



Faculty of Medicine

University of Dhaka

**“Effectiveness of Lower Trapezius Strengthening Exercises along with
Conventional Physiotherapy among Patients with Neck Pain attended at CRP;
Randomized Controlled Trial”**

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

DU Roll No: 1126

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BHPI, CRP, Savar, Dhaka-1343



Bangladesh Health Profession Institute (BHPI)

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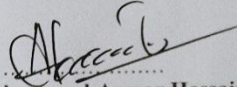
CRP, Savar, Dhaka-1343 Bangladesh

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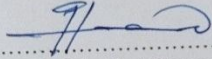
We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

“Effectiveness of Lower Trapezius Strengthening Exercises along with Conventional Physiotherapy among Patients with Neck Pain attended at CRP; Randomized Controlled Trial”

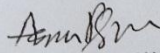
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DECLARATION

I declare that this is all my work and has not been previously submitted for assessment and it does not contain unreferenced material copied from any other sources. I am aware of plagiarism. If it is shown that material has been plagiarized or I have otherwise attempted to obtain an unfair advantage for myself or others. I understand that I may face sanctions following the policies and procedures of the Institute. A mark of zero maybe awarded and the reason for that mark will be recorded on my file.

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Acronyms

BHPI- Bangladesh Health Professions Institute

BMRC- Bangladesh Medical Research Council

CRP- Centre for the Rehabilitation of the Paralyzed

LTSE- Lower Trapezius Strengthening Exercise

LTSEG- Lower Trapezius Strengthening Exercise Group

CPG- Conventional Physiotherapy Group

IRB- Institutional Review Board

MS- Musculoskeletal

NDI- Neck Disability Index

NPRS- Numerical Pain Rating Scale

NSAID- Non-Steroidal Anti-Inflammatory Drug

SPSS- Statistical Package for Social Science

WHO- World Health Organization

Abstract

Purpose: The study evaluated the Lower Trapezius Strengthening Exercise along with Conventional Physiotherapy applied to the cervical region for pain and functional impairment caused by neck pain **Objectives:** The objective of the study is to determine on severity of pain, dysfunction, and disability before and after application of LTSE along with conventional physiotherapy among patients with neck pain. **Methodology:** An experimental study design was chosen for this study. 34 patients with Neck Pain were randomly allocated into two groups, from the outpatient musculoskeletal physiotherapy unit, CRP. Among them 17 patients who were assigned to the trial group received Lower Trapezius Strengthening Exercises with conventional physiotherapy and another 17 in the control group received only conventional physiotherapy. Total treatment sessions were 12 comprising of 3 sessions per week for 4 weeks. A single blinding procedure was used during data collection. Dallas pain questionnaire by using a Numerical pain rating scale of 10cm (NPRS) was used to measure neck pain and the Neck Disability Index to measure neck disability. Inferential statistics such as independent test for between groups Dallas pain and NDI, Paired t-test for within-group Dallas pain and NDI using SPSS version 20. **Results:** It was found that neck pain and neck disability had reduced both within and between a group of experimental and control groups. Both groups showed a statistically significant improvement within a group ($P < .05$). But the experimental group ($P = 0.000$) indicates slightly more significance than the control group. **Conclusion:** Lower trapezius strengthening exercise (LTSE) along with conventional physiotherapy can slightly improve the effects of only conventional physiotherapy in neck pain. This exercise proved beneficial when combined with conventional physiotherapy to minimize disability level prevent recurrence, and reduce pain.

Keywords: Neck pain, lower trapezius strengthening (LTSE), and Conventional physiotherapy.

1.1: Background

Gemmell and Miller(2010, p.1) argue that the condition of neck pain is frequent. Neck discomfort affects over 70% of adults at some point in their lives, and it affects about 22% of people. According to WHO (2013), the global burden of disease in chronic and mild neck pain is those with constant neck pain, those who have difficulty turning the head, holding the arms up, and lifting things, and every year due to disability neckpainare33.64 million, and the prevalence of neck pain is 4.8%

Neck discomfort may result from mechanical or generative changes. One of the prevalent issues with a variable prevalence across the globe is neck pain. Around 30% to 50% of people in the labor force report having neck pain. It goes through recurrences and chronicity in the past. Exacerbations of neck pain vary from person to person, and within six months, about one-third of those with neck pain develop chronic problems (Bertozzi et al. 2013, p. 1026).

Bangladesh is one of the most populous and least developed nations on earth. The official 2001 census showed that 123.2 million people were living there, up from 109.9 million in the 1991 census was argued (Bangladesh Bureau of statistics, 2009). Korhonen et al. (2003, p.475) argue that this is obvious in many people in today's society as a result of the increased usage of computers when the neck and shoulders are kept in a static position to look at the computer screens.

Linder et al.(2012, p.12) argue that numerous research studies have revealed that there are risk factors that have a significant influence on chronic neck discomfort. Chronic neck discomfort is brought on by factors such as age, gender, intolerable physical strain, mental stress from a job, smoking, diabetes, and restless sleep. Bad working posture affects women more than it does males. The ages of the males and females varied. Males over 65 had a larger likelihood of experiencing long-term and medium-term neck discomfort symptoms than did females between the ages of 35 and 44. Cheng and Huang

(2014,p.8) argue that women are more likely to experience persistent neck pain than men, and The prevalence in women, 27.2%, is higher than in men, 17.4%

Clare et al. (2004, p.209) argue that after six months of acute neck pain, symptoms of chronic neck pain began to appear. Western society's expensive musculoskeletal problem. About 50% of people report having neck pain on average over their lifetimes, and 25% report having it once a month. 15% to 19% of cases in the population of Europe progress to a chronic stage. 13% of people in Ireland also reported having persistent neck pain. However, 10% of men and 14% of women in Finland and 14% of people in Norway report having chronic neck pain Around the world, the percentage of people who have persistent neck discomfort at least once in their lifetime is over 20%.

Driessen et al. (2012, p.1441) argue that the annual prevalence of chronic neck pain in the United States was 41.5%, with the majority of patients being women and middle-aged (mean age 48.9 years). Chronic neck pain is also the eighth most common cause of disability in the country was argued (Sberman et al. 2014,p. 112). Joslin et al. (2014, p. 236 – 242) argue that the annual incidence in the United Kingdom was 2.34 percent.

Kanchanomai et al. (2012, p. 497) argue that neck pain is becoming the most common problem every day. By placing significant stress on the neck and shoulders and weakening the soft tissues by reducing the area's biomechanical capabilities and causing muscular rigidity and hypokinetics, abnormal posture leaves this region vulnerable to a variety of musculoskeletal problems.

Falla et al. (2007, p. 408) argue that the muscles on the posterior side of the head and neck should maintain balance from regular contraction in the normal position of the head and neck, with the center of the shoulder joints being placed vertically with both mastoid processes. However, prolonged computer use while adopting an improper posture might result in a forward head posture or rounded shoulders (Mekhora et al. 2000, p. 367). Another study showed that 61.7%of the students work exclusively in a sitting position and 38.3% alter between sitting and standing position (silva et al, 2016, p.191)

As a result of muscle imbalances, this syndrome weakens the rhomboids, serratus anterior, and lower trapezius while shortening the pectoralis major, pectoralis minor,

upper trapezius, and levator scapulae argued (Page 2011, p.254). Cools et al. (2007, p. 1744) argue that the lower trapezius, in particular, is crucial for stabilizing the scapula. Trapezius muscles are involved in the movement of the scapula. Muscle imbalance results from long-term hyperactivity and shortening of the upper trapezius, which weakens the lower trapezius was argued (Wright et al. 2000, p.276).

Kendall et al. (2005, p.1) argue that to achieve perfect postural alignment, many research have recommended therapeutic approaches that strengthen weak muscles and lengthen shortened muscles. The O'Sullivan et al. (2007) approaches are highlighted, which strengthen the lower trapezius without compensating the upper trapezius muscles. Additionally, ultrasound exams of the lower trapezius contraction are made easier. (O'Sullivan et al. 2007, p.620)

According to earlier research, Helgadottir et al. (2011, p.118)patients with neck pain and proprioceptive changes in the scapula may benefit from lower trapezius strengthening exercises, but there is still insufficient data to support these claims. It is necessary to gauge the strength change and gather proof that patients with neck pain benefit from exercises that specifically target the lower trapezius (O'Sullivan et al. 2007, p.621).

Neck pain is the second most common and most serious condition in the world. In Bangladesh, many patients are suffering from neck pain in daily life. There are many physiotherapy treatments are applied in the management of neck pain. In this study, the researcher tries to evaluate the effectiveness of Lower trapezius strengthening exercises in neck pain patients.

1.2: Rationale

Neck pain is a global issue that is equally prevalent in Bangladesh. Adults with sedentary professions frequently have neck pain due to musculoskeletal conditions. Due to their bad static posture, college students also tend to experience it frequently. Around the world, mechanical neck discomfort is the most common type. Any strain, exhaustion, or neck ache that can radiate to the upper extremities is an indication of it. It is possibly a result of their using computers and phones regularly or sitting for lengthy periods while working. According to systemic review-based data, neck discomfort is treated all over the world with a variety of dynamic, isometric, stabilization, strengthening, and stretching activities as well as mobilization, manipulation, traction, and occasionally electrotherapy.

Numerous studies have discovered a link between chronic neck pain and weak neck muscles. The duration, frequency, intensity, and method of the many exercise programs used to treat chronic neck pain can vary. Strengthening activities, among other types of exercise, help lessen pain and avoid re-injuries. It will be more effective to mix strengthening activities with conventional treatment.

As it has been shown that neck pain is caused by weak neck muscles, enhancing neck stability and limiting muscle weakness are efficient ways to reduce neck pain by strengthening the neck muscles. There is insufficient research to support the use of lower trapezius strengthening activities in addition to conventional physiotherapy.

There is no research to determine whether lower trapezius strengthening exercises combined with conventional physiotherapy are useful for treating people with neck pain. The purpose of this study is to determine whether lower trapezius strengthening exercises are effective. The findings of this study could assist physiotherapists in providing the best care possible for neck pain and discomfort.

1.3: Objectives

1.3. a. General Objective:

To identify the effectiveness of lower trapezius strengthening exercises along with conventional physiotherapy among patients with neck pain.

1.3. b. Specific Objectives:

- To identify the demographic status of neck pain patients.
- To examine the effectiveness of the severity of pain after introducing lower trapezius Strengthening exercises for neck pain patients.
- To identify the improvement of the function of neck pain patients.
- To determine the reduction of disability level of neck pain patients.

1.4. Hypothesis

Null-Hypothesis: Lower trapezius strengthening exercise along with conventional physiotherapy is no longer effective than only conventional physiotherapy for patients with neck pain.

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

Alternative-Hypothesis: Lower trapezius strengthening exercises along with conventional physiotherapy is more effective than only conventional physiotherapy for patients with neck pain.

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

Where,

H_0 = Null hypothesis

H_a = Alternative hypothesis

μ_1 = Mean difference in the initial assessment

μ_2 = Mean difference in the final assessment

1.6: Operational Definition

Pain: Pain is the protective mechanism of the body when any tissue is being damaged.

Neck Pain: Neck pain is the sensation of discomfort in the neck area. Neck pain can result from disorders of any of the structures in the neck including the cervical vertebrae and intervertebral discs, nerves, muscles, blood vessels, esophagus, larynx, trachea, lymphatic organs, thyroid gland, or parathyroid glands. Neck pain arises from numerous different conditions and is sometimes referred to as cervical pain.

Lower Trapezius Strengthening Exercise: Lower Trapezius Strengthening Exercise are an active form of physical therapy designed to strengthen muscles to support the spine and help to prevent any type of abnormalities. It requires coordination and training of the anterior and posterior cervical and thoracic and shoulder girdle musculature.

Conventional Physiotherapy: It is defined as the treatment of movement disorders caused by impairments of joints and muscles. It is an intervention that is widely accepted and commonly practiced by the medical community.

Neck pain is a common musculoskeletal disorder in modern society that can produce severe pain and disability (Lee and Lee, 2017, p.531). It mainly includes the pains of the back, neck, and shoulder but pain in the cervical region is the second most common disability, while mechanical back pain is the leading one. Nowadays the rate of neck pain is continuously rising, due to a sedentary lifestyle, and especially dependence on computers and laptops at the workplace (Waqas et al, 2016).

The anatomy of the cervical spine differs significantly from that of the thoracic or lumbar spine and the cervical spine is supported by ligaments, a capsular, muscular, and cartilaginous structure, which has a wide range of motion in all directions (Canale and Beaty 2012). Vaccaro et al. (2007, p.2365) argue that the cervical spine is the body part with the most intricate articular structure. The cervical spine allows the head to move freely about the trunk (McKenzie, 1989).

Damgaard et al. (2013, p.1) argue that the prevalence of chronic neck pain varies and the 12-month prevalence of pain in working people typically ranges between 30% and 50%; the 12-month prevalence of pain in unemployed people is 1.7% to 11.5%. The prevalence of chronic neck pain in India among computer operators was found 47%. (Rahman et al. 2017, p.37).

The prevalence of neck pain in the region of Asia, demonstrated in the peak position in the West and the Midwest of Asia whereas in the Southern part of Asia showed relatively lower and the age between 30 - and 50 years was the majority of the participants (Rahman et al. 2017, p.37). In contrast, in 2002 a research was conducted in Bangladesh about neck pain among 6476 patients with neck pain and the prevalence was about 21.01%. (Shakoor et al. 2002, p.74). Johora et al. (2016) argue that the Prevalence of neck pain among students was 86(76.8%) which was higher among female students at 51(59.8%) than male 35(40.2%) students.

The annual prevalence in the United States of America was 41.5% in which individuals with chronic neck pain were middle-aged (mean age 48.9 years) and women were the majority of subjects, the annual incidence in the United Kingdom was 34%, the prevalence in Australia of neck pain was 27.1% (Haldeman et al. 2008, p.8).

Jensen and Gebhart (2008, p.399) argue that the primary presenting symptom in people with neck pain is both a normal defense mechanism and a physiological response of the body to an aberrant input. Pins and needles, numbness, weakness, stiffness, and instability are some of the symptoms of this illness, however, the most significant symptom is pain. Pain is described by the International Association for the Study of Pain (IASP) as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (Kumar and Elavarasi 2016, p.87)

Sabeen et al. (2013, p.137) argued that neck pain is a feeling of discomfort that can be felt anywhere from the base of the skull at ear level to the upper section of the back, shoulder, or arm. Occasionally, it can even radiate up to the finger when one or more nerve roots in the hands are involved. Students experienced mechanical discomfort at a higher rate than those of a different age group (Chan et al. 2020, p. 102934). The neck experienced 25.42% of the musculoskeletal discomfort, the back experienced 37.29%, and the upper back experienced 18.64% (Khan, 2020).

Sabeen et al. (2013, p.137) argued that Neck pain is significantly correlated with factors that are physical strains, including repeated motion, bad posture, uncomfortable posture, neck flexion or rotation, sedentary lifestyle, using more than four hours of computer use each day is regarded as a risk factor for neck pain patients, along with bad posture, neck strain, occupational injuries, or sporting injuries. Nowadays, a lot of people, especially students, use computers (Kanchanomai et al. 2011, p.1). Non-modifiable characteristics include gender, particularly the body structure of women, which is a risk factor for neck pain (Cagnie et al. 2007, p.679). Chronic Neck Pain is frequently linked to psychosocial dysfunctions and a sedentary lifestyle (Hoy et al. 2010, p. 1309).

In recent years, increased the work load among different professionals as well as students. Therefore, the prevalence of work-related chronic neck pain has increased day by day among computer users, dentists, nurses, surgeons, bankers, and teachers (Mustafa and Sultan 2013, p.43)

The prevalence of musculoskeletal pain among students was 73.3% in Korea, 36.9% in Japan, and 76.6% in China. Compared to Korea and Japan, China has a greater rate of musculoskeletal pain among students (Alshagga et al. 2013, p.1). Chronic neck pain affects both men and women equally but men are less impacted than women because of hormone imbalance, poor posture, etc., and the majority of those affected by degenerative disc disorders which is a major contributor to neck pain; In a research, 91 patients or 68% of the total of 133 patients were women (Fillingim et al. 2009, p.447).

Gordon et al. (2010, p.137) argue that after reviewing the patient's medical history, it is occasionally discovered that persons who suffer from chronic pain use multiple pillows or soft pillows that are often used by people for comfort but ultimately they start to cause neck pain and the height of pillows have a significant impact on neck pain. One-third of a person's life is spent sleeping than other activities; therefore good sleep hygiene and comfort are important in everyone's life that's why they use a lot of pillows which might cause neck pain to worsen (Ren et al. 2016, p.2397).

One of the biggest emerging nations, China, has 1.3 billion residents who also suffer from neck pain. The burden of neck pain has spread to society and its victims. Adolescence has a significant incidence of neck discomfort, according to various research (Hakala et al. 2012, p.3). The prevalence of neck among adults ranges from 16.7% to 75.1% every year (Fejer, Kyvik and Hartvigsen 2006, p.834).

Ylinen (2003, p. 2509) argues that the majority of neck pain sufferers have "non-specific types of neck pain" that are characterized by mechanical or postural symptoms such as poor posture, anxiety, depression, neck strain, and sporting or occupational activities, are frequently multifactorial and poorly understood but when there is neither a bone injury nor a neurological deficiency, neck pain following a whiplash injury also falls under this

group and also the alignment of the cervical spine is frequently referred to as "cervical spondylosis" when the mechanical element is the top focus.

Gemmell and Miller (2010, p.5) argue that Practitioners of manual medicine frequently encounter mechanical neck pain, which they treat with a variety of techniques that can result from a wide range of conditions and illnesses affecting any neck structure. Physiotherapy has a variety of roles in treating neck pain and discomfort at various stages. People with neck pain can get back to their regular daily activities by receiving physiotherapy treatment (Manca et al. 2006, p.67).

Neck pain is treated by about 15% of persons in a hospital-based physiotherapy program and 30% of patients in a chiropractic service (Gross et al. 2000, p.33). Irnich et al. (2001, p.1574) argue that common treatments for neck pain include medication, manual therapies, physiotherapy, exercise, local and epidural injections, and patient education. Neck problems are more likely in people who have weak neck muscles, thus an exercise program to strengthen the neck is a good suggestion (Pillinger and Rutherford, 2005).

A physiotherapist might utilize mobilization techniques in conjunction with ultrasound, laser, or heat therapy, traction, a collar or corset, and TENS are all options for treatment (Manca et al. 2006, p.67). Depending on the diagnosis, neck discomfort may require different treatments. However, rest, medication, immobilization, physical therapy, exercise, activity adjustment, or a combination of these modalities are effective treatments for the majority of patients (AAOS, 2000). The goal of the exercise is to reduce pain, return to normal function, and quickly regain complete neck mobility under the specified circumstances and the McKenzie idea should always be followed for posture correction and maintenance (McKenzie, 1983).

Adams and Maher (2004, p.209) argue that among physiotherapists, the McKenzie treatment technique is the most common management strategy. It contains accurate evaluation. This method is centered on treating each patient specifically following their clinical symptoms. Traction, mobilization, manipulation, protraction, etc. are all part of the McKenzie approach.

