paired t test ( $p < .05$  or more p value) so experimental group is more significant than control group. In travelling experimental group significant level was  $p < .007$ , control group is not significant because  $p > .166$  in paired t test ( $p < .05$  or more p value) so experimental group is highly significant than control group. In working experimental group significant level was  $p < .002$ , control group is not significant because  $p > .261$  in paired t test ( $p < .05$  or more p value) so experimental group is highly significant than control group. In carrying experimental group significant level was  $p < .000$  and control group significant level was  $p < .001$ . Here both groups are highly significant in in paired t test ( $p < .05$  or more p value) but experimental group is more significant than control group. In normal ADL, experimental group significant level was  $p < .016$ , control group is not significant because  $p > .183$  in paired t test ( $p < .05$  or more p value) so experimental group is more significant than control group. And in resting pain experimental group is not significant because  $p > .080$  and control group is not significant because  $p > .265$  in paired t test ( $p < .05$  or more p value). So here both groups are statistically not significant.

In comparison between experimental to the control group, mean difference of the VAS indicators had shown higher mostly in experimental group. In unrelated t test, all of the domains did not show any significance statistically ( $p > .05$ ). Among the outcome measurements of this study, the Dallas questionnaire had used in evaluation of every session where the progression outline was improved in most of the indicators within the experimental group rather than control. In unrelated t-test, no domains did not show any significance statistically ( $p > .05$ ). Among the outcome measurements of this study, the progression rate of experimental group & control group both are alike.

In this study, Oswestry disability index was used to evaluate the level of disability impacted by the Cervical pain patient. According to the classification criteria determined by ODI, 25% participants were with moderate disability & 17% participants were with severe

disability in initial assessment within experimental group where there was only 8% had only moderate disability in the final assessment. On the other hand 17% participants were with moderate disability and 25% participants were with severe disability in initial assessment within control 1 group where there was 25% had remain moderate disability. There were no participants with bed-bounded and crippled disability within the both group. In Oswestry Neck pain disability questionnaire, both groups were significant at experimental group where  $p=0.000\%$  and in control group,  $p=0.001\%$  that determine the better outcome for experimental group comparatively. The ODI had used in this study at every assessment after the treatment session also in the follow-up session to evaluate the outcome measurement progressively where the mean of the progression out line had shown a well differentiation within the both group and mean disability level of the experimental group.

(Luedtke et al., 2015) conduct a systematic review evaluating the effectiveness of Myofascial release used by physiotherapists on the intensity, frequency and duration of cervicogenic headache (CGH). Three trials (234 participants) were included in the randomized control trial. Meta-analyses of all trials indicated a reduction of CGH ( $p=0.0002$ ; mean reduction -2.52 on a 0–10 VAS; 95% CI -3.86 to -1.19) pain intensity, CGH frequency ( $p<0.00001$ ; mean reduction-1.34 days per month; 95% CI-1.40 to-1.28).

Results suggest a statistically significant reduction in the intensity, frequency and duration of CGH. Combined results indicated statistically significant results for pain reduction only. To determine the effect of myofascial release techniques on pain symptoms and physical function in neck. RCT had done within 155 patients screened for eligibility,94 were enrolled and randomly assigned to intervention ( $n=47$ ) and placebo ( $n=47$ ) groups. The study was fully completed by 45 in the experimental group and 41 in the placebo group. visual analogue scale (VAS) was used to assess pain intensity and relief experienced by the patient (0=no pain, 10=unbearable pain and neck disability questioner was used to assess functional disability. After 20 weeks of myofascial After 20 weeks of myofascial therapy, the experimental group showed a significant improvement ( $P < 0.05$ ) in painful tender points, McGill Pain Score ( $20.6\pm 6.3$ ,  $P<0.032$ ), physical function ( $56.101\pm 7.3$ ,  $P<0.029$ ), and clinical severity ( $5.08\pm 1.03$ ,  $P<0.039$ ). At six months' post intervention, the experimental group had a significantly lower mean number of painful points, pain score

(8.251±.13, P<0.048), physical function (58.60\_16.30, P<0.049) and clinical severity (5.280±.97, P<0.043). At one year post intervention. The results suggest that myofascial release techniques can be a complementary therapy for pain symptoms, physical function in cervical region (Castro et al., 2011).

A preliminary randomized control trial with 71 participants with neck pain to explore physical therapy approach with myofascial release and medication with selective doses. Participants were randomly allocated to receive either a multimodal physical therapy program or a self/physician-management program. 72.5% participants had sensory alteration among them. The intervention period was 10 weeks and outcomes were assessed immediately following treatment. Both groups reported some relief of neck pain and disability, measured using Neck Disability Index (ODI) scores, and it was superior in the group receiving physical therapy myofascial release (P=.04) (Childs et al., 2008).

