Faculty of Medicine

University of Dhaka

EFFECTIVENESS OF MAITLAND MOBILIZATION FOR NECK PAIN PATIENTS

BintyRahman

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

DU Roll No: 125

DU Registration No:1755

BHPI, CRP, Savar, Dhaka-1343

Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy

CRP, Savar, Dhaka-1343

Bangladesh

[October, 2019]

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

"EFFECTIVENESS OF MAITLAND MOBILIZATION FOR NECK PAIN PATIENTS"

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

....

Mohammad Anwar Hossain
Associate Professor of Physiotherapy, BHPI
Senior Consultant & Head, Department of Physiotherapy
CRP, Savar, Dhaka

E. Rahman
....

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

....

Firoz Ahmed Mamin
Associate Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

....

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

....

Professor Md. Obaidul Haque
Head of Physiotherapy Department
Vice Principal
BHPI, CRP, Savar, Dhaka

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

Signature: *Binty Rahman*   Date: 30-11-2019

Binty Rahman

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

DU Roll: 125

Registration No: 1755

Session : 2014-15

BHPI, CRP, Savar, Dhaka.

CONTENTS

Acknowledgement

Acronyms

BHPI : Bangladesh Health Profession Institute

BMRC : Bangladesh Medical Research Council

CPA: Central Posterior Anterior

CRP : Centre for the Rehabilitation of the Paralysed

IRB : Institutional Review Board

NSNP: Non-specific Neck Pain

NPRS : Numeric pain Rating Scale

NDI: Neck Pain Disability Index

NP: Neck Pain

SNAGs: Sustained Apophyseal Glides

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Abstract

Purpose: The study evaluated the Maitland mobilization technique applied to the cervical region for pain and functional impairment caused by neck pain. **Objectives:** To find out the effectiveness of Maitland Mobilization for neck pain. To assess the effect on pain after introducing Maitland Mobilization at different functional position. (Sitting, Standing, Walking, sleeping, neck turning, neck bending).To estimate the disability after introducing Maitland Mobilization and to evaluate the intensity of pain at resting position after introducing Maitland Mobilization.**Methodology:** The study was a Quasi-experimental quantitative research design. In this experimental study 38 patients with neck pain were randomly assigned. Among these 38 patients, there was a single group design. These group attended for 6 sessions (each session for 30 minutes) of treatment in the physiotherapy outdoor department of CRP Savar. And the outcome of pain intensity measured by using Numeric Pain Rating scale (NPRS) and disability status measured by using Neck pain disability Index (NDI) scale among patients with neck pain. **Analysis of data:**Inferential statistics such as, Wilcoxon test and Paired t-test was done using SPSS version 20. **Results:**It was observed that pain and neck disability had reduced within this group. Numeric pain Rating Scale (NPRS) and neck pain disability index, improved significantly in this group. In this study significant level was (P< 0.05). **Conclusion:**This research showed that Maitland mobilization was very effective for neck pain patients. The study concludes that the Maitland technique is significantly capable of reducing pain and functional disability among patients with neck pain.

Keywords: Neck pain, Maitland mobilization, neck disability.

CHAPTER- I	INTRODUCTION

1.1.Background

Worldwideneck pain is a very common condition. One-month prevalencein china has between 15.4% and 45.3% and 12-month prevalence between 12.1% and 71.5% in adults. However its high prevalence, neck pain frequently becomes chronic and affects 10% of males and 17% of females (Cheng & Huang, 2014).Over the past 20 years the prevalence of neck pain has increased steadily and more than 50% of adults have experienced neck pain within the past 6 month (Cheng et al., 2014). In Pakistan according to Hussain et at. (2016) point prevalence ranges from 6% to 22% and up to 38% of the elderly population, while lifetime prevalence ranges from 14.2% to 71%.

One study indicated in a systematic literature review that the one-year incidence of neck pain was between 10.4% and 21.3%, and the one-year prevalence ranged from 4.8% to 79.5% (mean, 25.8%). 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% (Cheng et al., 2014). Hence, neck pain has been a source of disability and may require substantial health care resources and treatments (Cheng & Huang, 2014). In contrast, no relevant study was found on neck pain prevalence among Bangladeshi people till date and one study found that 22.22% office workers experienced neck pain on regular basis and 52.22% of the respondent sometimes (Rahmanet al., 2017).

Neck pain is a common musculoskeletal disorder, and its economic cost is increasing day by day in modern society and many people work for a long time on monotonous tasks and consequently suffer from chronic neck pain (Cheng et al., 2014). The life and work of the worker is usually affected by musculoskeletal disorder, which leads to a tremendous economic burden due to healthcare costs at a national level, and chronic neck pain is of a great concern for public health(Cheng et al., 2014). The pain exacerbates and fades periodically, and many patients do not fully recover from the symptoms and neck pain occurs in the upper thoracic spine area including theshoulder, and it is mechanical pain caused by bad postures and habits in most cases (Lee et al., 2017).

According to Gross et al.(2010) mentioned that neck pain with or without symptoms that radiate to the arms or head may involve one or several neurovascular and musculoskeletal structures such as nerves, ganglion, nerve roots, uncovertebral joints, intervertebral joints, discs, bones, periosteum, muscle and ligaments.