People who have weak neck muscles are more likely to experience neck issues; in these situations, a neck-strengthening exercise program is a good suggestion (Pillinger & Rutherford, 2005). If the neck's range of motion is compromised, poor postural adjustment is required. The patient may find comfort with a firm pillow at night (Ren et al. 2016, p.2397).

Conventional physiotherapy is not clearly defined. However, according to the Oxford Advanced Learner Dictionary (1995), conventional refers to a tendency to follow what is appropriate, traditional, or the method that has been done for a long time. Groups of particular treatments are used frequently in physiotherapy. Isometric exercise, range-of-motion exercise, dynamic resistance exercise, cranio-cervical exercise, upper limb strengthening exercise, neck stabilization exercise, proprioceptive exercise, and neck endurance exercise are the main types of exercise therapy for patients with neck pain. Therefore, we can say that traditional physiotherapy is a synthesis of several therapeutic modalities employed in the physiotherapy division(Bertozzi et al. 2013, p.1026).

Martel et al. (2011, p. 7), a home exercise regimen can also be quite beneficial for treating persistent neck discomfort. A home exercise program should start with general range of motion (ROM) exercises for warming up and cooling down, then move on to strengthening exercises for the upper thoracic and cervical spine, focusing on the flexion/extension, lateral flexion, and rotation of the cervical spine.

Lawlis, McCoy, and Selby created the Dallas Pain Questionnaire (DPQ), a 16-item visual analog instrument, to assess subjects' perceptions of the degree to which four components of patients' lives are affected by chronic pain: 1) Daily activities, such as pain and intensity, self-care, lifting, moving around, sitting, standing, and sleeping; 2) Work and Recreational Activities, such as Social Life, Travel, and Vocational; 3) Anxiety-Depression; and 4) Social Interest, such as Interpersonal Relationships, Social Support, and Punishing Responses. The visual scales are anchored at the start with terms like "no pain" or "no influence of pain" and 0, towards the middle with "some," and at the conclusion with "all the time" and 100 impact of pain.

Index of Neck Disability (NDI): This questionnaire set was created to gather data on how the patient's neck pain affects his or her capacity to function in daily life. The Neck Disability Index (NDI) was created in 1991 by Vernon & Mior. Each of the NDI's 10 different question sections has 6 different classes of defined statements. The maximum score for each segment is 5, with the first statement receiving a score of 0 and the last statement receiving a score of 5. The test-retest reliability of the NDI was investigated by Cleland et al. (2008) for a subgroup of individuals with mechanical neck pain. The study's findings indicate that the NDI only has fair test-retest reliability. Similar to the findings of Cleland et al. (2008), the findings of the study by Young et al. (2010) imply that the NDI only demonstrates fair test-retest reliability, which is lower than the values observed in patients with mechanical neck pain or cervical radiculopathy.

The top part of the spine in the back of the neck is called the cervical spine. The neck is stabilized by several muscles, including the sub-occipital, longus capitis, colli, multifidi, semi-spinalis cervicis, and longissimus cervicis. The lower trapezius and serratus anterior, two muscles in the upper back and shoulders, are crucial for stabilizing the spine. Stabilization exercises increase the strength of these muscles as well as improve stabilization (Sarkar et al. 2021, p. 103311).

Strengthening exercises are exercises that are meant to reduce pain, maximize function, correction of disability, and prevent injury progression or re-injury and also they require coordination and training of the shoulder girdle and neck musculature (Park and Lee 2020, p. 920208).

3.1 Study design:

The study was conducted by using a Randomized Control Trail (RCT).

A pretest (before intervention) and post-test (after intervention) were administered with each subject of both groups to compare the pain, postural alignment, and functional disability of the subject before and after the treatment.

According to Depoy & Gitlin (1998, p. 110), the design could be shown by-

Experimental group: R O X O

Control group: R O O

Where,

R = Randomly Assigned

O = Dependent Variable

X = Experimental Condition or Independent Variable or Treatment

3.2 Study area

The researcher selected the outpatient musculoskeletal physiotherapy department of the Centre for the Rehabilitation of the Paralyzed(CRP), Savar, Dhaka-1343. The researcher met with them at a pre-arranged location.

3.3 Study population

The study population was the patients with neck pain attended in the Outpatient Musculoskeletal Unit of the Physiotherapy Department at CRP, Savar, Dhaka.

3.4 Study duration

The data collection duration of my study was (01.05.23) to (01.06.23).

3.5 Sample size

34 patients were selected for the study where 17 patients were randomly assigned to the Experimental group who received lower trapezius strengthening exercise along with conventional physiotherapy and 17 patients in the control group who received only conventional physiotherapy.

3.6. Sample selection

Subjects, who met the inclusion criteria, were taken as the sample in this study. 34 patients suffering from neck pain were chosen from the outpatient musculoskeletal unit of the physiotherapy department at CRP, Savar; from there 17 were randomly assigned to the Experimental group, where they received conventional physiotherapy with lower trapezius strengthening exercise, and 17 were assigned to the Control group, where they received Conventional physiotherapy alone. The samples in this group were labeled as C1, C2, C3, etc., Whereas those in the experimental group were labeled as E1, E2, E3, etc. A single-blind method was used in this investigation.

3.7. Inclusion criteria

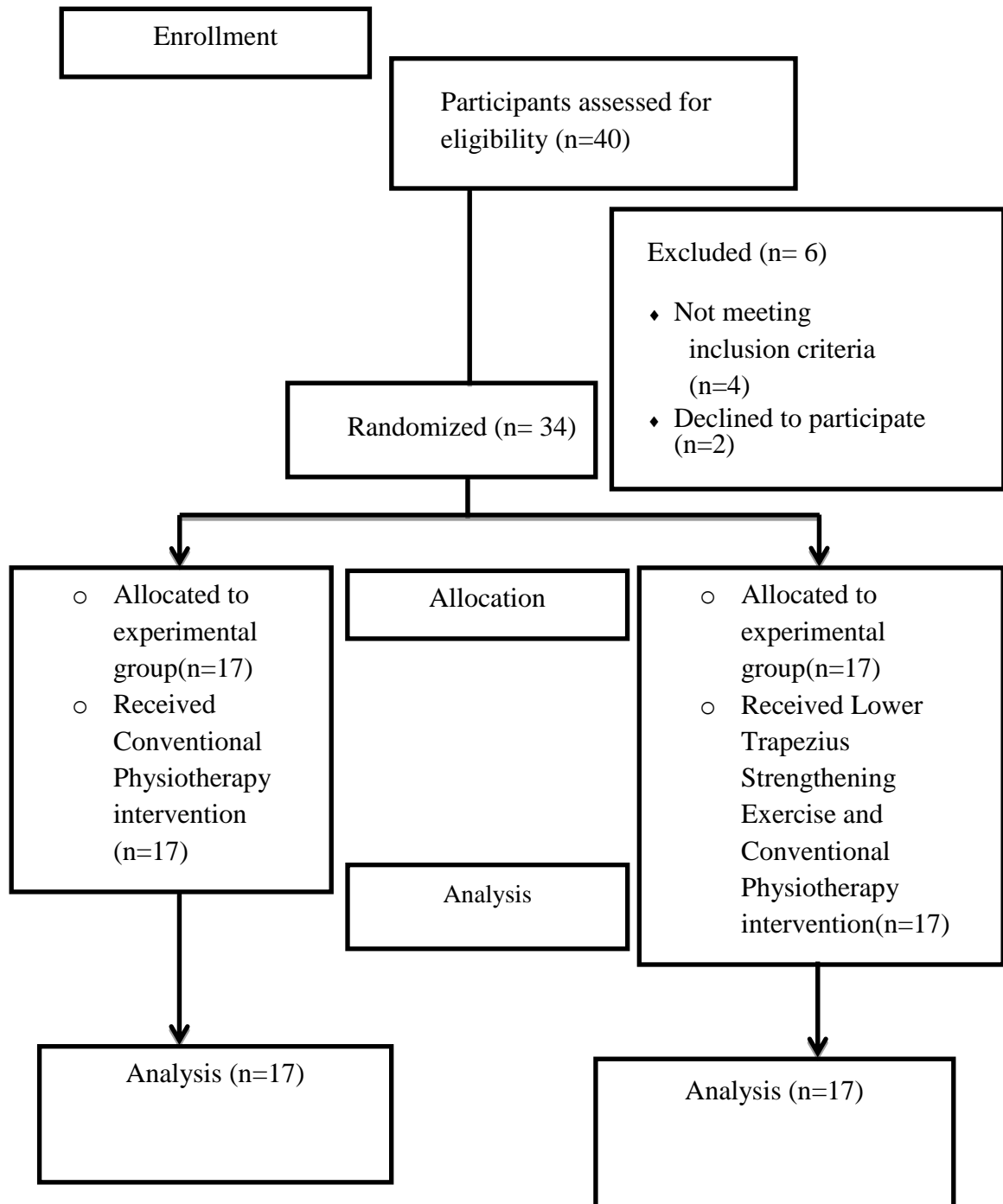
- Age range 18-55years (Manchikanti, L 2008, p.67)
- Both sexes
- Participants had central neck pain and radiating pain to the limb. (Aquino et al. 2009, p.95)
- Patients who are receiving physiotherapy from the musculoskeletal physiotherapy unit of CRP.
- Willingness to participate

3.8. Exclusion criteria

- Anyone who will be diagnosed with an orthopedic condition via x-ray such as-
 - ✓ Vertebral malignancy,
 - ✓ Bone infections,
 - ✓ Fracture,
 - ✓ Joint irritability,
 - ✓ Osteoporosis,
 - ✓ Osteopenia (Misailidou et al. 2010, p.49)
- Traumatic neck or thoracic injury (Farooq et al. 2018, p.24)
- History of surgery in the spine or thoracic (Misailidou et al. 2010, p.49)
- Any pathological lesion on the cervical, thoracic, or shoulder joint.
- Congenital deformity

3.9 Sample technique

3.9.1. Consort diagram



3.10. Treatment protocol:

3.10.1. Experimental group treatment protocol

A lower trapezius strengthening exercise program will be provided only to the experimental group. The program consisted of a modified prone cobra, trapezius muscle exercise progression, and wall slide.

- **Modified prone cobra:**

Procedure:

The participant was instructed to sufficiently contract the lower trapezius muscle without compensating the upper trapezius. The participant raises the chest approximately 10 cm in a prone lying position to maintain the scapula pulled downwards for 10 seconds.

Dose: 10 rep x 1 set x 10 seconds hold x 3 times a week for 4 weeks

- **Trapezius muscle exercise progression :**

Procedure:

Step-1: The starting position is made in prone lying. The shoulder and elbow joints are flexed to place the hands behind the head. The scapula is adducted, and the arms are out reaching for the ceiling for 10 seconds.

Step-2: In prone position. The shoulder joint is abducted to 120°, the elbow joint flexed at 90°, and the position is maintained for 10 seconds with the thumbs pointing towards it.

Step-3: In prone lying. The shoulder joint is abducted to 120°, the elbow joint flexed, and 10 seconds is maintained with the thumbs towards the ceiling.

Dose: 10 rep x 1 sets x 10 seconds hold x 3 times a week for 4 weeks

- **Wall slide :**

- **Procedure:** The participant stands by the wall on the back. The shoulder joint is abducted and externally rotated to 90° and the elbow joint is flexed to 90°. Then the arms are lifted up and down contracting the lower trapezius without the compensation of the upper trapezius.

Dose: 10 rep x 1 sets x 10 seconds hold x 3 times a week for 4 weeks

3.11 Method of data collection

3.11.1 Measurement tool:

- The researcher has used the Dallas pain questionnaire by using the Numerical pain rating scale (NPRS) for pain measurement in different working positions and activities.
- 50 points Neck disability scale to measure the disability status among patients with chronic neck pain.
- Self-oriented socio-demographic questionnaire.

3.12.1a Dallas pain questionnaire (DPQ)

The DPQ was a 16-item instrument to assess pain and intensity, personal care, standing, sitting, walking, and sleeping; Stiff neck, turning neck, relief by pain killer; work and leisure activities, and each item was scored with a Numerical pain rating scale (NPRS) This questionnaire slightly modified for suitable this study Scale extremity 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.

3.12.1b Neck disability index

The Neck disability index (ODI) included 10 sections of questions. The sections were selected from experimental questionnaires that aimed to assess several aspects of daily living. The ODI domains were the following: pain intensity, personal care, concentration, emotion, headache, lifting, reading, traveling, daily work activities, sleeping, 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.

3.13.2. Data collection tools:

Data collection form, Informed consent form, Structured questionnaire, Pen, Pencil, and Calculator were used as data collection tools in this study.

3.13.3. Data collection procedure:

Data was collected by using the Bengali version questionnaire through face-to-face interviews with the participants.

The study procedure was conducted by assessing the patient, initial recording, treatment, and final recording. After screening the patients at the department, the patients were assessed by a qualified physiotherapist. The researcher divided all participants into two groups and coded C1 (17) for the control group and E1 (17) for the experimental group. The experimental group received lower trapezius strengthening exercises and conventional physiotherapy exercises and the control group received only conventional physiotherapy.

3.14 Data analysis procedure

Statistical packages for the Social Science (SPSS) version 25.0 and Microsoft Excel 2019 were used to analyze the data every survey was double-checked for clarity and accuracy. Types, values, decimals, label alignment, and measurement level information must first be entered into SPSS's variable view. The next move was to load SPSS's data view. After entering all data, the researcher double-checked to make sure that the information on the questionnaire sheet had been correctly transferred to the SPSS data view. After that, we could use SPSS to analyze the raw data.

Estimated predictor

Un-like the t-test, which assumes normally distributed data, this hypothesis test of the mean difference between the experimental group and the control group, within groups and also between groups, assuming a normal distribution of the parent population, two different and or independent variables, variables were quantitative by estimated predictor of paired t-test or unpaired t-test.

Hypothesis test

Paired t-test

A paired t-test is used to compare the difference between the means of paired variables. The selection of the test of hypothesis is the mean difference under the t distribution.

Assumption

- Paired variables
- Variables were quantitative
- The parent population of the sample observation follows a normal distribution.

Formula test statistic t is as follows:

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

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

In this way, the researcher calculated paired t-value and significant level

Un-paired t-test

An unpaired t-test was used to compare the difference between the two means of independent variables. The selection of the test of the hypothesis was two independent mean differences under unpaired t distribution.

Assumption

- Different and independent variables
- Variables were quantitative
- Normal distribution of the variables

Formula: test statistic t is as follows:

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

Where,

$\bar{x}1$ = Mean of the Experimental Group

$\bar{x}2$ = Mean of the Control Group

$n1$ = Number of participants in the Experimental Group

$n2$ = Number of participants in the Control Group

S = Combined standard deviation of both groups

In this way researcher calculated independent t-value and significant level

3.15. Level of Significance:

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

3.16. Ethical consideration

The proposal of the dissertation including methodology was approved by the Institutional Review Board and obtained permission from the concerned authority of the ethical committee of Bangladesh Health Professions Institute (BHPI). 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. Again before the beginning of the data collection, the researcher obtained permission to ensure 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.

3.17. Informed Consent

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 an outdoor doctor if they think that the treatment is not enough to control the condition or if the condition worsens. The participants were also informed that they were completely free to decline to answer any question during the study and were 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 questions answered to their satisfaction.

1. Socio-demographic information of the participants:

Table: 1- Description of continuous variables (Socio-demographic) of both the Experimental (LTSEG) Group and Control (CPG) Group

Variables	Experimental (LTSEG) Group n(%) / Mean± SD	Control (CPG) Group n(%) / Mean± SD
Age (yr.)	38.41±10.834	36.41±12.349
Number of pillows	.35±.493	3.00±1.369

Table 1 shows the baseline characteristics of the Description of continuous variables (Socio-demographic) of participants between the experimental and control groups. In the experimental group, the mean age ± SD of the participants was 38.41±10.834 years, and in the control group 36.41±12.349 years. The mean number of the pillow (± SD) was similar in both the trial and control groups was .35±.493.

Table: 2- Socio-demographic information of both the Experimental (LTSEG) Group and Control (CPG) Group

Variables	Experimental Group(LTSEG) n(%)	Control Group(CPG) n(%)
Gender		
Male	10(58.8)	10(58.8)

Female	7(41.2)	7(41.2)
Residential area		
Urban	10(58.8)	15(88.2)
Rural	7(41.2)	2(11.8)
Educational status		
Illiterate	2(11.8)	1(5.1)
PSC	2(11.8)	2(11.8)
SSC	4(23.5)	3(17.6)
HSC	2(11.8)	6(35.3)
Hon's	3(17.6)	3(17.6)
Masters and above	4(23.5)	2(11.8)
Marital status		
Married	16(94.1)	11(64.7)
Un-Married	1(5.9)	6(35.3)
Family size		
Nuclear	12(70.6)	14(82.4)
Joint	5(29.4)	3(17.6)
Occupation		
Housewife	8(47.1)	5(29.4)
Businessman	1(5.9)	5(29.4)
Student	1(5.9)	5(29.4)
Teacher	2(11.8)	0

Doctor	1(5.9)	1(5.9)
Service holder	1(5.9)	0
Labor	3(17.6)	1(5.9)
BMI		
Underweight	1(5.9)	2(11.8)
Normal weight	8(47.1)	8(47.1)
Overweight	6(35.3)	6(35.3)
Obese	2(11.8)	1(5.9)

Table 2 shows the socio-demographic characteristics of two groups: the Experimental (LTSEG) and the Control (CPG) groups. The variables included in the table are gender, Residential area, educational status, marital status, family size, and occupation. The data are presented as the number and percentage of people in each category for each variable.

In terms of gender, there were 58.8% (n=10) female and 41.2% (n=7) male in the experimental group and 58.8% (n=10) female and 41.2% (n=7) male in the control group.

In terms of Residential areas, In the experimental group, 58.8% (n=10) lived in urban areas and 41.2% (n=7) lived in rural areas. Besides, in the control group, 88.2% (n=15) lived in urban areas and 11.8% (n=2) lived in rural areas.

In terms of educational status, among 34 participants, 11.8% (n=2) were illiterate in the experimental group and 5.1% (n=1) were illiterate in the control group. There were 11.8% (n=2) participants who passed PSC in the experimental group and 11.8% (n=2) participants who passed PSC in the control group. There were 23.5% (n=4) participants who passed the S. S. C examination in the experimental group and 17.6% (n=3) participants who passed the S. S. C examination in the control group. There 11.8% (n=2)

participants passed HSC in the experimental group and 35.3% (n=6) participants passed the H. S. C. level in the control group. At the Honors level, there were 17.6% (n=3) in the experimental group and 17.6% (n=3) in the control group, and at the Masters Level 23.5% (n=4) participants from the experimental group and 11.8% (n=2) were from control.

In terms of marital status, 94.1% (n=16) in the experimental group and 64.7% (n=11) are married in the control group, whereas 5.9% (n=1) in the experimental group and 35.3% (n=6) are unmarried in the control group.

In terms of family size, in the experimental group, 70.6% (n=12) were in the nuclear family and 29.4% (n=5) were in the joint family. Besides, in the control group, 82.4% (n=14) were in the nuclear family and 17.6% (n=3) were in the joined family.