Nilsson et al. (2010) conducted a randomized, clinical trial (n=53) in individual with carotogenic headache. Subject were randomized to receive high velocity low amplitude spinal manipulation or low level laser and deep friction massage. The use of analgesics were reduced by 36% in the manipulation group but were unchanged in the laser/massage group. The number of headache hours per day decrease by 69% for the individuals in the manipulation group and 37% in the laser /massage group. Headache intensity per episode decreased by 36% for those in manipulation group and 17% in the laser /massage group.

McKenzie (1995) suggested that to be a passenger is better than to drive on long journey. This means that travelling is an aggravating factor for neck pain. After traveling, significant (P<0.05) pain was found between the two groups. The mean reduction of pain intensity in the experimental or conventional with Myofascial release group was 3.9 and conventional physiotherapy alone group was 3.1 which means that pain reduction in conventional with Myofascial release group was greater than the conventional physiotherapy alone group. And the result is statistically significant.

Another study of randomized controlled trial. Seventy-four participants with a ≥3month history of neck pain and a score of ≥4 on the 10-point pain intensity visual analogue scale (VAS) will be randomly assigned to the MR group (n=37) or basic treatment group (n=37).

The participants will receive the MR treatment or basic treatment twice per week for 4 weeks. The primary outcome is the mean change in the VAS (0=no pain and 10=worst possible pain) from baseline to 4 weeks. The secondary outcomes are the mean change from baseline on the clinical relevance of the pain (ratio of changes greater than 1.5 or with percentiles greater than 30 % and 50 % in the VAS), and function (Neck Disability Index). The results of this trial will provide evidence to confirm the efficacy of myofascial release for chronic neck pain (Lee et al., 2016).

(Shrivastava et al., 2015) observed in their randomized control trial study to compare the effects of MFR along with Conventional Therapy v/s Conventional Therapy alone in the Management of Cervicogenic Headache. 30 patients between the age group of 25-45 years having cervicogenic headache were selected and allocated randomly into 2 groups of 15 subjects using random sampling method. Experimental group received MFR along with conventional therapy and the control group received only conventional therapy for a period of 6 weeks. Experimental group subjects received conventional therapy followed by MFR for 3 minutes. 6 weeks of training were given, 5 times a week. In this study, VAS and NDI scale were used and experimental group effective at ( $P < 0.05$ ) in painful condition. The results indicate that MFR with conventional therapy is more effective than conventional therapy alone in the management of CGH.

### **Limitation of the study**

The study was conducted with only four sessions treatment which is the main limitation of this study. The sample size is really very small, so the result is difficult to generalize among whole population. 8.3% participants were illiterate, it may give data error way. Proper using of myofascial release technique is not so easy technique, so it is not used by all clinical physiotherapist. It was a major problem in data collection session. There was no available relevant research done in this area in Bangladesh. So, relevant information about Myofascial release intervention in Cervical for Bangladesh was very limited in this study.

The result of this study in paired t-test has shown that the effectiveness of Myofascial Release technique and conventional physiotherapy treatment both are effective but some domain of Myofascial Release group shows superior effectiveness than Conventional physiotherapy after four sessions of treatment for patients with Cervicogenic pain. By few weeks' close observation, it has been found that the Myofascial Release technique is much more effective than basic physiotherapy. Considering the final assessment and also follow up, the pain in different positions has been reduced in both the group while comparing to the initial assessment where Myofascial Release treatment group has found a greater benefit of the participants. In unrelated t-test there is no significant difference shown in between both treatment approach. Myofascial Release and Conventional physiotherapy treatment were similarly relieved cervicogenic symptoms.

As the disability level this study has found that only Conventional physiotherapy is not so much effective then Myofascial Release with Conventional physiotherapy treatment. Proper application of Myofascial Release technique seemed to be more beneficial for Cervical pain patients to reduce financial burden and reduce fear avoidance about work and activity in their daily lives and also work place, and improves the self-confidence.

Despite the limitations of the study particularly small sample size, the results of the study give further motivation to controlled clinical trials with sufficient time and sample size. It could be also suggested that for future study can be carried out with comparable patient variables with emphasis on ergo metrics variables to emphasis more accurate result of Myofascial Release and Conventional therapeutic intervention in Cervicogenic pain.

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## APPENDIX

### Permission Letter

To

The Head of the Physiotherapy Department,  
Center for the Rehabilitation of the Paralyzed (C.R.P.),  
Savar, Dhaka.

**Subject: Prayer for permission of data collection for the research project.**

Sir,

I beg most respectfully to state that, I am a student of B Sc in Physiotherapy in Bangladesh Health Profession Institute (BHPI) under University of Dhaka. As a part of my curriculum, I have to conduct a research project. The area of my research project is musculoskeletal physiotherapy and title is "Effectiveness of Myofascial Release technique to reduce Cervicogenic Pain". The samples of my research project are patient with Neck pain. The setting of the project is outdoor service physiotherapy department at CRP Savar Dhaka. So I need to collect data of those patients from your department. I will follow all the fact written in my consent form and will not do any harm for the patients.