In terms of occupational status, among 34 participants, in the experimental group, 47.1% (n=8) were housewives, 5.9% (n=1) businessmen, 5.9% (n=1) students, 11.8% (n=2) teachers, 5.9% (n=1) doctor and 5.9% (n=1) service holder. On the other hand, in the control group, 29.4% (n=5) housewife, 29.4% (n=5) businessman, 29.4% (n=5) student and 5.9% (n=1) doctor.

In terms of BMI, among 17 participants, in the experimental group, 5.9% (n=1) were underweight, 47.1% (n=8) were in normal weight, 53.3% (n=6) participants were overweight, and 11.8% (n=2) participant were obese. In the control group, 11.8% (n=2) participants were underweight, 47.1% (n=8) participants were in normal weight, 35.3% (n=6) participants were in overweight and 5.9% (n=1) participants were obese.

2. Medical related information :

2.1. Comorbidities among participants:

Figure 5 showed that among 17 participants of the experimental group, 42.2% (n=7) participants did not have any comorbidities, 23.4% (n=5) had been suffering from diabetes mellitus, 17.6% (n=3) had been suffering from hypertension, 11.8% (n=2) had been suffering from heart disease. In contrast, among 17 participants in control group, 42.2% (n=7) participants did not have any comorbidities, 5.9% (n=1) had been suffering from diabetes mellitus, 23.5% (n=4) had been suffering from hypertension, 17.6% (n=3) had been suffering from heart disease, 5.9% (n=1) had been suffering from epilepsy, 5.9% (n=1) had been suffering from multiple co-morbidities (figure-1).

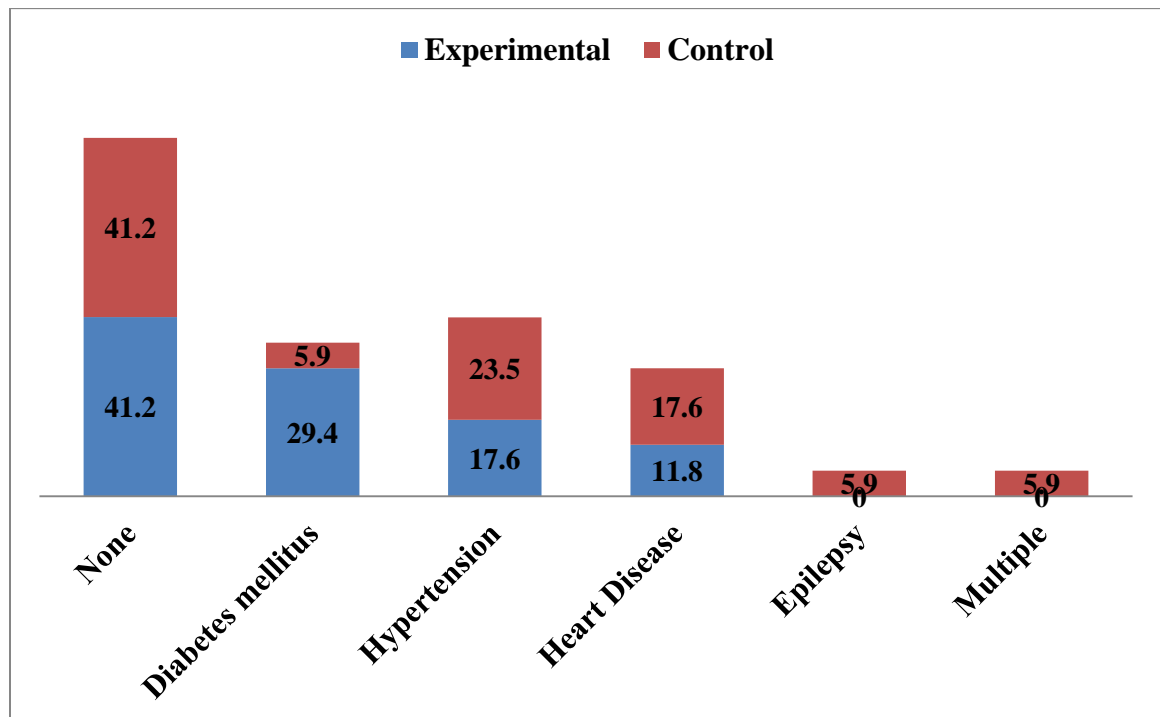


Figure 1: Comorbidities among trial and control group participants

3. Pain-related information:

3.1. Causes of pain among participants

Among 17 participants in the experimental group, 29.4% (n=5) have neck pain due to traumatic causes, 11.8% (n=2) due to postural causes, and 58.8% (n=10) due to no apparent reason. On the other hand, among 17 participants in the control group, 5.9% (n=1) have neck pain due to a traumatic cause, 58.8% (n=10) due to a postural cause, and 35.3% (n=6) due to no apparent reason. (figure-2).

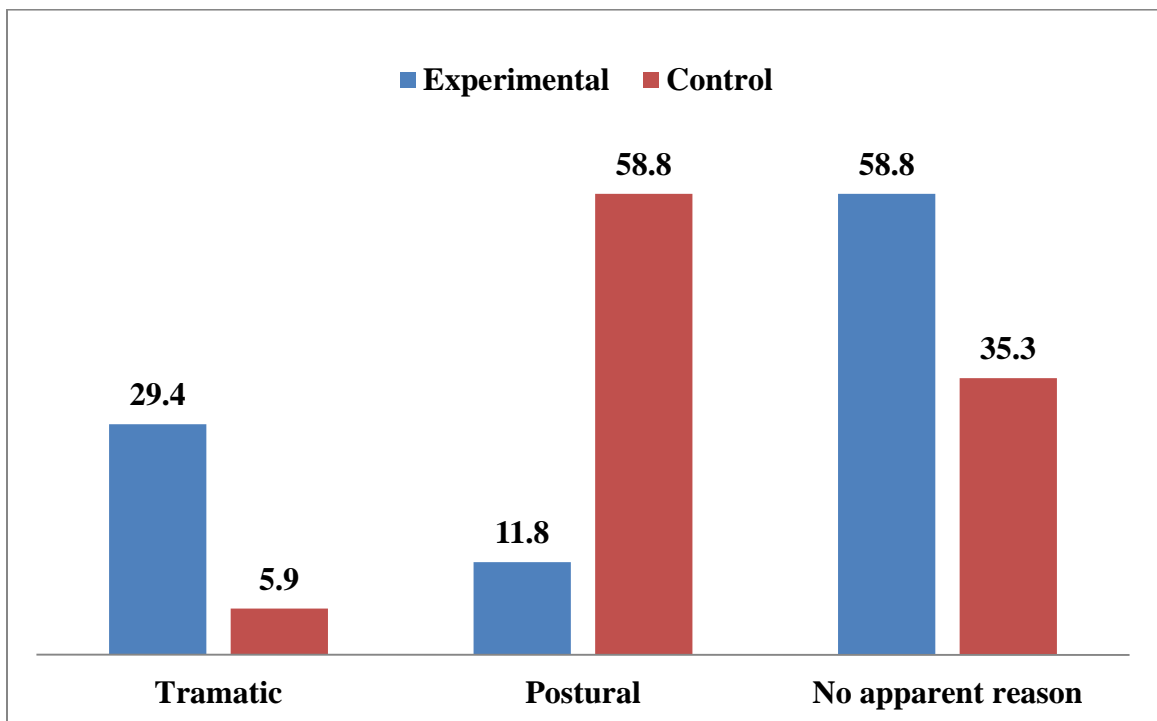


Figure 2: Causes of pain

3.2. Duration of pain among participants

Among 17 participants of the experimental group 23.5% (n=4) were suffering from 1-6months, 5.9% (n=1) were suffering from 7-12 months, 58.8% (n=10) were suffering from >1 year, 11.8% (n=2) were suffering from >5 years. Besides, among 17 participants of the control group 17.6% (n=3) were suffering from neck pain 1-4 weeks, 23.5% (n=4) were suffering from 1-6months, 11.8% (n=2) were suffering from 7-12 months, 35.3% (n=6) were suffering from >1 year, 11.8% (n=2) were suffering from >5 years. (figure-3)

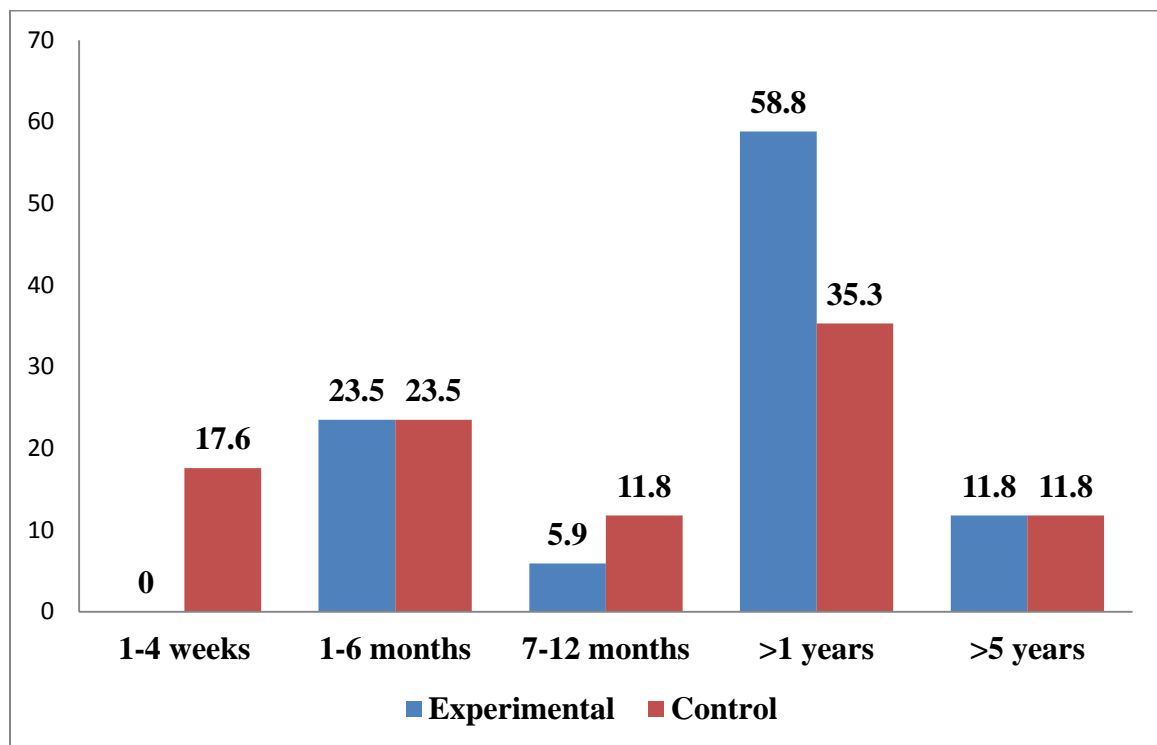


Figure 3: Category of duration of pain

3.3. Radiation of pain among participants

Among 34 participants, in the experimental group, 29.4% (n=5) participants had pain radiating to above the elbow, 52.9% (n=9) participants had pain radiating to below the elbow and 17.6% (n=3) did not radiate pain. On the other hand, in the control group, 5.9% (n=1) participants had pain radiating to above the elbow, 52.9% (n=9) participants had pain radiating to below the elbow and 41.2% (n=7) did not radiate pain. (figure-4).

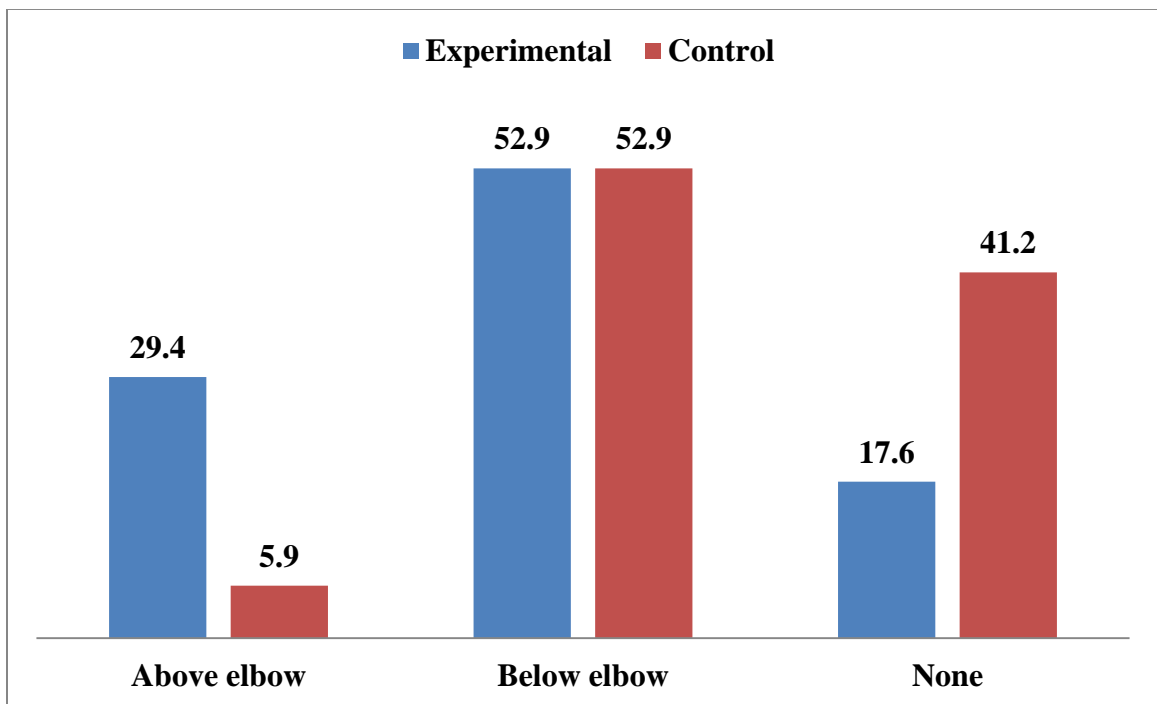


Figure 4: Radiation of pain among participants

3.4. Pain worsening time among participants

Among 17 participants in the experimental group, 29.4% (n=5) had in morning, 11.8% (n=2) had as the day progressed, 29.4% (n=5) at evening, and 29.4% (n=5) had worse pain at night. Besides, among 17 participants in the control group, 17.6% (n=3) had worse pain in the morning, 35.3% (n=6) had as the day progressed, 5.9% (n=1) at evening, and 41.2% (n=7) at night. (figure-5).

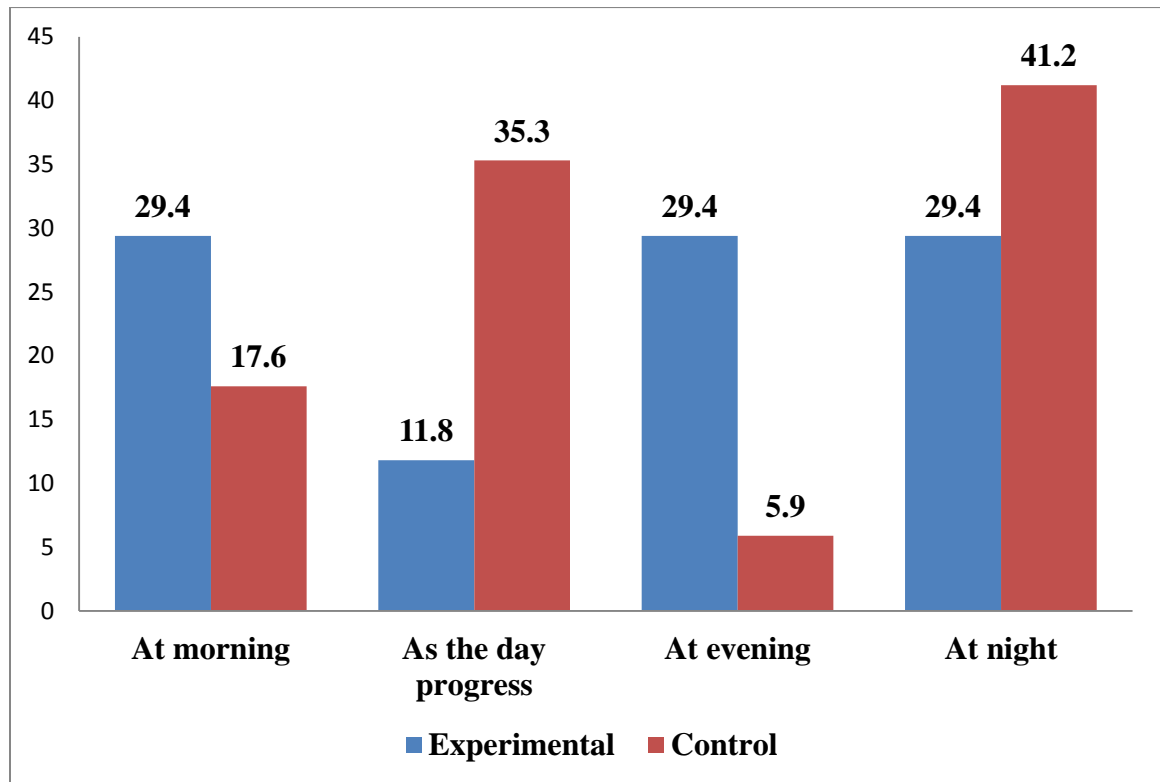


Figure 5: Pain worsening time among participants

3.5. Movement that Exaggerates of pain among patients

Among 34 participants, 17.6% (n=3) in the experimental group and 52.9% (n=9) in the control group had neck forward bending movement exaggerated pain, 29.4% (n=5) in experimental and 11.8% (n=2) participants in control group neck backward bending movement exaggerated pain, 29.4% (n=5) in experimental and 11.8% (n=2) participants in control group neck turning to right movement exaggerated pain, 5.9% (n=1) in experimental group and 17.6% (n=3) participants in control neck turning to left movement exaggerated pain, 11.8% (n=2) in experimental group and 5.9% (n=1) participants control raising from lying movement exaggerated pain, 0% participants raising from sitting exaggerated pain, 5.9% (n=1) in experimental group exaggerated pain in multiple movements (figure-6).