I therefore, pray and hope that you would be kind enough to give me the permission to collect data and complete the research project successfully from your department.

*Mst. Sohana Akter*  
Yours faithfully

Mst.Sohana Akter  
4th professional B.Sc. in physiotherapy (B.H.P.I.)  
C.R.P. Savar, Dhaka  
Date: 20-08-2016

*Approved*

*[Signature]*  
Mohammad Hossain  
Associate Professor &  
Head of Physiotherapy Dept.  
CRP, Chapain, Savar, Dhaka-1343

*Forwarded*

*9/20/08/16*  
Md. Obaidul Haque  
Associate Professor & Head of the Department  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapain, Savar, Dhaka-1343



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

Ref. CRP-BHPI/IRB/04/17/53

Date: 2/04/2017

To

Mst. Sohana Akter  
Session: 2011-2012, DU Reg no:1741  
Bachelor of Science in Physiotherapy (B.Sc. PT)  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

**Subject: Approval of the thesis proposal – “Effectiveness of Myofascial Release technique to reduce Cervicogenic pain” by ethics committee.**

Dear Mst. Sohana Akter,  
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on February 17, 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 Myofascial Release technique as an intervention applied by qualified physiotherapist in CRP for standard duration, outcome was measured by a visual analogue scale and Oxford Disability Questionnaire, have no likelihood of any harm to the participants, 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

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org



## Inform Consent

Assalamualaikum\ Namashker,

I am Mst Sohana Akter , 4th Professional,B.Sc. in Physiotherapy student at Bangladesh Health Professions Institute (BHPI) under the Faculty of Medicine, University of Dhaka. To obtain my Bachelor degree, I have to conduct a research project and it is a part of my study. My research title is “ Effectiveness of Myofacial Release Tecnique to reduce Cervicogenic Pain”. I would like to know about some personal & other related questions about your neck pain .To fulfill my research project I need to collect data. So, you can be a respected participant of this research and the conversation time will be two times 20-30 minutes. I would like to inform you that this is a purely academic study and will not to be used for any other purposes. I assure that all data will be kept confidential. Your participation will be voluntary. You may have the rights to withdraw consent and discontinue participation at any time from this study. You also have the rights to reject a particular question that you don't like.

If you have any query about the study, you may contact with my supervisor Mohammad Anwar Hossain, Head of Physiotherapy Dept, CRP, Savar, Dhaka-1343. Do you have any questions before I start?

So, I can proceed with the interview.

Yes  No

Signature of the participant and Date.....

Signature of the witness and Date.....

Signature of the researcher and Date.....

## সম্মতিপত্র

আসসালামুআলাইকুম/নমস্কার,

আমি মোছা: সোহানা আক্তার, ৪র্থ পেশাগত, বাংলাদেশ হেলথ প্রফেশন ইন্সটিটিউট (বিএইচপিআই), ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের একজন ছাত্রী। আমার ব্যাচেলর ডিগ্রী প্রাপ্তির জন্য আমার এটি একটি গবেষণা পরিকল্পনা এবং এটা আমার পড়াশোনার একটি অংশ। আমার গবেষণা প্রকল্পটি হচ্ছে “উভভবপঃরাবহবং ড়ভ গুড়ভধংপরধষ জবষবধংব ংবপযহরয়ঁব রহ ঙ্গবৎরপড়মবহরপ চধরহ.চ আমার গবেষণা প্রকল্পটি পূরণে আমার কিছু তথ্য সংগ্রহ করা প্রয়োজন। সুতরাং এই গবেষণার জন্য অংশগ্রহণকারীর সম্মতি প্রয়োজন এবং তথ্য সংগ্রহের জন্য গবেষক অংশগ্রহণকারীর কাছ থেকে দুই বার করে ২০-৩০ মিনিট সময় নিবে। আমি আপনাকে অবহিত করছি যে এটি একটি একাডেমিক গবেষণা এবং অন্যকোন উদ্দেশ্য ব্যবহার করা হবে না। আমি আশ্বস্ত করতে চাই যে, সব তথ্য গোপন রাখা হবে। অংশগ্রহণকারী যে কোন মুহূর্তে সম্মতি প্রত্যাহার করতে পারেন। এ ছাড়াও আপনি যে টি পছন্দ করেন না সেটি উত্তর না দেওয়ার অধিকার আছে।

সুতরাং আপনি কি রাজী ?

হ্যাঁ

না

অংশগ্রহণকারী স্বাক্ষর ও তারিখ.....

সাক্ষীর স্বাক্ষর ও তারিখ.....

গবেষকের স্বাক্ষর ও তারিখ.....

## প্রশ্নাবলী (বাংলা)

### ব্যক্তিগত তথ্যাবলী

এই প্রশ্নপত্রটি তৈরি করা হয়েছে ঘাড়ের ব্যথার রোগীদের ব্যথা পরিমাপ করার জন্য। ব্যক্তিগত তথ্যাবলী অংশটি ফিজিওথেরাপিস্ট/গবেষক কালো/নীল কলমের দ্বারা পূরণ করবেন।

কোড

নংঃ

তারিখঃ.....

রোগীর নামঃ.....

বয়সঃ.....

ঠিকানাঃ.....

ফোন নম্বরঃ.....

পেশাঃ.....

লিঙ্গঃ.....

কতদিন যাবত ঘাড়ের ব্যথায় ভুগছে?

বছর ..... মাস ..... সপ্তাহ .....

**আর্থ-সামাজিক অবস্থার তথ্যাবলী**  
(তথ্যাবলী মৌখিক অথবা নথি থেকে সংগৃহীত হতে হবে)

কোড নম্বর:

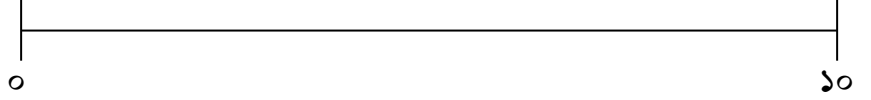
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	ব্যবসায়ী	০২
	গৃহিনী	০৩
	দোকানদার	০৪
	কৃষক	০৫
	শিক্ষক	০৬
	অন্যান্য	০৭
বৈবাহিক অবস্থা	বিবাহিত	০১
	অবিবাহিত	০২
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	বৌদ্ধ	০৪
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	মাস্টার্স	০৭
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ওজন	-----কেজি	
উচ্চতা	----- সেমি:	

তথ্য সংগ্রহ পত্র

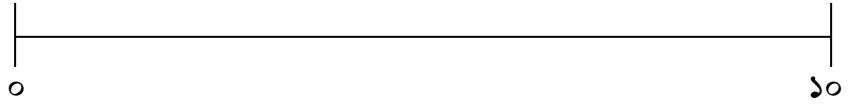
(চিকিৎসার পূর্বে এবং পরে)

আপনি যে মুহূর্তে ঘাড়ের ব্যথার প্রশ্নপত্র টি পূরণ করবেন সেই মুহূর্তে আপনার ঘাড়ের ব্যথার তীব্রতা কোন সময়ে কেমন, ঠিক জায়গায় কলম দিয়ে ক্রস (X) একটি দাগ দিন।

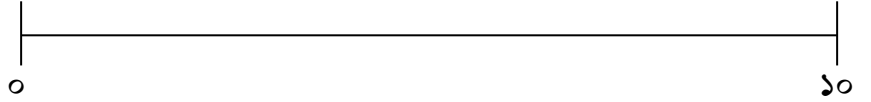
১) আপনার ঘাড়ের ব্যথার তীব্রতা আজকে কতটুকু?



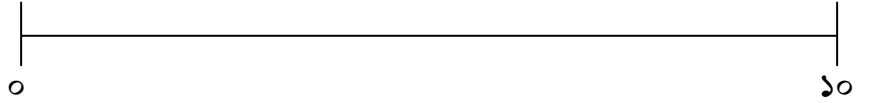
২) দীর্ঘক্ষণ (আধা ঘন্টার বেশী) বসে থাকলে আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



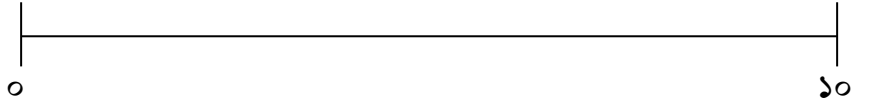
৩) আপনি যখন শুয়ে থাকেন আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



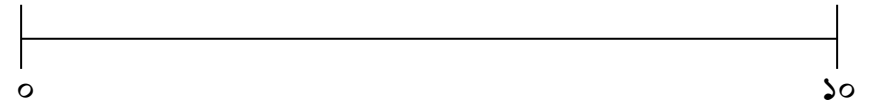
৪) সামনে বুকো কাজ করলে আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



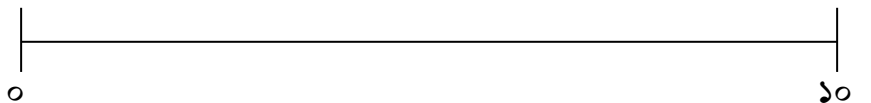
৫) হাটার সময় আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