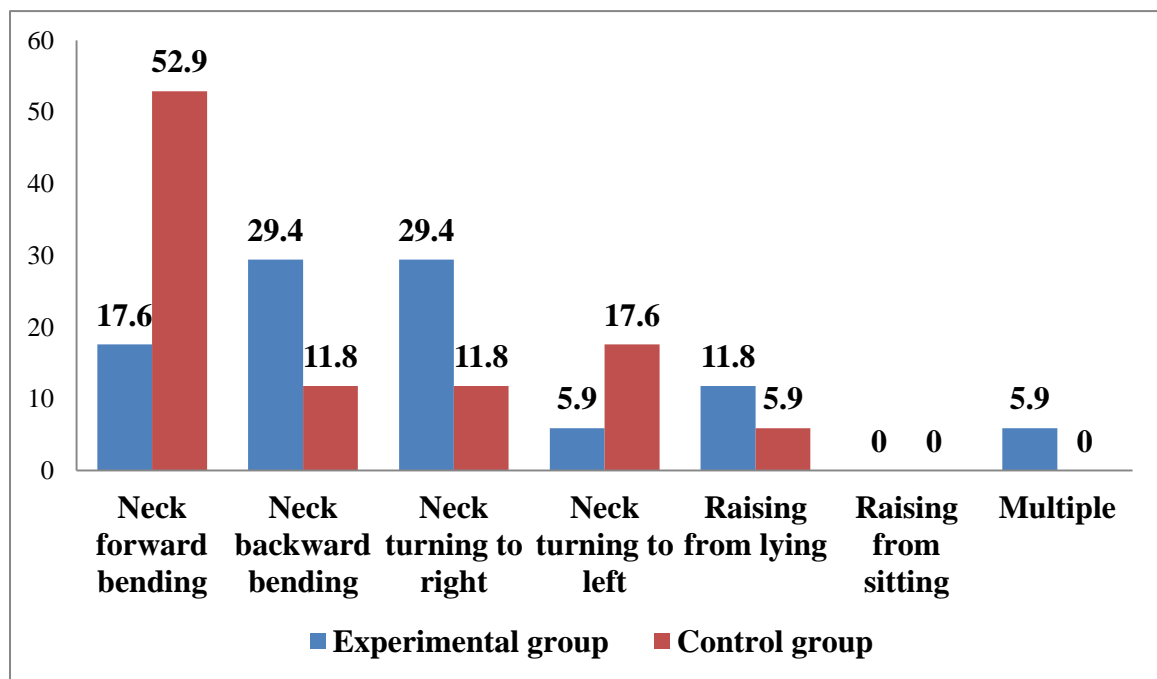


Figure 6: Movement that Exaggerates pain among patients

3.6. Movement that relieves pain among patients:

Among 34 participants, 29.4% (n=5) in the experimental group and 5.9% (n=1) in the control group neck forward bending movement relieve pain, 23.5 (n=4) in the experimental group and 70.6%(n=12) participants in control neck backward bending movement relieves pain, 5.9% (n=1) in the experimental group and 11.8% (n=2) participants in control neck turning to right, 29.4% (n=5) in experimental group and 5.9% (n=1) participants in control neck turning to left, 5.9% (n=1) in experimental group and 5.9% (n=1) participants control raising from lying, 0% participants raising from sitting exaggerated pain, 5.9% (n=1) in experimental group and 0% participants in control exaggerated pain in multiple movements (figure-7).

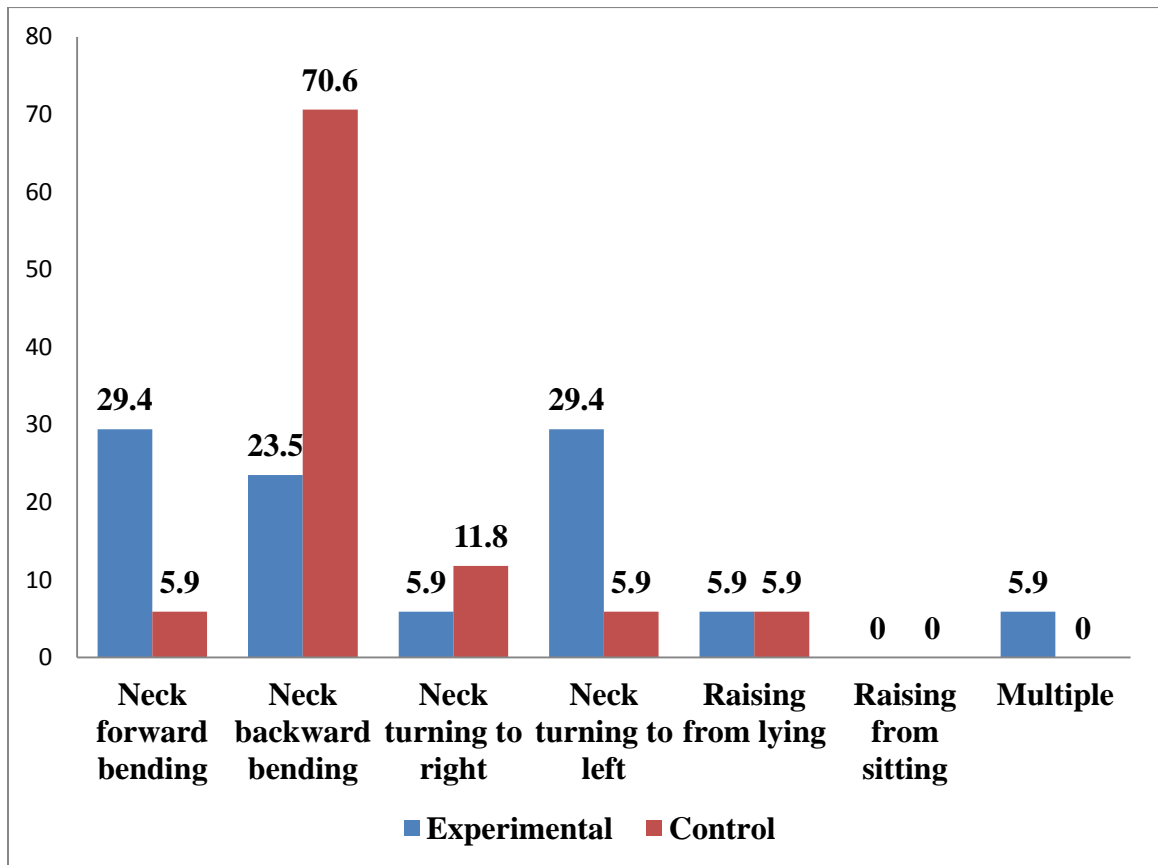


Figure-7: Most relieved movement

3.7. Sleeping posture among patients:

Among 17 participants, in the Experimental group, 29.4% (n=5) were sleeping in a supine lying position, 23.5 (n=4) were sleeping in the prone lying position, and 47.1% (n=8) were sleeping in a side lying position. Besides, among 17 participants in the control group, 41.2% (n=7) were sleeping in a supine lying position, 5.9% (n=1) were sleeping in a prone lying position, 52.9% (n=9) were sleeping in a side-lying position (figure-8).

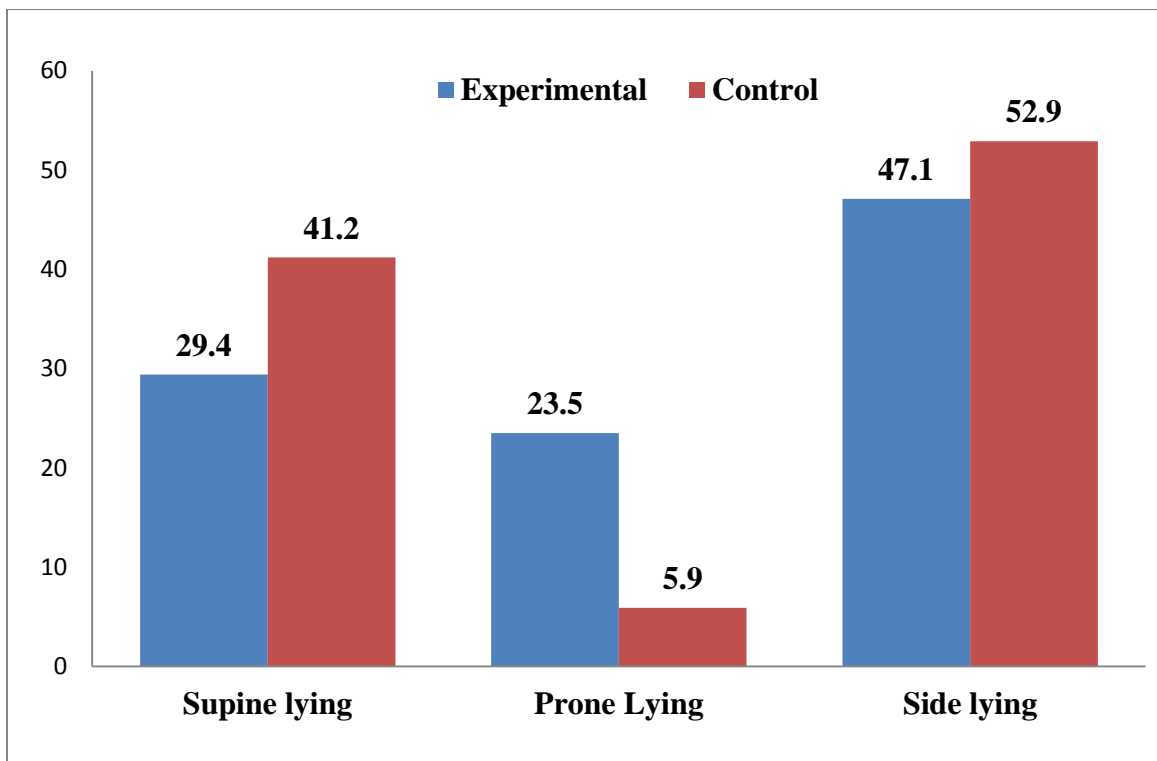


Figure 8: Sleeping posture among patients

4. Dallas pain questionnaire

4.1: Paired t-test of Dallas questionnaire within Experimental (LTMSEG) Group and Control group.

Serial No.	Variables	Experimental group			Control group		
		t	Mean± SD	Sig. (2-tailed)	t	Mean± SD	Sig. (2-tailed)
1	Pain in today	8.899	1.941±.899	.000	8.899	1.941±.899	.000
2	Pain on average	10.165	2.176±.883	.004	8.458	2.412±1.176	.007
3	Pain Interfere with sleep	7.778	2.588±1.372	.023	4.315	1.882±1.799	.017
4	Pain on standing	6.839	2.235±1.348	.001	5.916	2.059±1.435	.006
5	Pain on walking	5.310	2.413±1.873	.000	4.311	1.529±1.463	.002
6	Pain Interfere with driving	4.338	2.471±2.348	.042	5.856	2.118±1.111	.053
7	Pain interfere with social activities	5.144	1.647±1.320	.000	6.971	1.588±.939	.001
8	Pain interfere with recreational activities	5.488	2.294±1.724	.000	9.257	3.471±1.546	.001
9	Pain interfere with work activities	2.791	.941±1.391	.013	2.022	.941±1.919	.060
10	Pain interfere with personal care	6.516	3.235±2.047	.009	8.598	3.118±1.495	.020
11	Pain interfere with personal relationship	1.897	.941±2.045	.076	8.884	3.412±1.583	.058
12	Pain affect on emotion	5.409	2.765±2.107	.004	6.577	2.588±1.622	.000
13	Pain affect on	3.867	1.824±1.944	.001	6.286	1.294±.849	.005

concentration							
14	How stiff neck	3.977	1.529±1.586	.001	3.405	1.176±1.425	.004
15	Pain turning neck	8.868	2.412±1.121	.008	5.015	2.353±1.935	.003
16	Pain relief by pain killer	7.948	3.412±1.770	.020	5.690	1.882±1.364	.044

Table-3: Paired t-test of Dallas questionnaire within experimental group and Control group

4.1.1. Pain in today:

The pre-test and post-test pain intensity was observed in both experimental and control group before and after intervention was same. The t value 8.899 and significance p value 0.000 as $P < 0.05$.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group in pain on today ($P=0.000$).

4.1.2. Pain on average:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the t value 10.165 and significance p value 0.004 and control group the t value 8.458 and significance p value 0.007.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group. But experimental group ($P=0.004$) indicates slightly more significant than control group ($P=0.007$).

4.1.3.Pain Interfere with sleep:

The pre-test and post-test pain intensity was observed before and after intervention, in experimental group the t value 7.778 and significance p value 0.023 and control group the t value 4.315 and significance p value 0.017.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group.

But control group ($P=0.017$) indicates slightly more significant than experimental group ($P=0.023$).

4.1.4.Pain on standing:

The pre-test and post-test pain intensity was observed before and after intervention, in experimental group the t value 6.839 and significance p value 0.001 and control group the t value 5.916 and significance p value 0.006.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group. But experimental group ($P=0.001$) indicates slightly more significant than control group ($P=0.006$).

4.1.5.Pain on walking:

The pre-test and post-test pain intensity was observed before and after intervention, in experimental group the t value 5.310 and significance p value 0.000 and control group the t value 4.311 and significance p value 0.002.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group. But experimental group ($P=0.000$) indicates slightly more significant than control group ($P=0.002$).

4.1.6.Pain interfere with driving:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the t value 4.338 and significance p value 0.042 and control group the t value 5.856 and significance p value 0.053.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) showed a statistically significant improvement but and in control group (conventional physiotherapy) did not show significant improvement (P=0.053). So, lower trapezius strengthening exercise along with conventional physiotherapy was more effective than only conventional physiotherapy among patients with chronic neck pain.

4.1.7.Pain interfere with social activities:

The pre-test and post-test pain intensity was observed before and after intervention, in experimental group the t value 5.144 and significance p value 0.000 and control group the t value 6.971 and significance p value 0.001.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group But experimental group (P=0.000) indicates slightly more significant than control group (P=0.001).

4.1.8.Pain interfere with recreational activities:

The pre-test and post-test pain intensity was observed before and after intervention, in experimental group the t value 5.488 and significance p value 0.000 and control group the t value 9.257 and significance p value 0.001.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group But experimental group (P=0.000) indicates slightly more significant than control group (P=0.001).

4.1.9.Pain interfere with work activities:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the t value 2.791 and significance p value 0.013 and control group the t value 2.055 and significance p value 0.060.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) group showed a statistically significant improvement but and in control group (conventional physiotherapy) did not show significant improvement (P=0.060). So, lower trapezius strengthening exercise along with conventional physiotherapy was more effective than only conventional physiotherapy among patients with chronic neck pain.

4.1.10.Pain interfere with personal care:

The pre-test and post-test pain intensity was observed before and after intervention, in experimental group the t value 6.516 and significance p value 0.009 and control group the t value 8.598 and significance p value 0.020.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in

experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group But experimental group ($P=0.009$) indicates slightly more significant than control group ($P=0.020$).

4.1.11.Pain interfere with personal relationship:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the, t value 1.897 and significance p value 0.076 and control group the t value 8.884 and significance p value 0.000.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) group and control group (conventional physiotherapy) both did not show significant improvement ($P=0.076$), ($P=0.058$).

4.1.12.Pain affect on emotion:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the t value 5.409 and significance p value 0.004 and control group the t value 6.577 and significance p value 0.000.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group But control group ($P=0.000$) indicates slightly more significant than experimental group ($P=0.004$).

4.1.13. Pain affect on concentration:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the t value 3.867 and significance p value 0.001 and control group the t value 6.286 and significance p value 0.005.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group But experimental group (P=0.001) indicates slightly more significant than control group (P=0.005).

4.1.14. How stiff neck:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group, t value 3.977 and significance p value 0.001 and control group the t value 3.405 and significance p value 0.004.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group. But experimental group (P=0.001) indicates more significant than control group (P=0.004). So, lower trapezius strengthening exercise along with conventional physiotherapy was more effective than only conventional physiotherapy among patients with chronic neck pain.

4.1.15. Pain turning neck:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the t value 8.868 and significance p value 0.008 and control group the t value 5.015 and significance p value 0.003.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group But control group (P=0.003) indicates slightly more significant than experimental group (P=0.008).

4.1.16. Pain relief by pain killer:

The pre-test and post-test pain intensity was observed before and after intervention , in experimental group the t value 7.948 and significance p value 0.020 and control group the t value 5.015 and significance p value 0.044.

By examining the final test statistics portion of table by paired t test it was discovered that 4 weeks , 3 days per weekly means that after 12 sessions of this treatment in experimental (LTSE with conventional physiotherapy) and control (conventional physiotherapy) group showed a statistically significant improvement occur in both group But experimental group (P=0.020) indicates more significant than control group (P=0.044).

4.1: Unpaired-t test of Dallas questionnaire between Experimental (LTMSG) and control (CPG) Group.

Variables	Experimental	Control	t	Sig. (2-tailed)
	(LTSEG)	(CPG)		
	<u>Mean± SD</u>			
Pain on today	4.00±.935	4.24±.970	2.720	.047
Pain on average	6.47±.943	6.71±1.213	1.832	.032
Pain Interfere with sleep	2.18±1.185	3.12±1.495	2.834	.041
Pain on standing	2.00±1.173	2.59±2.123	3.000	.027
Pain on walking	1.59±1.417	2.53±2.183	2.491	.043
Pain Interfere with driving	1.71±1.404	2.35±1.935	1.116	.273
Pain interfere with social activities	2.06±1.435	3.65±1.115	3.604	.001
Pain interfere with recreational activities	1.00±1.275	1.41±1.583	2.338	.029
Pain interfere with work activities	4.24±.970	5.12±1.317	2.224	.034
Pain interfere with personal care	1.71±1.105	2.53±1.419	1.989	.048
Pain interfere with personal relationship	1.35±1.222	1.65±.996	.769	.447
Pain affect on emotion	1.65±1.412	2.47±1.625	1.578	.125
Pain affect on concentration	3.59±1.734	4.53±1.419	1.732	.039

How stiff neck	4.47±1.179	4.59±1.228	3.285	.017
Pain turning neck	3.71±1.160	3.29±.772	1.989	.037
Pain relief by pain killer	2.41±1.734	2.82±1.629	.714	.481

Table-4: Unpaired-t test of Dallas questionnaire between group

The table shows the results of an independent sample t-test on Dallas neck pain questionnaire data from the Experimental group (LTSEG) and the Control group (CPG) before and after treatment. The first column showed the Dallas pain questionnaire variables: Pain on today, Pain on average, Pain Interfere with sleep, Pain on standing, Pain on walking, Pain Interfere with driving, pain Interfere with social activities, painInterfere with recreational activities , pain Interfere with work activities, pain Interfere with personal care, Pain interfere with personal relationship, Pain affect on emotion, Pain affect on concentration, How stiff neck, Pain turning neck, Pain relief by pain killer. The second and third columns showed the mean \pm SD for each variable in the Experimental and Control groups after treatment. The fourth column showed t value and fifth columns shows p value. In unrelated test, most of the domains (Pain on today, Pain on average, Pain Interfere with sleep, Pain on standing, Pain on walking, pain Interfere with social activities, pain Interfere with recreational activities , pain Interfere with work activities, pain Interfere with personal care, Pain affect on emotion, Pain affect on concentration, How stiff neck, Pain turning neck) showed significant statistically ($p < .05$) but few domains (Pain Interfere with driving, Pain interfere with personal relationship, Pain relief by pain killer) did not show significance statistically ($p > .05$).

5. Neck disability index (NDI) questionnaire

5.1. Paired t test of NDI within Experimental and Control group (Pre-post test)

		Experimental Group			Control Group		
Serial No.	Variables	t	<u>Mean± SD</u>	Sig. (2-tailed)	t	<u>Mean± SD</u>	Sig. (2-tailed)
Pair 1	NDI (%) (Pretest – posttest)	6.983	.941±.556	.000	9.051	.941±.429	.000

Table-5: Paired t test of NDI questionnaire within group

In Neck Disability Index questionnaire, observed paired t test value was 6.983(.941±.556) in experimental group and 9.051 (.941±.429) in control group. Both groups were highly significant at 0.000% and 0.000% level. Both groups were statistically significant to reduce neck pain disability.