৬) আপনি যখন কোন কিছু উঠান আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



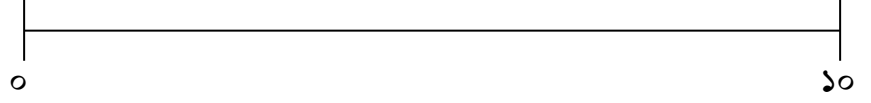
৭) আপনি যখন পড়েন তখন আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



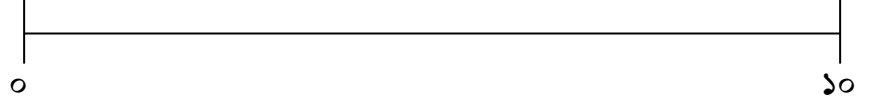
৮) আপনি যখন ভ্রমণ করেন আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



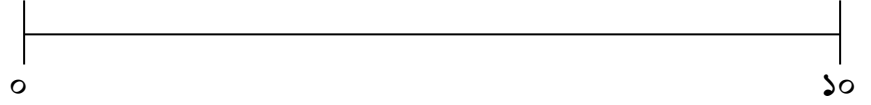
৯) আপনি যখন কাজ করেন আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



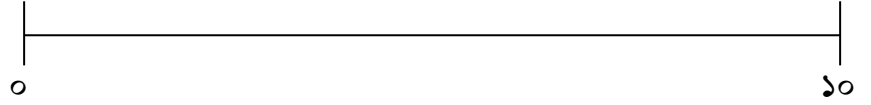
১০) আপনি যখন ভারি কিছু হাতে নিয়ে হাটেন আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



১১) আপনি যখন দৈনন্দিন কাজ করেন আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



১২) অবসর সময়ে আপনার ঘাড়ের ব্যথার তীব্রতা কেমন হয়?



## ঘাড়ের প্রতিবন্ধিতা সূচক বিবৃতি

(চিকিৎসার পূর্বে এবং পরে)

আপনার ঘাড়ের ব্যথা কিভাবে প্রতিদিনের জীবন পরিচালনা করতে আপনার সামর্থ্যকে প্রভাবিত করে তা জানার জন্য এই প্রশ্নাচিত্রটি পরিকল্পনা করা হয়। অনুগ্রহ পূর্বক সবগুলো প্রশ্নের উত্তর দিন। প্রতিটি অংশে শুধুমাত্র এশটি বাস্ক/উত্তরঃ চিহ্নিত করুন যা আজ আপনার অবস্থাকে সর্বাপেক্ষা কাছাকাছি বর্ণনা করে।

### অংশ- ১-ব্যথার তীব্রতা :

- এই মূহূর্তে আমার ব্যথা নেই।
- এই মুহূর্তে ব্যথা অত্যন্ত কম।
- এ মুহূর্তে ব্যথা মোটামুটি।
- এ মুহূর্তে ব্যথা যথেষ্ট পরিমাণ তীব্র।
- এমুহূর্তে ব্যথা অত্যন্ত তীব্র।
- এ মুহূর্তে ব্যথা এমন তীব্র যে তা কল্পনার সর্বোচ্চ খারাপ।

### অংশ-২ ব্যক্তিগত যত্ন (ধৌতকরণ, পোশাক পরিধান ইত্যাদি) :

- কোন ধরনের ব্যথা ছাড়াই আমি আমার নিজের স্বাভাবিক যত্ন নিতে পারি।
- আমি আমার নিজের স্বাভাবিক যত্ন নিতে পারি, কিন্তু এটি অত্যন্ত ব্যথাদায়ক।
- আমার নিজের যত্ন নেওয়া ব্যথাদায়ক এবং এ জন্য আমি ধীর ও সতর্কতা অবলম্বন করি।
- আমার কিছু সাহায্যের দরকার হয়। কিন্তু আমি আমার অধিকাংশ ব্যক্তিগত কাজ নিজেই সম্পাদন করি।
- প্রতিদিন আমার নিজের অধিকাংশ কাজের জন্য অন্যের প্রয়োজন হয়।
- আমি আমার পোশাক পরিধান করতে পারি না, ধৌতকরণ যথেষ্ট কষ্টদায়ক এবং আমি বিছানাতেই থাকি।

### অংশ-৩ উত্তোলনঃ

- আমি কোন বাড়তি ব্যথা ছাড়াই ভারি ওজন উত্তোলন করতে পারি।
- আমি বাড়ি ওজন উত্তোলন করতে পারি, কিন্তু এতে বাড়তি ব্যথা সৃষ্টি করে।
- ব্যথার কারণে আমি মেঝে থেকে ভারি ওজন উত্তোলনে বাধার সম্মুখীন হয় কিন্তু সুবিধাজনক অবস্থান যেমন টেবিলে রাখলে) সহজে উত্তোলন করতে পারি।
- ব্যথা আমাকে ভারি ওজন উত্তোলনে বাঁধা সৃষ্টি করে কিন্তু সুবিধাজনক অবস্থানে থাকলে হালকা থেকে মাঝারি ধরনের ওজন উত্তোলন করতে পারি।
- আমি কেবল অত্যন্ত হালকা ওজন উত্তোলন করতে পারি।
- আমি একেবারেই কোন কিছু উত্তোলন বা বহন করতে পারি না।