5.1. Neck Disability Index within Experimental and Control group

In this study, among the participants of experimental group (n=17), 11.8% participants (n=2) had mild disability, 58.8% participants (n=10) moderate disability, 29.4% participants (n=5) severe disability at pre-test. In post-test there were 76.5% participants (n=13) mild disability, 23.5% participants (n=4) moderate disability. Beside this, among the participants of control group (n=17), 11.8% participants (n=2) were with mild disability, 52.9% participants (n=9) were with moderate disability and 35.3% participant (n=6) were severe disability in pre-test. In post-test, 70.6% participant (n=12) were mild disability, 29.4% participant (n=5) were moderate disability.

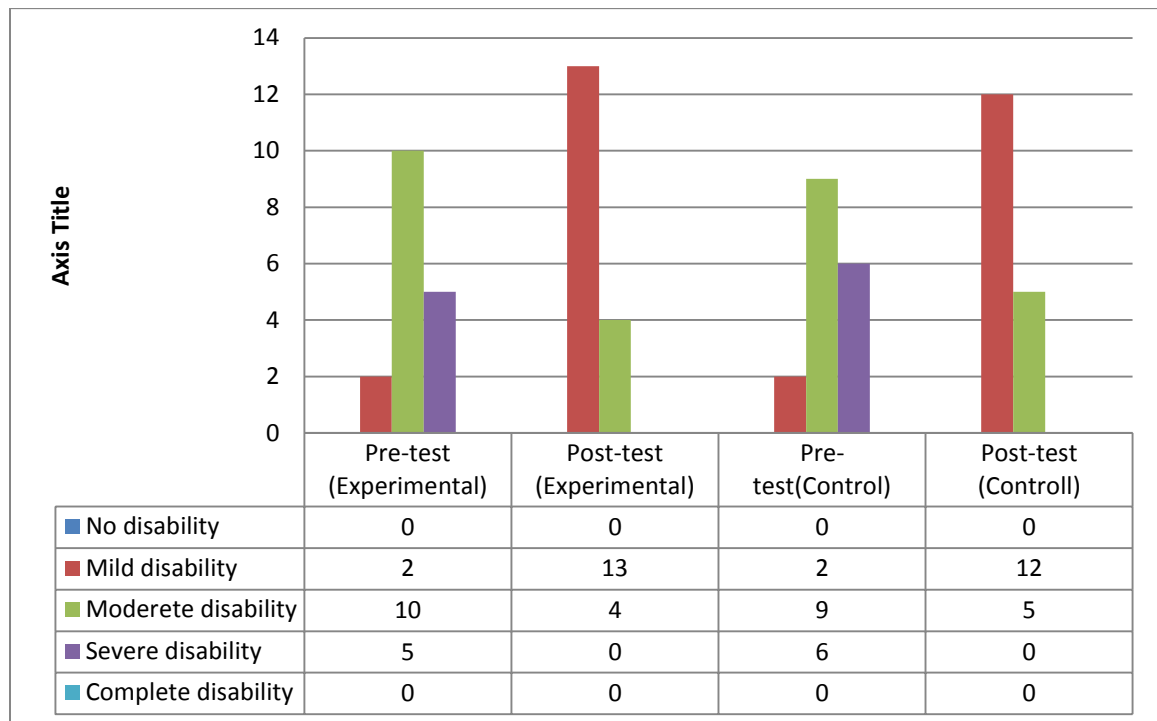


Figure-9: Disability among the participants

5.2: Unpaired-t test of Neck disability index (NDI) questionnaire between Experimental (LTSG) and control (CPG) Group.

Variables	Experimental (LTSEG)	Control (CPG)	t	Sig. (2-tailed)
	<u>Mean± SD</u>			
NDI (%) difference between (LTSEG) and (CPG)	20.24±4.466	24.94±6.750	-2.397	.023

Table-6: Unpaired-t test of NDI questionnaire between group

The table showed that independent-t test between experimental and control group mean±SD, t value and P value. Therefore, the result was significant for 2- tailed hypothesis. This means that difference between experimental group treatment (LTSE with conventional physiotherapy) and control group treatment (conventional physiotherapy only) was significant i.e. improvement occur in both group.

The findings are examined in this chapter in light of the study's goals and objectives as well as other academic literature. The researcher was committed to determining the efficiency of Lower Trapezius Strengthening Exercises in combination with Conventional Physiotherapy treatment for patients with neck pain. The null hypothesis was tested and examined using various measuring techniques, which determined whether or not the null hypothesis was accepted based on a smaller or higher p. The socio-demographic factors were discovered using a self-oriented semi-structural questionnaire. Both groups that were documented before and after therapy experienced notable gains. The current study indicated that the trial and control groups of participants had distinct baseline characteristics in terms of age, gender, family members, number of pillows used during neck pain duration, body mass index (BMI), Dallas Pain Questionnaire, and neck disability index (NDI) pretest score. Baseline similarities between the two groups' attributes proved that randomization was successful.

The findings revealed that the mean age of both groups was 36.18 years for the control group and 38.41 years for the experimental group. In both groups, there were 10 (58.8%) females and 7 (41.2%) males. There were 3 participants who were illiterate, 4 participants passed the PSC (11.8% in the experimental group control group and 11.8% in the control group), 7 participants passed the S. S. C (23.5% in the experimental group and 17.6% in the control group), and 8 participants passed the H. S. C. level (35.3% in the experimental group and 11.8% in the control group). 6 of the participants were Hon's level (17.6% in the experimental group and 17.6% in the control group), whereas 6 of the participants were Masters level (23.5% in the experimental group and 11.8% in the control group).

Among the 34 participants in both experimental and control group, 13 participants (38.2%) were housewives, 6 (17.6%) were businessman , 6 (17.6%) were students, 2 (5.9%) were teachers, 2 (5.9%) were doctors, 1 (2.9%) was a service provider, and 4 (11.8%) were labor.

Among the 34 participants in both group, 26 participants came from nuclear families (70.6% in the experimental group and 82.4% in the control group), while 8 participants came from joint families (29.4% in the experimental group and 17.6% in the control group) and 25 participants (58.8% in the experimental group and 88.2% in the control group) were came from urban areas, whereas, 9 participants (41.2% in the experimental group and 11.8% in the control group) were came from rural areas.

A total of 34 participants were studied: 3 participants (5.9% in the experimental group and 11.8% in the control group) were of underweight, 16 participants(47.1% in the experimental group and 47.1% in the control group) were normal weight. 12 people (35.3% in the experimental group and 35.3% in the control group) and 3 persons (11.8% in the experimental group and 5.9% in the control group) were overweight or obese, respectively.

The Dallas Pain Scale was used to quantify discomfort and pain in various working positions, such as: Pain on today, Pain on average, Pain Interfere with sleep, Pain on standing, Pain on walking, Pain Interfere with driving, pain Interfere with social activities, pain Interfere with recreational activities , pain Interfere with work activities, pain Interfere with personal care, Pain interfere with personal relationship, Pain affect on emotion, Pain affect on concentration, How stiff neck, Pain turning neck, Pain relief by pain killer. In Paired t-test most of the domains were found statistically significant($p < .05$) in both group. but few domain in experimental group (pain interferes with personal relationships) and control group (pain interfere with driving, pain interfere with work activities, pain interferes with personal relationships) were not found statistically significant($p > .05$).In unpaired-t test, most of the domains (Pain on today, Pain on average, Pain Interfere with sleep, Pain on standing, Pain on walking, pain Interfere with social activities, pain Interfere with recreational activities , pain Interfere with work activities, pain Interfere with personal care, Pain affect on emotion, Pain affect on concentration, How stiff neck, Pain turning neck) showed significant statistically ($p < .05$) but few domains (Pain Interfere with driving, Pain interfere with personal relationship, Pain relief by pain killer) did not show significance statistically ($p > .05$).The Dallas questionnaire was used in this study's evaluation of sessions where the progression

outline was improved in the majority of indicators for the experimental group as opposed to the control group.

The level of disability experienced by patients with neck pain was assessed in this study using the Neck Disability Index in paired-t test within groups (LTSEG and CPG). 4 participants (11.8 percent in the experimental group and 11.8 percent in the control group) had a mild disability at pre-test, 14 participants (58.8 percent in the experimental group and 23.5% in the control group) had a moderate disability, and 11 participants (29.4 percent in the experimental group and 35.3 percent in the control group) had a severe disability. 25 participants had mild disabilities (76.5% in the experimental group and 70.6% in the control group), while 9 participants had moderate disabilities (23.5% in the experimental group and 29.4% in the control group). The mean of the progression out line had shown a well differentiation within the two groups, and the mean disability level of the experimental group has shown a better improvement in comparison to the control group. In unpaired-t test between experimental group treatment (LTSE with conventional physiotherapy) and control group treatment (conventional physiotherapy only) was significant i.e. improvement occur in both group. The NDI was used in this study at assessment following the treatment session to evaluate the outcome measurement gradually.

Modified prone cobra posture, lower trapezius strengthening exercises, wall slides, combined with conventional physiotherapy treatments given to the experimental group. The individuals in the control group, received conventional physiotherapy. Each participant's demands were taken into account while determining the frequency and intensity of the interventions, which were given every four weeks, three times per week, and 30 minutes per session. Data was gathered by two assessors, who also served as the participants' blinders.

Cheng et al. (2014) ; Tanveer et al. (2017, p.430), women are more likely than men to have chronic neck pain. According to the analysis of the study's sample, women are more negatively impacted than males. The study's findings showed that 65.8% of participants were women and 34.2% were men. The sample's average age of 39 years suggests that the majority of those affected were of working age.

In a study, Tunwattanapong et al. (2016, p.64) argues that, a 4-week regimen of neck and scapula exercises considerably decreased pain and discomfort in 96 office employees ($P < 0.05$). In another study, Chung et al. (2012, p.629) argues that following 12 weeks of neck flexion exercises, the neck functional impairment score in 35 patients with chronic neck pain significantly decreased ($P < 0.05$). Through in this study, a 4-week lower trapezius strengthening exercise program, the pain level is significantly decreased ($P < 0.05$), and the neck function disability level significantly decreased ($P < 0.05$).

Patients with neck pain experience an increase in the flexion angle, as well as an increase in the activation of the neck flexion muscle upper trapezius and a decline in the strength and endurance of the lower trapezius. For Inhibiting activated muscles like the upper trapezius and offering activities that support deactivated muscles like the lower trapezius are both necessary (Lin et al. 2006, p.458).

Conventional physiotherapy was demonstrated to be an effective treatment for patients with persistent neck pain by various research (Gupta et al. 2013, p.2261; Sambyal and Kumar 2013, p.442 ; Clare et al. 2004, p.209). Kaka et al. (2015, p.17) argues that, neck stability exercises are beneficial in improving neck disability rates, reducing pain and increasing range of motion and muscular strength, and lowering the rate of impairment.

Sahrman, Azevedo and Van (2017, p.391) argues that scapulo-thoracic muscle control is essential for the clinical care of individuals with neck pain. In order to improve the ratio of the strength of the lower trapezius muscles to those of the upper trapezius, an intensive muscle-strengthening exercise program was provided. It is possible to interfere that this had an impact on the reduction of dysfunction brought on by scapulo-thoracic imbalance as well as the improvement of postural alignment.

This study reveals that lower trapezius muscle strengthening exercise reduce neck pain and dysfunction levels by strengthening the weak muscles, reducing scapulo-thoracic muscular imbalances, and increasing stabilization in the neck and scapula.

Limitation:

- The sample size is really very small, so the result is difficult to generalize among whole population.
- The main limitation of the study was that the trial therapists were not blinded to the treatment allocation.
- The researcher tried to minimize the effect of unbinding by training the trial therapists as samples were collected only from CRP- Savar, it could not represent the wider chronic neck pain population and the study lacks in generalize ability of results to wider population.
- Patient get only 12 sessions of treatment, it can be more effective and accurate if they get more sessions. Sometimes treatment sessions were interrupted due to public holiday.
- Data were collected only two times during study and it created study limitation as there is no follow up session.
- There were no available researches representing effectiveness of this intervention before this one in Bangladesh. So timeline comparison of the particular exercise's effectiveness couldn't be possible.

6.1. Conclusion

Neck pain is thought to be the cause of problems with the cervical spine's structural integrity. According to the results of this study, lower trapezius strengthening exercise combined with Conventional physiotherapy is marginally more effective in reducing pain and functional disability than conventional physiotherapy alone. Both treatments are equally successful in reducing the rate of impairment. The standard of care, such as manual therapy, exercise therapy, and electrotherapy, is often employed in clinical practice. After doing this study, a new efficient treatment strategy is provided to everyone that can be used for the patients' benefit. In contrast, the study's goals were achieved, and the null hypothesis was disproved in favor of lower trapezius strengthening exercises combined with conventional physiotherapy for neck pain sufferers. The results also show that the selection of a well-defined cohort of neck pain patients using precise inclusion and exclusion criteria led to significant changes in patients. Increasing functional capacities for neck discomfort may be beneficial for patients. In contrast, lower trapezius strengthening exercises encouraged patients to participate actively since the level of muscle force resistance can be increased in line with the patient's capacity. The entire staff's daily activities as well as the body system are impacted by neck pain. The results of the dissertation would assist practitioners outside the study setting in creating a management guideline to treat patients with neck pain because lower trapezius strengthening exercise has only recently been practiced by physiotherapists in a limited way outside of this study environment. These findings imply that lower trapezius strengthening exercises combined with conventional physical therapy are clinically beneficial for those with neck pain.

6.2. Recommendations:

In this study, both groups received a total of 12 sessions of treatment over the course of 4 weeks, three sessions per week. More lower trapezius strengthening workout sessions are advised for future research. It is possible to conduct a lengthy study with appropriate follow-up. Since the study was only conducted for a brief period of time, longer study periods will be required in the future. For the purpose of completing this dissertation study, 34 participants were chosen. It was suggested that the study recruit more participants in the future for more fruitful results. Only people from the musculoskeletal physiotherapy unit were used in this study, and CRP was used as a sample alone. In order to establish the generalize ability of this study, the researcher strongly advised including neck pain patients from all over Bangladesh in future research. Future research should use a high sample size and employ randomization when picking a sample from the population.

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Appendix-A

IRB Application Letter

Date: 13th February 2023
The Chairman
Institutional Review Board (IRB)
Bangladesh Health Professional Institute (BHPI)
CRP, Savar, Dhaka-1343, Bangladesh

Subject: Application for review and ethical approval.

Dear sir,

With due respect, I am Safa Tun Noor, student of B.Sc in physiotherapy program at Bangladesh Health Professional Institute (BHPI) the academic institute of Centre for the Rehabilitation of the Paralyzed (CRP) under the Faculty of Medicine, University of Dhaka. As per the course curriculum, I have to conduct a dissertation entitled "**Effectiveness of lower trapezius strengthening exercise along with conventional physiotherapy among patients with neck pain attended at CRP – A randomized control trail**" under the supervision of Dr. Mohammad Anwar Hossain, Associated Professor of Physiotherapy, BHPI, Senior Consultant and Head of the Department of Physiotherapy.

The purpose of the study is to investigate the effects of lower trapezius strengthening exercise on pain, functional disability, postural alignment of neck pain patients attended at CRP. The study involves face-to-face interview by using semi-structured questionnaire to explore the perception of persons with neck pain residing at CRP, Savar, Dhaka, in Bangladesh. There is no likelihood of any harm to the participants. Related information will be collected from the patients' guide books. Data collectors will receive informed consent from all participants and the collected data will be kept confidential.

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

Sincerely,

Safa Tun Noor
Safa Tun Noor
4th Year B.Sc. in Physiotherapy
Session: 2017-2018 Student ID: 112170402
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Dissertation presentation date: 9th January 2023

Shofiq 18.02.2023
Head, Department of Physiotherapy, BHPI


Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapaini, Savar, Dhaka-1343

Recommendation from the thesis supervisor

Mohammad Anwar Hossain
Mohammad Anwar Hossain
Associated Professor of Physiotherapy, BHPI
Senior Consultant and Head of the Department of Physiotherapy
CRP, Savar, Dhaka

Appendix-B

IRB Approval Letter


BANGLADESH HEALTH PROFESSIONS INSTITUTE

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

Ref: CRP/BHPI/IRB/03/2023/707 Date: 13/03/2023

To
Safa Tun Noor
B.Sc. in Physiotherapy,
Session: 2017-2018, DU Reg. No: 8647
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

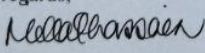
Subject: Approval of the dissertation proposal “Effectiveness of Lower Trapezius Strengthening Exercise along with Conventional Physiotherapy among Patients with Neck Pain attended at CRP – A Randomized Control Trail”- by ethics committee.

Dear
Safa Tun Noor,
Congratulations
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal Investigator Dr. Mohammad Anwar Hossain, Associated Professor of Physiotherapy, BHPI, Senior Consultant and Head of the Department of Physiotherapy, as dissertation supervisor. The following documents have been reviewed and approved:

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

The purpose of the study is to find out the level of physical disability & functional independence of spinal cord injury patients after getting discharge following complete rehabilitation from CRP. Should there any interpretation, typo, spelling, grammatical mistakes in the title, it is the responsibilities of the investigator. Since the study involves questionnaire that takes maximum 20- 25 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on January 9, 2023 at BHPI, 34th IRB Meeting.

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

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৪৬৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭
CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd

Appendix-C

Data collection Permission Letter

28th March, 2023
Head of the Department of Physiotherapy
Centre for the Rehabilitation of the Paralysed (CRP)
Chapain, Savar, Dhaka-1343

Through: Head of Physiotherapy Department, BHPI.

Subject: Application for seeking permission to collect data for conducting dissertation project.

Sir,

With due respect and humble submission to state that I am Safa Tun Noor, a student of 4th year B.Sc. in physiotherapy at Bangladesh Health Professions Institute (BHPI). The Ethical committee has approved my dissertation project entitled: "**Effectiveness of Lower Trapezius Strengthening Exercise along with Conventional Physiotherapy among Patients with Neck Pain attended at CRP**" – A Randomized Control Trail" under the supervision of Dr. Mohammad Anwar Hossain, Associated Professor of Physiotherapy, BHPI, Senior Consultant and Head of the Department of Physiotherapy. Conducting this dissertation project is partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. I have to collect data for my dissertation project from the patients with neck pain. So, I need your kind permission for data collection at Musculoskeletal unit of CRP Savar, Dhaka. I would like to assure you that nothing of the study would be harmful for the participants.

I therefore, pray and hope that your honor would be kind enough to grant give me your permission for collecting data at Musculoskeletal unit and oblige thereby.

Sincerely,

Safa Tun Noor

Safa Tun Noor
4th Year B.Sc. in Physiotherapy
Session: 2017-2018 Student ID: 112170402
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Seen
[Signature]
28/03/23

Recommended

Shofiq

28.03.2023

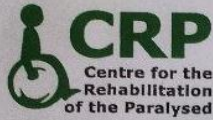
Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Approved

[Signature]
11/04/23
Dr. Mohammad Anwar Hossain, PhD
Senior Consultant & Head
Physiotherapy Department
Associate Professor, BHPI
CRP, Savar, Dhaka-1343

Appendix-D

Conventional Physiotherapy treatment for control group



Centre for the Rehabilitation of the Paralysed (CRP) Department of Physiotherapy

Head Office: CRP- Savar, CRP- Chapaln, Savar Dhaka-1343, Bangladesh
Tel: +880 02 7745464-5, Fax: 7745069, E-mail: contact@crp-bangladesh.org, www. crp-bangladesh.org

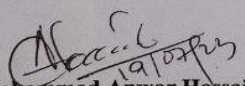
Ref: CRP/PT/ 2102/111 /

Date: 13.7.2021

Conventional Physiotherapy Treatment

Control Group

1. Therapist guided McKenzie of directional exercises for cervical region
 - Repeated retraction
 - Repeated retraction with over pressure
 - Repeated retraction with extension
2. Mulligan Concept for Neck- SNAG's
3. Traction retraction extension rotation mobilization
4. Traction
 - Manual Traction
 - Mechanical Traction
5. Maitland mobilization technique
 - Posterior-anterior side
 - Lateral side
6. Movement with mobilization exercise
7. Neck muscle strengthening exercise
8. Neck muscle stretching exercise
9. Soft tissue release technique
10. Isometric Exercise
 - Concentric Exercise
 - Eccentric Exercise
11. Muscle Energy Technique (MET)
12. Neural Stretching
13. Electrotherapy
 - TENS
 - IRR
 - Ultrasound
 - Ice


Dr. Mohammad Anwar Hossain(PhD)
Sr. Consultant & Head of Physiotherapy Department
Associate Professor. BHPI
CRP, Savar, Dhaka-1343

CRP-Mirpur, Dhaka, Plot: A/5, Block- A, Section- 14, Mirpur, Dhaka- 1206, Tel: 02 9025662-4, Fax: 02 9025561, Email: dgm-mirpur@crp-bangladesh.org, CRP-Ganakbari, PO: Dhamsena, P.S: Ashulia, Savar, Dhaka, Tel: 02 7789227, Email: ganakbari@crp-bangladesh.org, AK Khan CRP- Chittagong, Kalurghat, Mohra, Chadgaon, Chittagong, Tel: 031- 2573412, Email: chittagong@crp-bangladesh.org, Afsar Hussain CRP- Rajshahi, House no: 11, Mohishbathan, Rajshahi Court Rajpara, Rajshahi, Tel: 0721 771709, Email: rajshahi@crp-bangladesh.org, CARSA Foundation- CRP, Barisal, 12 Gonopara, Barisal Sadar, Barisal, Phone: 0431 71556, Email: barisal@crp-bangladesh.org, CRP- Moulvibazar, 836 Sayed Muztaba Ali Road, Poschim Bazar, Tel: 0861 52469, E-mail: moulvibazar@crp-bangladesh.org
As a donor to CRP you qualify for a tax rebate as the Government of Bangladesh have approved CRP as a Philanthropic Institution from February 2008

Appendix-E

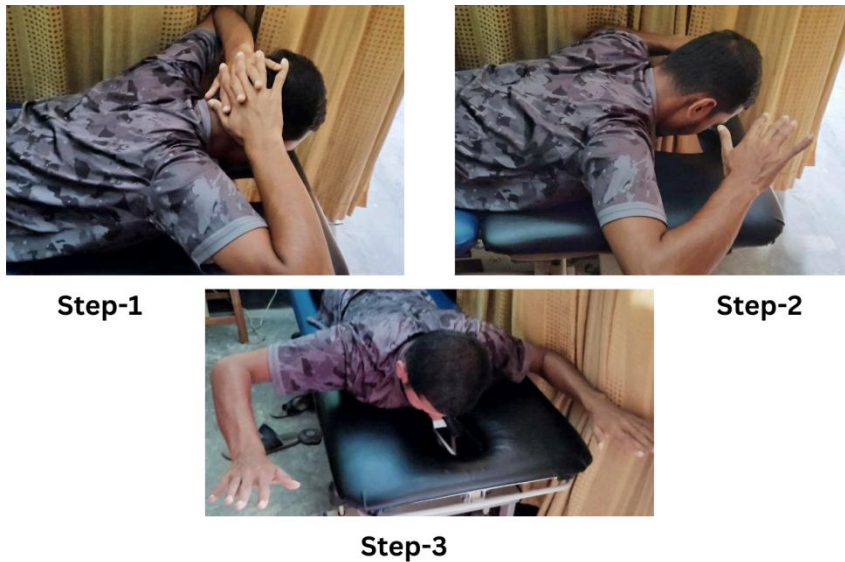
Figures of intervention of Experimental Group (LTSE)

Figure-1



Modified prone cobra position

Figure-2



Lower trapezius muscle strengthening exercise

Figure-3



Wall slide

Appendix-F

Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)
ChapainSavar Dhaka-1343

Informed Consent Form

This Informed Consent Form is for men and women who are neck pain patients attended at CRP for physiotherapy treatment. I am inviting to participate in research on B.Sc in Physiotherapy dissertation program. The title of my research project is “Effectiveness of Lower Trapezius Strengthening Exercise along with Conventional Physiotherapy among Patients with Neck Pain attended at CRP.

I am SafaTun Noor, student of B.Sc in physiotherapy at Bangladesh Health Professions Institute (BHPI), CRP. I am doing Research on Neck Pain, which is very common in this country. I am going to give you information and invite you to be a part of this research. You don't have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.

This research will involve in Effectiveness of Lower Trapezius Strengthening Exercise along with Conventional Physiotherapy among Patients with Neck Pain. After 3-4 sessions, I will measure pain and disability level in this research test.

I am inviting all adult with neck pain patient who are taking physiotherapy treatment at CRP.

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Nothing will be affected if you refuse. You may change your mind later and stop participating even if you agreed earlier. I will keep all the information's confidential which I obtained from.

Do you have any question before I start?

Yes No

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

Yes No

Signature of the participant & date

Signature of the researcher & date

Signature of the witness & date

Appendix-G

মৌখিক অনুমতি পত্র

এই অবহিত সম্মতিটি শুধুমাত্র সে সকল পুরুষ ও মহিলাদের জন্য যারা ঘাড় ব্যথার কারণে ফিজিওথেরাপি চিকিৎসার জন্য CRP আসেন। আমি ফিজিওথেরাপি গবেষণামূলক প্রোগ্রামে B.Sc গবেষণায় অংশগ্রহণের জন্য তাদেরকে আমন্ত্রণ জানাচ্ছি। আমার গবেষণা প্রকল্পের শিরোনাম হল "সিআরপিতে উপস্থিত ঘাড়ের ব্যথা সহ রোগীদের মধ্যে প্রচলিত ফিজিওথেরাপি ফিজিওথেরাপি চিকিৎসার সাথে লোয়ার ট্র্যাপিজিয়াস স্ট্রেন্ডেনিং এক্সারসাইজ এর কার্যকারিতা"।

আমি সাফা তুন নূর, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (BHPI), CRP-এর বিএসসি ফিজিওথেরাপি বিভাগের ৪র্থ বর্ষের ছাত্রী। আমি ঘাড়ের ব্যথা নিয়ে গবেষণা করছি, যা এদেশে ক্রমাগত বেড়েই চলেছে। আমি আপনাকে এই গবেষণার অংশ হতে আমন্ত্রণ জানাচ্ছি। আপনি গবেষণায় অংশগ্রহণ করবেন কি না তা আপনাকে আজই সিদ্ধান্ত নিতে হবে না। আপনি সিদ্ধান্ত নেওয়ার আগে, গবেষণা সম্পর্কে আপনি যার সাথে স্বাচ্ছন্দ্য বোধ করেন তার সাথে কথা বলতে পারেন।

এই গবেষণাটি ঘাড়ের ব্যথায় আক্রান্ত রোগীদের ক্ষেত্রে লোয়ার ট্র্যাপিজিয়াস স্ট্রেন্ডেনিং এক্সারসাইজ এর সাথে প্রচলিত ফিজিওথেরাপি চিকিৎসার কার্যকারিতার সাথে জড়িত। ৩-৪ সেশনের পরে, আমি এই গবেষণায় অংশগ্রহণকারী সকল রোগীর ব্যথা এবং কর্মহীনতা পরিমাপ করব।

এই গবেষণায় আপনার অংশগ্রহণ সম্পূর্ণ স্বেচ্ছায়। আপনি যদি অংশগ্রহণ করতে না চান তাহলে আপনাকে এই গবেষণায় অংশগ্রহণ করতে হবে না। আপনি যেকোনো সময় গবেষণায় অংশগ্রহণ করা বন্ধ করতে পারেন এবং অংশগ্রহণ করতে অস্বীকার করলে এই হাসপাতালে আপনার চিকিৎসা কোনভাবেই প্রভাবিত হবে না। আমি আপনার থেকে প্রাপ্ত সমস্ত তথ্য গোপন রাখব।

অধ্যায়ন বা অংশগ্রহণকারী হিসেবে আপনার অধিকার সম্পর্কে কোন প্রশ্ন থাকলে আপনি আমার সাথে যোগাযোগ করতে পারেন এবং/অথবা আমার সুপারভাইজার ড. মোহাম্মদ আনোয়ার হোসেন পি এইচ ডি, সহযোগী অধ্যাপক, বিএইচপিআই সিনিয়র কনসালটেন্ট এবং ফিজিওথেরাপি বিভাগের প্রধান সিআরপি, সাভার, ঢাকা-১৩৪৩।

আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে?

হ্যা না

তাহলে, আমি কি আপনার সাক্ষাতকারে এগিয়ে যেতে সম্মতি পেতে পারি?

হ্যা না

অংশগ্রহণকারীর সাক্ষর ও তারিখ.....

গবেষকের সাক্ষর ও তারিখ.....

সাক্ষীর সাক্ষর ও তারিখ.....

Appendix-H

Questionnaire (English version)

Title:- “Effectiveness of Lower Trapezius Strengthening Exercise along with Conventional Physiotherapy among Patients with Neck Pain attended at CRP” – A Randomized Control Trail.

Part: - 1 Personal information

Code No:

Date:

Patient's name:

Patient ID No:

Mobile No:

Address:

Part-2: Socio - Demographic Information

No	Question	Response
2.1	Patient's Age	..... Years
2.2	Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
2.3	Educational Status	<input type="checkbox"/> Illiterate <input type="checkbox"/> PSC <input type="checkbox"/> SSC <input type="checkbox"/> HSC <input type="checkbox"/> Hon's <input type="checkbox"/> Masters and above it
2.4	Marital Status	<input type="checkbox"/> Married <input type="checkbox"/> Unmarried <input type="checkbox"/> Separation <input type="checkbox"/> Divorced
2.5	Family Size	<input type="checkbox"/> Nuclear family <input type="checkbox"/> Joint family
2.6	Family Member	.....
2.7	Occupation	.....
2.8	Residential area	<input type="checkbox"/> Urban <input type="checkbox"/> Rural
2.9	6. Height (meter)	.....
2.10	7. Weight (kg)	.....
2.11	8. BMI (kg/m ² )	.....

Part -3 : Health related question

3.1	Co-morbidities	<input type="checkbox"/> Diabetes mellitus <input type="checkbox"/> Hypertension <input type="checkbox"/> Heart disease <input type="checkbox"/> Asthma <input type="checkbox"/> Hypothyroidism <input type="checkbox"/> Epilepsy <input type="checkbox"/> Multiple <input type="checkbox"/> Others.....
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Part- 4 : Neck pain related information

4.1	What is the cause of your neck pain?	<input type="checkbox"/> Traumatic -Fall something from height -Violence <input type="checkbox"/> Postural <input type="checkbox"/> No apparent reason
4.2	How much duration of neck pain?	<input type="checkbox"/>days <input type="checkbox"/>weeks <input type="checkbox"/>months <input type="checkbox"/>years
4.3	Does your pain radiate?	<input type="checkbox"/> Above elbow <input type="checkbox"/> Below elbow <input type="checkbox"/> No
4.4	At when your pain get more worse?	<input type="checkbox"/> At morning <input type="checkbox"/> As the day progress <input type="checkbox"/> At evening <input type="checkbox"/> At night
4.5	Which direction of movement exaggerated your pain?	<input type="checkbox"/> Neck forward bending <input type="checkbox"/> Neck backward bending <input type="checkbox"/> Neck turning to right <input type="checkbox"/> Neck turning to left <input type="checkbox"/> Raising from lying <input type="checkbox"/> Raising from sitting
4.6	Which direction of movement relieved your pain?	<input type="checkbox"/> Neck forward bending <input type="checkbox"/> Neck backward bending <input type="checkbox"/> Neck turning to right <input type="checkbox"/> Neck turning to left <input type="checkbox"/> Raising from lying <input type="checkbox"/> Raising from sitting
4.7	How many pillows do you use at the time of sleeping?	.....
4.8	In which posture do you prefer to sleep?	<input type="checkbox"/> Supine lying <input type="checkbox"/> Prone lying <input type="checkbox"/> Side lying- right <input type="checkbox"/> Side lying- left

Pre-Test data:

Part-1: Dallas Pain Questionnaire

No	Question	Score
1.1	How is your pain today? No pain 0_____ 10 most Severe pain	
1.2	How bad is your pain on average No pain 0_____ 10 most Severe pain	
1.3	Does your pain interfere with your sleep Not at all 0_____ 10 Can't sleep	
1.4	How bad is your pain while standing No pain 0_____ 10 Most severe pain	
1.5	How bad is your pain while walking No pain 0_____ 10 most severe pain	
1.6	Does your pain interfere with riding with driving or riding a vehicle Not at all 0_____ 10 Can't drive or ride	
1.7	Does your pain interfere with your social activities No at all 0_____ 10 Always	
1.8	Does your pain interfere with your recreational activities Not at all 0_____ 10 Always	
1.9	Does your pain interfere with your work activities Not at all 0_____ 10 Can't work	
1.10	Does your pain interfere with your personal care (eating, dressing, bathing etc.) Not at all 0_____ 10 Always	
1.11	Does your pain interfere with personal relationship (Family, friends, Sex etc.) Not at all 0_____ 10 Always	
1.12	Does your pain affect your emotions Not at all 0_____ 10 Completely	

1.13	Does your pain affect your ability to think or concentrate Not at all 0_____10 Completely	
1.14	How stiff is your neck Not stiff 0_____10 Can't move neck	
1.15	How much trouble do you have turning your neck No trouble 0_____10 Can't move	
1.16	How much pain do pain killer help Complete relief 0_____10 No relief	

Part-2: Disability Information (This questionnaire has been designed to give us information as to how your neck pain has affected your ability to manage in everyday life). Each section of Neck Disability Index (NDI) consists of lowest 0 point and highest 5 points. Total Score= 50 (Obtained Score.....)

No	Question	Response
2.1	How much pain do you have today?	<input type="checkbox"/> I have no pain at the moment <input type="checkbox"/> The pain is very mild at the moment <input type="checkbox"/> The pain is moderate at the moment <input type="checkbox"/> The pain is fairly severe at the moment <input type="checkbox"/> The pain is very severe at the moment <input type="checkbox"/> The pain is the worst imaginable at the moment
2.2	How independent are you at personal care (washing, dressing etc.)	<input type="checkbox"/> I can look after myself normally without causing extra pain <input type="checkbox"/> I can look after myself normally but it causes extra pain <input type="checkbox"/> It is painful to look after myself and I am slow and careful <input type="checkbox"/> I need some help but can manage most of my personal care <input type="checkbox"/> I need help every day in most aspects of self care <input type="checkbox"/> I do not get dressed, I wash with difficulty and stay in bed
2.3	How independent are you during lifting object?	<input type="checkbox"/> I can lift heavy weights without extra pain <input type="checkbox"/> I can lift heavy weights but it gives extra pain <input type="checkbox"/> Pain prevents me lifting heavy weights off the floor, but I can manage if they are conveniently placed, for example on a table <input type="checkbox"/> Pain prevents me from lifting heavy

		weights but I can manage light to medium weights if they are conveniently positioned <input type="checkbox"/> I can only lift very light weights <input type="checkbox"/> I cannot lift or carry anything
2.4	How do you feel while reading newspaper or books?	<input type="checkbox"/> I can read as much as I want to with no pain in my neck <input type="checkbox"/> I can read as much as I want to with slight pain in my neck <input type="checkbox"/> I can read as much as I want with moderate pain in my neck <input type="checkbox"/> I can't read as much as I want because of moderate pain in my neck <input type="checkbox"/> I can hardly read at all because of severe pain in my neck <input type="checkbox"/> I cannot read at all
2.5	To which state of headache do you feel?	<input type="checkbox"/> I have no headaches at all <input type="checkbox"/> I have slight headaches, which come infrequently <input type="checkbox"/> I have moderate headaches, which come infrequently <input type="checkbox"/> I have moderate headaches, which come frequently <input type="checkbox"/> I have severe headaches, which come frequently <input type="checkbox"/> I have headaches almost all the time
2.6	To which level of concentration do you keep during working despite of neck pain?	<input type="checkbox"/> I can concentrate fully when I want to with no difficulty <input type="checkbox"/> I can concentrate fully when I want to with slight difficulty <input type="checkbox"/> I have a fair degree of difficulty in concentrating when I want to <input type="checkbox"/> I have a lot of difficulty in concentrating when I want to <input type="checkbox"/> I have a great deal of difficulty in concentrating when I want to <input type="checkbox"/> I cannot concentrate at all
2.7	To which state neck pain affect your daily work?	<input type="checkbox"/> I can do as much work as I want to <input type="checkbox"/> I can only do my usual work, but no more <input type="checkbox"/> I can do most of my usual work, but no more <input type="checkbox"/> I cannot do my usual work <input type="checkbox"/> I can hardly do any work at all <input type="checkbox"/> I can't do any work at all
2.8	How do you feel your neck pain during travelling?	<input type="checkbox"/> I can travel without any neck pain <input type="checkbox"/> I can travel as long as I want with slight pain in my neck

		<input type="checkbox"/> I can travel as long as I want with moderate pain in my neck <input type="checkbox"/> I can't travel as long as I want because of moderate pain in my neck <input type="checkbox"/> I can hardly travel at all because of severe pain in my neck <input type="checkbox"/> I can't travel at all
2.9	To which state neck pain affect your sleep?	<input type="checkbox"/> I have no trouble sleeping <input type="checkbox"/> My sleep is slightly disturbed (less than 1 hr sleepless) <input type="checkbox"/> My sleep is mildly disturbed (1-2 hrs sleepless) <input type="checkbox"/> My sleep is moderately disturbed (2-3 hrs sleepless) <input type="checkbox"/> My sleep is greatly disturbed (3-5 hrs sleepless) <input type="checkbox"/> My sleep is completely disturbed (5-7 hrs sleepless)
2.10	To which state your neck pain affect your recreational activities?	<input type="checkbox"/> I am able to engage in all my recreation activities with no neck pain at all <input type="checkbox"/> I am able to engage in all my recreation activities, with some pain in my neck <input type="checkbox"/> I am able to engage in most, but not all of my usual recreation activities because of pain in my neck <input type="checkbox"/> I am able to engage in a few of my usual recreation activities because of pain in my neck <input type="checkbox"/> I can hardly do any recreation activities because of pain in my neck <input type="checkbox"/> I can't do any recreation activities at all

Post-Test data:

Part-1: Dallas Pain Questionnaire

No	Question	Score
1.1	How is your pain today? No pain 0_____ 10 most Severe pain	
1.2	How bad is your pain on average No pain 0_____ 10 most Severe pain	
1.3	Does your pain interfere with your sleep Not at all 0_____ 10 Can't sleep	
1.4	How bad is your pain while standing No pain 0_____ 10 Most severe pain	
1.5	How bad is your pain while walking No pain 0_____ 10 most severe pain	
1.6	Does your pain interfere with riding with driving or riding a vehicle Not at all 0_____ 10 Can't drive or ride	
1.7	Does your pain interfere with your social activities No at all 0_____ 10 Always	
1.8	Does your pain interfere with your recreational activities Not at all 0_____ 10 Always	
1.9	Does your pain interfere with your work activities Not at all 0_____ 10 Can't work	
1.10	Does your pain interfere with your personal care (eating, dressing, bathing etc.) Not at all 0_____ 10 Always	
1.11	Does your pain interfere with personal relationship (Family, friends, Sex etc.) Not at all 0_____ 10 Always	
1.12	Does your pain affect your emotions Not at all 0_____ 10 Completely	

1.13	Does your pain affect your ability to think or concentrate Not at all 0_____10 Completely	
1.14	How stiff is your neck Not stiff 0_____10 Can't move neck	
1.15	How much trouble do you have turning your neck No trouble 0_____10 Can't move	
1.16	How much pain do pain killer help Complete relief 0_____10 No relief	

Part-2: Disability Information (This questionnaire has been designed to give us information as to how your neck pain has affected your ability to manage in everyday life). Each section of Neck Disability Index (NDI) consists of lowest 0 point and highest 5 points. Total Score= 50 (Obtained Score.....)