### অংশ-৪ পড়া শোনাঃ

- আমি কোন ঘাড়ে ব্যথা ছাড়াই যতক্ষণ ইচ্ছা পড়তে পারি।
- আমি সামান্য ব্যথা আসলেও যতক্ষণ ইচ্ছা পড়তে পারি।
- যতক্ষণ ইচ্ছা পড়তে পারি কিন্তু বেশ মাঝারি ধরনের ব্যথ্যা অনুভব করি।
- বেশ মোটামুটি ব্যথার কারণে আমি অনেক বেশি সময় পড়তে পারি না।
- আমার অত্যধিক ঘাড়ে ব্যথার কারণে পড়তে কষ্ট হয়।
- আমি পড়তে পারি না।

### অংশ- ৫: মাথা ব্যথাঃ

- আমার কোন মাথা ব্যথা নেই
- আমার সামান্য মাথা ব্যথা অনেকদিন পর পর আসে।

- আমার মোটামুটি বেশি মাথা ব্যথা অনেক দিন পর পর আসে।
- আমার একটু বেশি মাথা ব্যথা মাঝে মাঝে হয়।
- আমার মাঝে মাঝে অনেক বেশি মাথা ব্যথা হয়।
- আমার সবসময় অনেক বেশী মাথা ব্যথা করে।

#### অংশ- ৬ মনোযোগঃ

- আমি কোন সমস্যা ছাড়াই খুব ভাল মনোযোগ দিতে পারি।
- আমি যখন পুরোপুরি মনোযোগ দিই তখন সামান্য সমস্যার তৈরি হয়।
- পুরোপুরি মনোযোগ দেওয়ার সময় বেশ সমস্যা হয়।
- মনোযোগ দেওয়ায় আমার অনেক সমস্যা হয়।
- সমস্যা এত বেশি হয় যে আমি ভালভাবে মনোযোগ দিতে পারি না।
- আমি কোন মনোযোগ দিতে পারি না।

#### অংশ -৭ কাজ :

- আমি যেমন ইচ্ছা কাজ করতে পারি।
- আমি শুধু আমার দরকারি কাজগুলো করতে পারি তার বেশি না।
- আমি শুধু আমার খুব দরকারি কাজগুলো করতে পারি তার বেশি না।
- আমি আমার দরকারি কাজগুলো করতে পারি না।
- আমার যে কোন কাজ করতেই কষ্ট হয়।
- আমি এখন কোন কাজই করতে পারি না।

#### অংশ -৮ গাড়ি চালানো :

- আমি ঘাড়ে কোন ব্যথা ছাড়াই গাড়ি চালাতে পারি।
- আমি যখন দীর্ঘ সময় গাড়ি চালাই তখন সামান্য ব্যথা অনুভব করি।
- আমি যখন দীর্ঘ সময় গাড়ি চালাই মোটামুটি ব্যথা অনুভব করি।
- আমি দীর্ঘ সময় গাড়ি চালাতে পারি না অনেক ঘাড়ের ব্যথার জন্য।
- আমার গাড়ি চালাতে অনেক কষ্ট হয় অনেক বেশি ব্যথা করে।
- আমি আমার গাড়ি চালাতে পারি না।

#### অংশ -৯ ঘুমানো :

- ব্যথার কারণে আমার ঘুম কখনো ব্যাহত হয় না।
- ব্যথার কারণে আমার ঘুম মাঝে মাঝে ব্যাহত হয়।
- ব্যথার কারণে আমার ঘুম ছয় ঘন্টারও কম হয়।
- ব্যথার কারণে আমার ঘুম আট ঘন্টারও কম হয়।
- ব্যথার কারণে আমার ঘুম দুই ঘন্টারও কম হয়।
- ব্যথার কারণে আমি মোটেই ঘুমাতে পারি না।

#### অংশ -১০ বিনোদনঃ

- ব্যথা ছাড়াই আমি সব ধরনের বিনোদনে অংশ নিতে পারি।
- সামান্য ব্যথা নিয়ে আমি সব ধরনের বিনোদনে অংশ নিতে পারি।
- আমি প্রায় সব জাগাতেই পারি তবে কিছুকিছু সময় ব্যথার জন্য অংশ নিতে পারি না।
- ব্যথার জন্য আমি আমার সামান্য সংখ্যক বিনোদনে অংশ নিতে পারি।
- তীব্র ব্যথার জন্য যে কোন বিনোদনে অংশ নিতেই কষ্ট হয়।
- আমি কোন বিনোদন কাজে অংশ নিতে পারি না।



**Questionnaire (English Version)**  
**Subjective Information**

This questionnaire is developed to measure the pain of the patient with Cervicogenic pain and this portion will be filled by physiotherapist/researcher using a pencil.