No	Question	Response
2.1	How much pain do you have today?	<input type="checkbox"/> I have no pain at the moment <input type="checkbox"/> The pain is very mild at the moment <input type="checkbox"/> The pain is moderate at the moment <input type="checkbox"/> The pain is fairly severe at the moment <input type="checkbox"/> The pain is very severe at the moment <input type="checkbox"/> The pain is the worst imaginable at the moment
2.2	How independent are you at personal care (washing, dressing etc.)	<input type="checkbox"/> I can look after myself normally without causing extra pain <input type="checkbox"/> I can look after myself normally but it causes extra pain <input type="checkbox"/> It is painful to look after myself and I am slow and careful <input type="checkbox"/> I need some help but can manage most of my personal care <input type="checkbox"/> I need help every day in most aspects of self care <input type="checkbox"/> I do not get dressed, I wash with difficulty and stay in bed
2.3	How independent are you during lifting object?	<input type="checkbox"/> I can lift heavy weights without extra pain <input type="checkbox"/> I can lift heavy weights but it gives extra pain <input type="checkbox"/> Pain prevents me lifting heavy weights off the floor, but I can manage if they are conveniently placed, for example on a table <input type="checkbox"/> Pain prevents me from lifting heavy

		weights but I can manage light to medium weights if they are conveniently positioned <input type="checkbox"/> I can only lift very light weights <input type="checkbox"/> I cannot lift or carry anything
2.4	How do you feel while reading newspaper or books?	<input type="checkbox"/> I can read as much as I want to with no pain in my neck <input type="checkbox"/> I can read as much as I want to with slight pain in my neck <input type="checkbox"/> I can read as much as I want with moderate pain in my neck <input type="checkbox"/> I can't read as much as I want because of moderate pain in my neck <input type="checkbox"/> I can hardly read at all because of severe pain in my neck <input type="checkbox"/> I cannot read at all
2.5	To which state of headache do you feel?	<input type="checkbox"/> I have no headaches at all <input type="checkbox"/> I have slight headaches, which come infrequently <input type="checkbox"/> I have moderate headaches, which come infrequently <input type="checkbox"/> I have moderate headaches, which come frequently <input type="checkbox"/> I have severe headaches, which come frequently <input type="checkbox"/> I have headaches almost all the time
2.6	To which level of concentration do you keep during working despite of neck pain?	<input type="checkbox"/> I can concentrate fully when I want to with no difficulty <input type="checkbox"/> I can concentrate fully when I want to with slight difficulty <input type="checkbox"/> I have a fair degree of difficulty in concentrating when I want to <input type="checkbox"/> I have a lot of difficulty in concentrating when I want to <input type="checkbox"/> I have a great deal of difficulty in concentrating when I want to <input type="checkbox"/> I cannot concentrate at all
2.7	To which state neck pain affect your daily work?	<input type="checkbox"/> I can do as much work as I want to <input type="checkbox"/> I can only do my usual work, but no more <input type="checkbox"/> I can do most of my usual work, but no more <input type="checkbox"/> I cannot do my usual work <input type="checkbox"/> I can hardly do any work at all <input type="checkbox"/> I can't do any work at all
2.8	How do you feel your neck pain during travelling?	<input type="checkbox"/> I can travel without any neck pain <input type="checkbox"/> I can travel as long as I want with slight pain in my neck

		<input type="checkbox"/> I can travel as long as I want with moderate pain in my neck <input type="checkbox"/> I can't travel as long as I want because of moderate pain in my neck <input type="checkbox"/> I can hardly travel at all because of severe pain in my neck <input type="checkbox"/> I can't travel at all
2.9	To which state neck pain affect your sleep?	<input type="checkbox"/> I have no trouble sleeping <input type="checkbox"/> My sleep is slightly disturbed (less than 1 hr sleepless) <input type="checkbox"/> My sleep is mildly disturbed (1-2 hrs sleepless) <input type="checkbox"/> My sleep is moderately disturbed (2-3 hrs sleepless) <input type="checkbox"/> My sleep is greatly disturbed (3-5 hrs sleepless) <input type="checkbox"/> My sleep is completely disturbed (5-7 hrs sleepless)
2.10	To which state your neck pain affect your recreational activities?	<input type="checkbox"/> I am able to engage in all my recreation activities with no neck pain at all <input type="checkbox"/> I am able to engage in all my recreation activities, with some pain in my neck <input type="checkbox"/> I am able to engage in most, but not all of my usual recreation activities because of pain in my neck <input type="checkbox"/> I am able to engage in a few of my usual recreation activities because of pain in my neck <input type="checkbox"/> I can hardly do any recreation activities because of pain in my neck <input type="checkbox"/> I can't do any recreation activities at all

Appendix-H

প্রশ্নাবলী (বাংলা)

এই প্রশ্নাবলী ঘাড়ে ব্যাথা রোগীদের ব্যাথামাংস পেশীর সক্ষমতাঘাড়ের জয়েন্টের গতি এবং ঘাড়ের অক্ষমতা নির্ণয়ের জন্য তৈরি করা হয়েছে এবং এই অংশকালো কলম দ্বারা তথ্য সংগ্রহকারী পূরণ করবেন। দয়া করে প্রত্যেকটি অংশ পূরণ করবেন এবং বক্সের সেই অংশটুকু পূরণ কা আপনার জন্য প্রযোজ্য। ইহা অনুমান করা যায় যেকোনো প্রশ্নের একাধিক অংশ আপনার নিকট কাছাকাছি মনে হতে পারে কিন্তু আপনি সেই উত্তর টি দিবেন যা আপনার সমস্যার কাছাকাছি অবস্থিত।

অংশ-১: ব্যক্তিগততথ্যবলি

কোড নং:

তারিখ:

রোগীর নাম:রোগীর আইডি:

মোবাইল নং:

ঠিকানা:

অংশ-২: সামাজিক -বৈশ্বিক তথ্যবলি

নম্বর	প্রশ্ন	উত্তর
২.১	বয়স	..... বছর
২.২	লিঙ্গ	<input type="checkbox"/> পুরুষ <input type="checkbox"/> মহিলা
২.৩	শিক্ষাগত যোগ্যতা	<input type="checkbox"/> নিরক্ষর <input type="checkbox"/> প্রাথমিক <input type="checkbox"/> মাধ্যমিক <input type="checkbox"/> উচ্চমাধ্যমিক <input type="checkbox"/> স্নাতক <input type="checkbox"/> মাস্টার্স এবং তার উপরে
২.৪	বৈবাহিক অবস্থা	<input type="checkbox"/> বিবাহিত <input type="checkbox"/> অবিবাহিত <input type="checkbox"/> তালাকপ্রাপ্ত <input type="checkbox"/> বিচ্ছিন্ন
২.৫	পারিবারিক ধরন	<input type="checkbox"/> এককপরিবার <input type="checkbox"/> যৌথপরিবার
২.৬	পরিবারের সদস্য সংখ্যা	..... জন
২.৭	পেশা	.....
২.৮	মাসিক আয়	..... টাকা
২.৯	আবাসিক এলাকা	<input type="checkbox"/> শহর <input type="checkbox"/> গ্রাম
২.১০	উচ্চতা (মিটার)	.....
২.১১	ওজন (কেজি)	.....
২.১২	বিএমআই (কেজি/মিটার ^২)	.....

অংশ-৩: স্বাস্থ্যবিষয়ক তথ্যবলি

৩.১	আপনিকিএধরনেররোগেভুগছেন?	<input type="checkbox"/> ডায়াবেটিস <input type="checkbox"/> উচ্চ রক্তচাপ <input type="checkbox"/> হৃদরোগ <input type="checkbox"/> হাঁপানি <input type="checkbox"/> হাইপোথাইরয়েডিজম <input type="checkbox"/> মৃগী রোগ <input type="checkbox"/> অন্যান্য.....
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অংশ-৪: ঘাড়ব্যথা সম্পর্কিত তথ্যবলি

8.১	ঘাড় ব্যথার কারণ কি?	<input type="checkbox"/> আঘাতজনিত - উপর থেকে কিছু ঘাড়ে পড়েছে - সহিংসতা <input type="checkbox"/> অস্বাভাবিক অঙ্গবিন্যাস <input type="checkbox"/> আপাত কারণ নেই
8.২	কতদিন ধরে ঘাড় ব্যথায় ভুগছেন?	<input type="checkbox"/>দিন <input type="checkbox"/>সপ্তাহ <input type="checkbox"/>মাস <input type="checkbox"/>বছর
8.৩	ঘাড়ের ব্যথা অন্য কোথায় যায়?	<input type="checkbox"/> হ্যাঁ - কনুইয়ের উপরে - কনুইয়ের নিচে <input type="checkbox"/> না
8.৪	কোন সময় আপনি বেশি ব্যথা অনুভব করেন?	<input type="checkbox"/> সকালে <input type="checkbox"/> দিন বাড়ার সাথে <input type="checkbox"/> সন্ধ্যায় <input type="checkbox"/> রাতে
8.৫	কোনদিকে নড়াচড়ায় আপনার বেশি ব্যথা হয়?	<input type="checkbox"/> ঘাড়ের সামনের দিকে ঝুঁকলে <input type="checkbox"/> ঘাড়ের পিছনের দিকে ঝুঁকলে <input type="checkbox"/> ডান দিকে ঘুরালে <input type="checkbox"/> বাম দিকে ঘুরালে <input type="checkbox"/> শোয়া থেকে উঠতে গেলে <input type="checkbox"/> বসা থেকে উঠতে গেলে
8.৬	কোনদিকে নড়াচড়ায় আপনার ব্যথা কম হয়?	<input type="checkbox"/> ঘাড়ের সামনের দিকে ঝুঁকলে <input type="checkbox"/> ঘাড়ের পিছনের দিকে ঝুঁকলে <input type="checkbox"/> ডান দিকে ঘুরালে <input type="checkbox"/> বাম দিকে ঘুরালে <input type="checkbox"/> শোয়া থেকে উঠতে গেলে <input type="checkbox"/> বসা থেকে উঠতে গেলে
8.৭	ঘুমানোর সময় কয়টা বালিশ ব্যবহার করেন?	..... টা
8.৮	ঘুমানোর সময় কিভাবে শুয়ে থাকেন?	<input type="checkbox"/> চিত হয়ে <input type="checkbox"/> উপুড় হয়ে <input type="checkbox"/> ডানদিকে কাত হয়ে <input type="checkbox"/> বামদিকে কাত হয়ে

প্রি-টেস্টডাটা:

অংশ- ১: ডালাস ব্যথা সম্পর্কিত প্রশ্নাবলী

নম্বর	প্রশ্ন	স্কোর
১.১	আজকে আপনার ব্যথা কেমন? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.২	গড়ে আপনার ব্যথাকতটুকু? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.৩	আপনার ব্যথা কি আপনার ঘুমকে প্রভাবিত করে একদমই না ০ _____ ১০ ঘুমাতেই পারি না	
১.৪	দাঁড়ানো অবস্থায় আপনার ব্যথা কেমন? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.৫	হাটাহাটির সময় আপনার ব্যথা কেমন? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.৬	আপনার ব্যথা কি গাড়ী চালানো বা গাড়ী চলাচলের ক্ষেত্রে হস্তক্ষেপ করে? একদমই _____ না ০ _____ ১০ ড্রাইভ বা চড়তে পারি না	
১.৭	আপনার ব্যথা কি আপনার সামাজিক কার্যকলাপে হস্তক্ষেপ করে? একদমই না ০ _____ ১০ সবসময়	
১.৮	আপনার ব্যথা কি আপনার বিনোদনমূলক কার্যকলাপে হস্তক্ষেপ করে? একদমই না ০ _____ ১০ সবসময়	
১.৯	আপনার ব্যথা কি আপনার কাজের ক্ষেত্রে হস্তক্ষেপ করে? একদমই _____ না ০ _____ ১০ কাজ করতে পারি না	
১.১০	আপনার ব্যথা কি আপনার ব্যক্তিগত যত্নে হস্তক্ষেপ করে? (পরিচ্ছন্নতা, জামাকাপড় পরিধান ইত্যাদি) একদমই না ০ _____ ১০ সবসময়	
১.১১	আপনার ব্যথা কি আপনার ব্যক্তিগত সম্পর্কে হস্তক্ষেপ করে? (পরিবার, বন্ধু, দাম্পত্য জীবন ইত্যাদি)	

	একদমই না০ _____ ১০সবসময়	
১.১২	আপনার ব্যথা কি আপনার আবেগকে প্রভাবিত করে? একদমই না০ _____ ১০পুরোপুরি	
১.১৩	আপনার ব্যথা কি আপনার চিন্তা বা মনোনিবেশ করার ক্ষমতাকে প্রভাবিত করে? একদমই না০ _____ ১০পুরোপুরি	
১.১৪	আপনার ঘাড় কতটা শক্ত? শক্ত নয়০ _____ ১০ঘাড় নাড়াতে পারিনা	
১.১৫	আপনার ঘাড় ঘুরাতে কতটা কষ্ট হচ্ছে? কোন অসুবিধা _____ নেই ০ _____ ১০ঘাড় ঘুরাতে পারিনা	
১. ১৬	ব্যথানাশক ওষুধে কতটা ব্যথা উপশম হয়? পুরপুরি উপশম হয়০ _____ ১০উপশম হয়না	

অংশ-২: ঘাড়ের অক্ষমতা সম্পর্কিত তথ্যবলি (এই প্রশ্নাবলী তৈরি করা হয়েছে যাতে আমি জানতে পারি আপনার ঘাড়ের সমস্যা আপনার প্রতিদিনের কাজে কি পরিমাণ বাধাগ্রস্ত করে) নেক ডিসএবিলিটি ইনডেক্স এর প্রতিটি অংশের সর্বনিম্ন নম্বর ০ এবং সর্বোচ্চ নম্বর ৫। মোট নম্বর =৫০। প্রাপ্ত নম্বর =(.....)

নম্বর	প্রশ্ন	উত্তর
২.১	আজকে আপনার ব্যথার তীব্রতা কি পরিমাণ?	<input type="checkbox"/> আমার এই মূহুর্তে কোনো ব্যথা নেই <input type="checkbox"/> আমার এই মূহুর্তে খুবই হালকা ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে সহনীয় ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে মোটামুটি গুরুতর ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে খুব তীব্র ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে সবচেয়ে খারাপ ব্যথা আছে
২.২	ব্যক্তিগত কাজে (পরিচ্ছন্নতা, জামাকাপড় পরিধান ইত্যাদি) আপনি কি পরিমাণ স্বাবলম্বি?	<input type="checkbox"/> আমি সাধারণত অতিরিক্ত ব্যথা ছাড়াই নিজেকে দেখাশোনা করার কাজ করতে পারি <input type="checkbox"/> আমি সাধারণত নিজেকে দেখাশোনা করতে পারি কিন্তু এতে অতিরিক্ত ব্যথা হয় <input type="checkbox"/> আমি নিজেকে দেখাশোনা করার কাজ করতে গেলে ব্যথা অনুভব করি এবং সতর্কতার অবলম্বন করি

		<input type="checkbox"/> আমাকে সামান্য সাহায্য করলে আমি আমার ব্যক্তিগত যন্ত্রের অধিকাংশ কাজই পরিচালনা <input type="checkbox"/> আমার নিজের যন্ত্রের অধিকাংশ ক্ষেত্রেই প্রতিদিনই সাহায্য প্রয়োজন হয় আমি কাপড় পরিধান করতে পারি না, আমার <input type="checkbox"/> আমার কাপড় ধোত করতে অসুবিধা হয় এবং বিছানায় শুয়ে থাকতে হয়
২.৩	কোন বস্তু উঠানোর ক্ষেত্রে আপনি কি পরিমাণ স্বাবলম্বী?	<input type="checkbox"/> আমি অতিরিক্ত ব্যথা ছাড়াই ভারী ওজন উত্তোলন করতে পারি <input type="checkbox"/> আমি ওজন উত্তোলন করতে পারি কিন্তু এটা অতিরিক্ত ব্যথা দেয় <input type="checkbox"/> ব্যথা আমাকে মেঝে থেকে ভারী ওজন উত্তোলন করতে বাধা দেয়, কিন্তু আমি তা পারি যদি সেটা সুবিধামতো কোথাও স্থাপন করে থাকে। উদাহরণস্বরূপ কোন একটি টেবিলের উপর থেকে <input type="checkbox"/> ব্যথা আমাকে মেঝে থেকে ভারী ওজন উত্তোলন করতে বাধা দেয়, কিন্তু আমি মাঝারি থেকে হালকা ওজন উত্তোলন করতে পারি যদি সেটা সুবিধামতো কোথাও স্থাপন করে থাকে। <input type="checkbox"/> আমি শুধুমাত্র খুব হালকা ওজন উত্তোলন করতে পারি <input type="checkbox"/> আমি কোন কিছু উত্তোলন বা কিছু বহন করতে পারি না
২.৪	খবরের কাগজ বা বই পড়ার সময় আপনি কি রকম অনুভব করেন?	<input type="checkbox"/> আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই যতটা আমি চাই ততটাই পড়তে পারি <input type="checkbox"/> আমি আমার ঘাড়ে সামান্য ব্যথা নিয়ে যতটা আমি চাই পড়তে পারি <input type="checkbox"/> আমি আমার ঘাড়ে সহনীয় ব্যথা নিয়ে যতটা আমি চাই পড়তে পারি <input type="checkbox"/> আমি আমার ঘাড়ে মাঝারি ব্যথার কারণে আমি যতটা চাই পড়তে পারি না <input type="checkbox"/> আমি আমার ঘাড়ে তীব্র ব্যথার কারণে খুব কমই পড়তে পারি <input type="checkbox"/> আমি ব্যথার কারণে একদমই পড়তে পারি না
২.৫	আপনি ঘাড়ে ব্যথার জন্য কি পরিমাণ মাথা ব্যথা অনুভব করেন?	<input type="checkbox"/> আমার কোন মাথা ব্যথা নেই <input type="checkbox"/> আমার সামান্য মাথাব্যথা আছে, যা কদাচিৎ আসে