Code no:

Date:

Age: .....Sex:.....

Adders: Village:.....P.O.:.....

Thana: ..... District: .....

Mobile:

How long have you had neck pain?

Years..... Months..... Weeks.....

**Patient's Socio-demographic Information**  
(To be collected from Record/ Care provider)

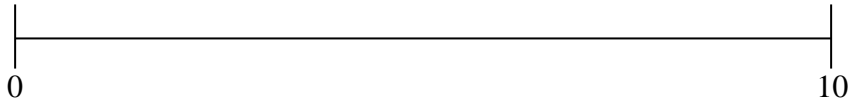
**Code no:**

Questions and filters	Responses	Code
Age(in years)	_ _  yrs	
Sex	Male	01
	Female	02
Occupation	Service holder	01
	Businessman	02
	Housewife	03
	Farmer	04
	Shopkeeper	05
	Teachers	06
	Others	07
Marital status	Married	01
	Un married	02
	Divorced	03
	Separated	04
	Widow	05
Religion	Muslim	01
	Hindu	02
	Christian	03
	Buddha	04
Educational level	Illiterate	01
	Primary School	02
	Secondary School	03
	SSC Pass	04
	HSC Pass	05
	Graduate	06
	Masters	07
	M Phil, PHD	08
Hobby	.....	
Monthly income	..... Taka	
Body weight	.....kg	
Height	.....cm	

**Questionnaire for**  
(Pre & Post treatment session)

Please a mark (X) on the line where you feel it shows how much pain you have

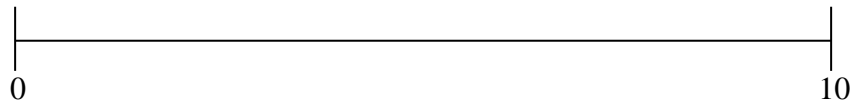
1. How would you describe your neck pain in general intensity? Point out on the scale, mark with a (X) on the scale.



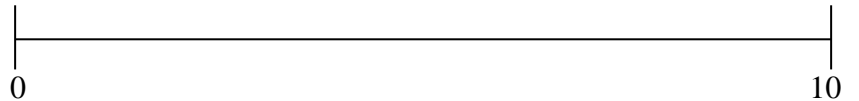
2. How much pain increases your neck during long time sitting (above 30m minutes)?Point out on the scale, mark with a (X) on the scale.



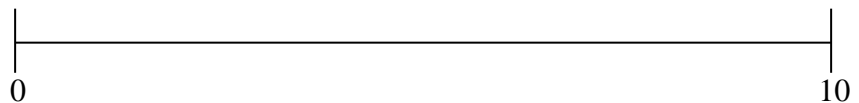
3. How much pain increases your neck during lying? Point out on the scale, mark with a (X) on the scale.



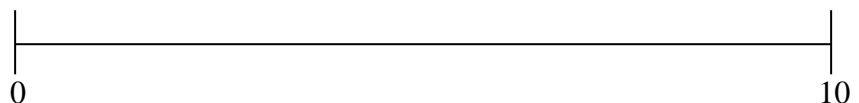
4. How much pain increases during forward bending? Point out on the scale, mark with a (X) on the scale.



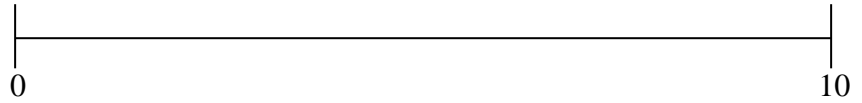
5. How much pain increases during your walking? Point out on the scale, mark with a (X) on the scale.



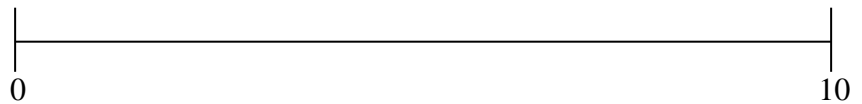
6. How much pain increases your neck during lifting? Point out on the scale, mark with a (X) on the scale.



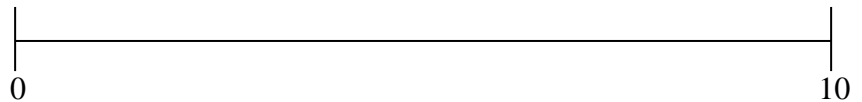
7. How much pain increases your neck during reading? Point out on the scale, mark with a (X) on the scale.



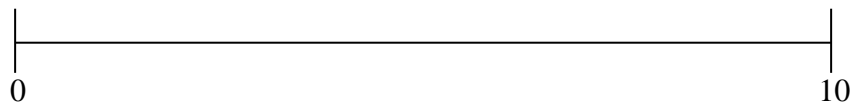
8. How much pain increases your neck during traveling? Point out on the scale, mark with a (X) on the scale.



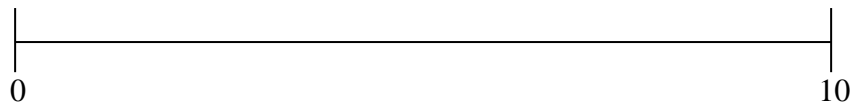
9. How much pain increases your neck during working? Point out on the scale, mark with a (X) on the scale.



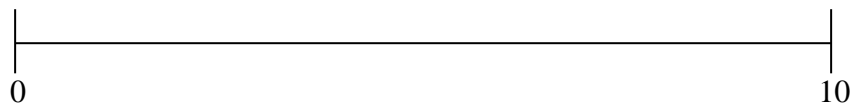
10. How much pain increases during carrying heavy load? Point out on the scale, mark with a (X) on the scale.



11. How much pain increases during your ADLS? Point out on the scale, mark with a (X) on the scale.



12. How much pain increases during your resting time? Point out on the scale, mark with a (X) on the scale.



## Neck (Cervical spine) Disability questionnaire

(Pre & Post treatment session)

This questionnaire has been designed to give us information as to how your neck pain has affected your ability to manage in everyday life. Please answer every section and mark in each section only the one box that applies to you. We realise you may consider that two or more statements in any one section relate to you, but please just mark the box that most closely describes your problem.

### 1: Pain Intensity

- I have no pain at the moment
- The pain is very mild at the moment
- The pain is moderate at the moment
- The pain is fairly severe at the moment
- The pain is very severe at the moment
- The pain is the worst imaginable at the moment

### 2: Personal Care (Washing, Dressing, etc.)

- I can look after myself normally without causing extra pain
- I can look after myself normally but it causes extra pain
- It is painful to look after myself and I am slow and careful
- I need some help but can manage most of my personal care
- I need help every day in most aspects of self care
- I do not get dressed, I wash with difficulty and stay in bed

### 3: Lifting

- I can read as much as I want to with no pain in my neck
- I can lift heavy weights but it gives extra pain
- Pain prevents me lifting heavy weights off the floor, but I can manage if they are conveniently placed, for example on a table
- Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned
- I can only lift very light weights

- I can only lift very light weights

#### 4: Reading

- I can read as much as I want to with no pain in my neck
- I can read as much as I want to with slight pain in my neck
- I can read as much as I want with moderate pain in my neck
- I can't read as much as I want because of moderate pain in my neck
- I can hardly read at all because of severe pain in my neck
- I cannot read at all

#### 5: Headaches

- I have no headaches at all
- I have slight headaches, which come infrequently
- I have moderate headaches, which come infrequently
- I have moderate headaches, which come frequently
- I have severe headaches, which come frequently
- I have headaches almost all the time

#### 6: Concentration

- I can concentrate fully when I want to with no difficulty
- I can concentrate fully when I want to with slight difficulty
- I have a fair degree of difficulty in concentrating when I want to
- I have a lot of difficulty in concentrating when I want to
- I have a great deal of difficulty in concentrating when I want to
- I cannot concentrate at all Office

#### 7: Work

- I can do as much work as I want to
- I can only do my usual work, but no more
- I can do most of my usual work, but no more
- I cannot do my usual work & I can hardly do any work at all

- I can't do any work at all

#### 8: Driving

- I can drive my car without any neck pain
- I can drive my car as long as I want with slight pain in my neck
- I can drive my car as long as I want with moderate pain in my neck
- I can't drive my car as long as I want because of moderate pain in my neck
- I can hardly drive at all because of severe pain in my neck
- I can't drive my car at all Section.

#### 9: Sleeping

- I have no trouble sleeping
- My sleep is slightly disturbed (less than 1 hr sleepless)
- My sleep is mildly disturbed (1-2 hrs sleepless)
- My sleep is moderately disturbed (2-3 hrs sleepless)
- My sleep is greatly disturbed (3-5 hrs sleepless)
- My sleep is completely disturbed (5-7 hrs sleepless)

#### 10: Recreation

- I am able to engage in all my recreation activities with no neck pain at all
- I am able to engage in all my recreation activities, with some pain in my neck
- I am able to engage in most, but not all of my usual recreation activities because of pain in my neck
- I am able to engage in a few of my usual recreation activities because of pain in my neck
- I can hardly do any recreation activities because of pain in my neck
- I can't do any recreation activities at all