		<input type="checkbox"/> আমার সহনীয় মাথাব্যথা আছে, যা কদাচিৎ আসে <input type="checkbox"/> আমার সহনীয় মাথাব্যথা আছে, যা ঘনঘন আসে <input type="checkbox"/> আমার তীব্র মাথাব্যথা আছে, যা ঘনঘন আসে <input type="checkbox"/> আমার প্রায় সবসময় মাথাব্যথা হয়
২.৬	ঘাড়ের ব্যথার কারণে আপনি কাজে কি পরিমাণ মনোযোগ দিতে পারেন?	<input type="checkbox"/> আমি কোন অসুবিধা ছাড়াই যখন চাই তখনই সম্পূর্ণরূপে মনোযোগ দিতে পারি <input type="checkbox"/> আমি সামান্য অসুবিধার সঙ্গে যখন চাই তখনই সম্পূর্ণরূপে মনোযোগ দিতে পারি <input type="checkbox"/> আমি যখন মনোযোগ দিতে চাই তখন চলনসই মাত্রার অসুবিধা হয় <input type="checkbox"/> আমি যখন মনোযোগ দিতে চাই তখন অনেক অসুবিধা হয় <input type="checkbox"/> আমি যখন মনোযোগ দিতে চাই তখন গুরুতর অসুবিধা হয় <input type="checkbox"/> আমি একদমই মনোযোগ দিতে পারি না
২.৭	ঘাড়ে ব্যথা আপনার প্রতিদিনের কাজে কি পরিমাণে প্রভাবিত করে?	<input type="checkbox"/> আমি যত চাই তত কাজ করতে পারি <input type="checkbox"/> আমি শুধুমাত্র আমার স্বাভাবিক কাজ করতে পারি, কিন্তু এর বেশি না। <input type="checkbox"/> আমি আমার অধিকাংশ স্বাভাবিক কাজ করতে পারি, কিন্তু এর বেশি না <input type="checkbox"/> আমি আমার স্বাভাবিক কাজ করতে পারি না <input type="checkbox"/> আমি খুব কমই কোন কাজ করতে পারি <input type="checkbox"/> আমি একদমই কোন কাজ করতে পারি না
২.৮	গাড়িতে ভ্রমণের সময় আপনার ঘাড়ে কি পরিমাণ ব্যথা অনুভূত হয়?	<input type="checkbox"/> আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই গাড়িতে ভ্রমণ করতে পারি <input type="checkbox"/> আমি আমার ঘাড়ে সামান্য ব্যথা নিয়ে যতক্ষণ খুশি ততক্ষণ ভ্রমণ করতে পারি <input type="checkbox"/> আমি আমার ঘাড়ে সহনীয় ব্যথানিয়ে যতক্ষণ খুশি ততক্ষণ ভ্রমণ করতে পারি <input type="checkbox"/> আমি আমার ঘাড়ে মাঝারি ব্যথানিয়ে যতক্ষণ খুশি ততক্ষণ ভ্রমণ করতে পারি <input type="checkbox"/> আমি আমার ঘাড়ে তীব্র ব্যথার কারণে ভ্রমণ করতে পারি না <input type="checkbox"/> একদমই ভ্রমণ করতে পারি না
২.৯	ঘুমানোর সময় ঘাড়ের ব্যথা আপনার ঘুমকে কি পরিমাণ প্রভাবিত করে?	<input type="checkbox"/> আমার ঘুম আসতে কোন কষ্ট হয় না <input type="checkbox"/> আমার ঘুম আসতে সামান্য সমস্যা হয় (১

		<p>ঘন্টার কম সময় নির্ঘুম কাটে)</p> <p><input type="checkbox"/> আমার ঘুম আসতে সমস্যা হয় (১ থেকে ২ ঘন্টা নির্ঘুম কাটে)</p> <p><input type="checkbox"/> আমার ঘুম পরিমিতরূপে নষ্ট হয় (২ থেকে ৩ ঘন্টা নির্ঘুম কাটে)</p> <p><input type="checkbox"/> আমার ঘুম ব্যপকভাবে নষ্ট হয় (৩ থেকে ৫ ঘন্টা নির্ঘুম কাটে)</p> <p><input type="checkbox"/> আমার ঘুম সম্পূর্ণভাবে নষ্ট হয় (৫ থেকে ৭ ঘন্টা নির্ঘুম কাটে)</p>
২.১০	ঘাড়েরব্যথা আপনার চিত্তবিনোদনের কার্যক্রমকে কি পরিমাণে প্রভাবিত করে?	<p><input type="checkbox"/> আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই সব চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে কিছু ব্যথা নিয়ে সব চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে ব্যথার কারণে অধিকাংশ কার্যক্রমে অংশগ্রহণ করতে পারছি, কিন্তু আমার সকল স্বাভাবিক চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি না</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে ব্যথার কারণে চিত্তবিনোদনের কার্যক্রমের কয়েকটি কাজে নিয়োজিত হতে পারছি</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে ব্যথার কারণে চিত্তবিনোদনের কার্যক্রমের খুবই কম কাজে নিয়োজিত হতে পারছি</p> <p><input type="checkbox"/> আমি একদমই কোন চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি না</p>

পোস্ট-টেস্টডাটা:

অংশ- ১: ডালাস ঘাড় ব্যথা সম্পর্কিত প্রশ্নাবলী

নম্বর	প্রশ্ন	স্কোর
১.১	আজকে আপনার ব্যথা কেমন? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.২	গড়ে আপনার ব্যথাকতটুকু? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.৩	আপনার ব্যথা কি আপনার ঘুমকে প্রভাবিত করে একদমই না ০ _____ ১০ ঘুমাতেই পারি না	
১.৪	দাঁড়ানো অবস্থায় আপনার ব্যথা কেমন? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.৫	হাটাহাটির সময় আপনার ব্যথা কেমন? ব্যথা নেই ০ _____ ১০ সবচেয়ে বেশি ব্যথা	
১.৬	আপনার ব্যথা কি গাড়ী চালানো বা গাড়ী চলাচলের ক্ষেত্রে হস্তক্ষেপ করে? একদমই _____ না ০ _____ ১০ ড্রাইভ বা চড়তে পারিনা	
১.৭	আপনার ব্যথা কি আপনার সামাজিক কার্যকলাপে হস্তক্ষেপ করে? একদমই না ০ _____ ১০ সবসময়	
১.৮	আপনার ব্যথা কি আপনার বিনোদনমূলক কার্যকলাপে হস্তক্ষেপ করে? একদমই না ০ _____ ১০ সবসময়	
১.৯	আপনার ব্যথা কি আপনার কাজের ক্ষেত্রে হস্তক্ষেপ করে? একদমই _____ না ০ _____ ১০ কাজ করতে পারিনা	
১.১০	আপনার ব্যথা কি আপনার ব্যক্তিগত যত্নে হস্তক্ষেপ করে? (পরিচ্ছন্নতা, জামাকাপড় পরিধান ইত্যাদি) একদমই না ০ _____ ১০ সবসময়	
১.১১	আপনার ব্যথা কি আপনার ব্যক্তিগত সম্পর্কে হস্তক্ষেপ করে? (পরিবার, বন্ধু, দাম্পত্য জীবন ইত্যাদি)	

	একদমই না০ _____ ১০সবসময়	
১.১২	আপনার ব্যথা কি আপনার আবেগকে প্রভাবিত করে? একদমই না০ _____ ১০পুরোপুরি	
১.১৩	আপনার ব্যথা কি আপনার চিন্তা বা মনোনিবেশ করার ক্ষমতাকে প্রভাবিত করে? একদমই না০ _____ ১০পুরোপুরি	
১.১৪	আপনার ঘাড় কতটা শক্ত? শক্ত নয়০ _____ ১০ঘাড় নাড়াতে পারিনা	
১.১৫	আপনার ঘাড় ঘুরাতে কতটা কষ্ট হচ্ছে? কোন অসুবিধা _____ নেই ০ _____ ১০ঘাড় ঘুরাতে পারিনা	
১.১৬	ব্যথানাশক ওষুধে কতটা ব্যথা উপশম হয়? পুরপুরি উপশম হয়০ _____ ১০উপশম হয়না	

অংশ-২: ঘাড়ের অক্ষমতা সম্পর্কিত তথ্যবলি (এই প্রশ্নাবলী তৈরি করা হয়েছে যাতে আমি জানতে পারি আপনার ঘাড়ের সমস্যা আপনার প্রতিদিনের কাজে কি পরিমাণ বাধাগ্রস্ত করে) নেক ডিসএবিলিটি ইনডেক্স এর প্রতিটি অংশের সর্বনিম্ন নম্বর ০ এবং সর্বোচ্চ নম্বর ৫। মোট নম্বর =৫০। প্রাপ্ত নম্বর =(.....)

নম্বর	প্রশ্ন	উত্তর
২.১	আজকে আপনার ব্যথার তীব্রতা কি পরিমাণ?	<input type="checkbox"/> আমার এই মূহুর্তে কোনো ব্যথা নেই <input type="checkbox"/> আমার এই মূহুর্তে খুবই হালকা ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে সহনীয় ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে মোটামুটি গুরুতর ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে খুব তীব্র ব্যথা আছে <input type="checkbox"/> আমার এই মূহুর্তে সবচেয়ে খারাপ ব্যথা আছে
২.২	ব্যক্তিগত কাজে (পরিচ্ছন্নতা, জামাকাপড় পরিধান ইত্যাদি) আপনি কি পরিমাণ স্বাবলম্বি?	<input type="checkbox"/> আমি সাধারণত অতিরিক্ত ব্যথা ছাড়াই নিজেকে দেখাশোনা করার কাজ করতে পারি <input type="checkbox"/> আমি সাধারণত নিজেকে দেখাশোনা করতে পারি কিন্তু এতে অতিরিক্ত ব্যথা হয় <input type="checkbox"/> আমি নিজেকে দেখাশোনা করার কাজ করতে গেলে ব্যথা অনুভব করি এবং

		<p>সতর্কতার অবলম্বন করি</p> <p><input type="checkbox"/> আমাকে সামান্য সাহায্য করলে আমি আমার ব্যক্তিগত যন্ত্রের অধিকাংশ কাজই পরিচালনা</p> <p><input type="checkbox"/> আমার নিজের যন্ত্রের অধিকাংশ ক্ষেত্রেই প্রতিদিনই সাহায্য প্রয়োজন হয়</p> <p>আমি কাপড় পরিধান করতে পারি না, আমার</p> <p><input type="checkbox"/> আমার কাপড় ধৌত করতে অসুবিধা হয় এবং বিছানায় শুয়ে থাকতে হয়</p>
২.৩	কোন বস্তু উঠানোর ক্ষেত্রে আপনি কি পরিমাণ স্বাবলম্বী?	<p><input type="checkbox"/> আমি অতিরিক্ত ব্যথা ছাড়াই ভারী ওজন উত্তোলন করতে পারি</p> <p><input type="checkbox"/> আমি ওজন উত্তোলন করতে পারি কিন্তু এটা অতিরিক্ত ব্যথা দেয়</p> <p><input type="checkbox"/> ব্যথা আমাকে মেঝে থেকে ভারী ওজন উত্তোলন করতে বাধা দেয়, কিন্তু আমি তা পারি যদি সেটা সুবিধামতো কোথাও স্থাপন করে থাকে। উদাহরণস্বরূপ কোন একটি টেবিলের উপর থেকে</p> <p><input type="checkbox"/> ব্যথা আমাকে মেঝে থেকে ভারী ওজন উত্তোলন করতে বাধা দেয়, কিন্তু আমি মাঝারি থেকে হালকা ওজন উত্তোলন করতে পারি যদি সেটা সুবিধামতো কোথাও স্থাপন করে থাকে।</p> <p><input type="checkbox"/> আমি শুধুমাত্র খুব হালকা ওজন উত্তোলন করতে পারি</p> <p><input type="checkbox"/> আমি কোন কিছু উত্তোলন বা কিছু বহন করতে পারি না</p>
২.৪	খবরের কাগজ বা বই পড়ার সময় আপনি কি রকম অনুভব করেন?	<p><input type="checkbox"/> আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই যতটা আমি চাই ততটাই পড়তে পারি</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে সামান্য ব্যথা নিয়ে যতটা আমি চাই পড়তে পারি</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে সহনীয় ব্যথা নিয়ে যতটা আমি চাই পড়তে পারি</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে মাঝারি ব্যথার কারণে আমি যতটা চাই পড়তে পারি না</p> <p><input type="checkbox"/> আমি আমার ঘাড়ে তীব্র ব্যথার কারণে খুব কমই পড়তে পারি</p> <p><input type="checkbox"/> আমি ব্যথার কারণে একদমই পড়তে পারি</p>

		না
২.৫	আপনি ঘাড়ে ব্যথার জন্য কি পরিমাণ মাথা ব্যথা অনুভব করেন?	<input type="checkbox"/> আমার কোন মাথা ব্যথা নেই <input type="checkbox"/> আমার সামান্য মাথাব্যথা আছে, যা কদাচিৎ আসে <input type="checkbox"/> আমার সহনীয় মাথাব্যথা আছে, যা কদাচিৎ আসে <input type="checkbox"/> আমার সহনীয় মাথাব্যথা আছে, যা ঘনঘন আসে <input type="checkbox"/> আমার তীব্র মাথাব্যথা আছে, যা ঘনঘন আসে <input type="checkbox"/> আমার প্রায় সবসময় মাথাব্যথা হয়
২.৬	ঘাড়ের ব্যথার কারণে আপনি কাজে কি পরিমাণ মনোযোগ দিতে পারেন?	<input type="checkbox"/> আমি কোন অসুবিধা ছাড়াই যখন চাই তখনই সম্পূর্ণরূপে মনোযোগ দিতে পারি <input type="checkbox"/> আমি সামান্য অসুবিধার সঙ্গে যখন চাই তখনই সম্পূর্ণরূপে মনোযোগ দিতে পারি <input type="checkbox"/> আমি যখন মনোযোগ দিতে চাই তখন চলনসই মাত্রার অসুবিধা হয় <input type="checkbox"/> আমি যখন মনোযোগ দিতে চাই তখন অনেক অসুবিধা হয় <input type="checkbox"/> আমি যখন মনোযোগ দিতে চাই তখন গুরুতর অসুবিধা হয় <input type="checkbox"/> আমি একদমই মনোযোগ দিতে পারি না
২.৭	ঘাড়ে ব্যথা আপনার প্রতিদিনের কাজে কি পরিমাণে প্রভাবিত করে?	<input type="checkbox"/> আমি যত চাই তত কাজ করতে পারি <input type="checkbox"/> আমি শুধুমাত্র আমার স্বাভাবিক কাজ করতে পারি, কিন্তু এর বেশি না। <input type="checkbox"/> আমি আমার অধিকাংশ স্বাভাবিক কাজ করতে পারি, কিন্তু এর বেশি না <input type="checkbox"/> আমি আমার স্বাভাবিক কাজ করতে পারি না <input type="checkbox"/> আমি খুব কমই কোন কাজ করতে পারি <input type="checkbox"/> আমি একদমই কোন কাজ করতে পারি না
২.৮	গাড়িতে ভ্রমণের সময় আপনার ঘাড়ে কি পরিমাণ ব্যথা অনুভূত হয়?	<input type="checkbox"/> আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই গাড়িতে ভ্রমণ করতে পারি <input type="checkbox"/> আমি আমার ঘাড়ে সামান্য ব্যথা নিয়ে যতক্ষণ খুশি ততক্ষণ ভ্রমণ করতে পারি <input type="checkbox"/> আমি আমার ঘাড়ে সহনীয় ব্যথানিয়ে যতক্ষণ খুশি ততক্ষণ ভ্রমণ করতে পারি

		<input type="checkbox"/> আমি আমার ঘাড়ে মাঝারি ব্যথানিয়েযতক্ষণ খুশি ততক্ষণ ভ্রমন করতে পারি <input type="checkbox"/> আমি আমার ঘাড়ে তীর ব্যথার কারনেভ্রমন করতে পারি না <input type="checkbox"/> একদমই ভ্রমন করতে পারি না
২.৯	ঘুমানোর সময় ঘাড়ের ব্যথা আপনার ঘুমকে কি পরিমান প্রভাবিত করে?	<input type="checkbox"/> আমার ঘুম আসতে কোন কষ্ট হয় না <input type="checkbox"/> আমার ঘুম আসতেসামান্য সমস্যা হয় (১ ঘন্টার কম সময় নিঘুম কাটে) <input type="checkbox"/> আমার ঘুম আসতে সমস্যা হয় (১ থেকে ২ ঘন্টা নিঘুম কাটে) <input type="checkbox"/> আমার ঘুম পরিমিতরুপে নষ্ট হয় (২ থেকে ৩ ঘন্টা নিঘুম কাটে) <input type="checkbox"/> আমার ঘুম ব্যপকভাবে নষ্ট হয় (৩ থেকে ৫ ঘন্টা নিঘুম কাটে) <input type="checkbox"/> আমার ঘুম সম্পূর্ণভাবে নষ্ট হয় (৫ থেকে ৭ ঘন্টা নিঘুম কাটে)
২.১০	ঘাড়েরব্যথা আপনার চিত্তবিনোদনের কার্যক্রমকে কি পরিমান প্রভাবিত করে?	<input type="checkbox"/> আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই সব চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি <input type="checkbox"/> আমি আমার ঘাড়ে কিছু ব্যথা নিয়েসব চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি <input type="checkbox"/> আমি আমার ঘাড়ে ব্যথার কারনে অধিকাংশ কার্যক্রমে অংশগ্রহণ করতে পারছি, কিন্তু আমার সকল স্বাভাবিক চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি না <input type="checkbox"/> আমি আমার ঘাড়ে ব্যথার কারনে চিত্তবিনোদনের কার্যক্রমের কয়েকটি কাজে নিয়োজিত হতে পারছি <input type="checkbox"/> আমি আমার ঘাড়ে ব্যথার কারনে চিত্তবিনোদনের কার্যক্রমের খুবই কম কাজে নিয়োজিত হতে পারছি <input type="checkbox"/> আমি একদমই কোন চিত্তবিনোদনের কার্যক্রমে অংশগ্রহণ করতে পারছি না