Vaajoki (2013) sated that pain in the neck is an unpleasant sensory and emotional experience in the neck area associated with actual or potential tissue damage or described in terms of such damage and it is an unspecified pain symptom (or syndrome) rather than a clinical sign. On the other hand, Tanveer et al. (2017) stated that neck pain (NP) is an unpleasant sensory and emotional experience in the neck region connected with genuine or potential tissue harm or describe as far as such harm.

Lee et al. (2017) stated that theupper thoracic spine is involved in the physiologic motion of the neck and the decreased movement of the upper cervical spine can cause excessive movement of the lower cervical spine, increase fatigue in the sternocleidomastoid, anterior scales, and upper trapezius, cause changes of neck postures and breathing patterns, and a decrease in the range of motion.

The neck is situated in the top end of the spinal column or spine, which supports the head and also protects the spinal cord. The neck is composed of 7 bones which are known as cervical vertebrae. These seven vertebrae are called as the bony building blocks of the spine in the neck surrounding the spinal cord (Barbuto et al., 2008). In different way we can say that the neck (cervical spine) is composed of vertebrae which begin in the upper torso and end at the base of the skull (Neck Pain, 2000).Nerves of neck passes through between those vertebrae and many ligaments and muscles are linked to the spine, shoulder blade and back to make it more stable (Barbuto et al., 2008). Stability of the spine provided by these bony vertebrae along with the ligaments (like thick rubber bands). Support and motion are allowed by the muscles (Neck Pain, 2000).Structures of the neck include the neck muscles, arteries, veins, lymph glands, thyroid gland, parathyroid glands, esophagus, larynx, and trachea (Barbuto et al., 2008).

Cervical radiculopathy conduct to neck and radiating arm pain or numbness in the distribution of a specific nerve root. Often, this radicular pain is associated by motor or sensory disturbances (Johnson, et al., 2014). We include neck pain with

cervicogenic headache and this pain is originated from the neck and sub-occipital region and radiates to the forehead, orbital region, temples, vertex or ears and is aggravated by specific neck movements or sustained neck postures (Gross et al., 2010).Nowadays there are different interventional strategies to manage nonspecific neck pain like conservative and non-conservative ways comprising, pain management with medication intervention, and surgery (Hussain, et at., 2016)

Physiotherapy plays a wide ranging role at all stages of neck pain to help the patient to return early to normal activities and forms part of the treatment offered for patients with neck pain and it includes specific exercise programs like Mckenzie approach, manual therapy (spinal manipulation and mobilization), traditional massage, physical modalities and proper patient education (Moffett & Mclean, 2006). Nowadays Manipulation and Mobilizationare commonly used treatments for neck pain and may be performed by physical therapists, chiropractors, traditional bonesetters, osteopaths, medical doctors, and massage therapists (Gross et al., 2010). Manipulations, mobilizations and exercise are effective over traditional care in reducing acute neck pain at short-term follow-up (Ganesh et al., 2014).

Shehri et al. (2018) said thatvarious type of procedures is used in manual therapy related to the musculoskeletal structures for treating mechanical pain. It includes soft tissue therapies, such as the many types of massage, focal soft tissue therapy, such as trigger point therapy, shiatsu, acupressure, mobilization, manipulation, and manual traction.

Gross et al. (2010) stated that spinal mobilization or manipulation has demonstrated mechanical effects including permanent or short-term change in length of connective tissue and neurophysiological effects including analgesic effects, motor effects, and sympathetic nervous system effect dysfunction.

The results of one study revealed that exercises combined with mobilization/manipulation demonstrated either intermediate or long-term benefits. Studies have shown that manual therapy techniques provide effective relief for neck pain and these techniques include manipulation (i.e. a high velocity thrust directed at the joints ofthe spine) and mobilization techniques that do not involve a highvelocity thrust(Ganesh et al., 2014).

Professionals debate whether the use of neck manipulation does more harm than good and manipulation is associated with a small risk of serious cerebrovascular injury,

whereas mobilization is generally considered to be a safer technique (Ganesh et al., 2014).

The study objective is to evaluate the efficacy Maitland mobilization on improving neck pain, and neck disability. It is hypothesized that Maitland Mobilization have a significant improvement on reduction of neck pain and neck disability in subjects with all neck pain.

1.2 Rationale

Neck pain is a musculoskeletal disorder and it is true that compared with the incidence of low back pain the percentage of neck pain sufferers is relatively low. But according to modern science the rate of neck pain is gradually increasing day by day in Bangladesh as in the whole world. Physiotherapy plays a vital role in the management of neck pain. This type of experimental study is very important to provide a platform for the physiotherapy profession itself. Neck pain is a common musculoskeletal problem, whose occurrence around 30-50% the adult population in general. It increases day by day. Many physiotherapy treatment help to reduce neck pain where one of them is Maitland mobilization. Maitland Mobilization procedure aims to reduce pain and restore normal anatomical structure and function of the joint. It helps to minimize pain and increase range of motion. Maitland Mobilization can be used for every joint in human body but its main focus is on the movement of the vertebral column and the interaction between the nerves, discs, and joints. As the amount of neck pain patients in our CRP is gradually increase and there is various manual physiotherapy as well as electrotherapy is applied regularly, I want to get ultimate answer from my study to know what is the actual effectiveness of only Maitland mobilization for neck pain. That's why I am interested about this study.

1.3 Objectives

1.3.1 General objective

To evaluate the effectiveness of Maitland Mobilization for neck pain.

1.3.2 Specific objectives

- To assess the effect on pain after introducing Maitland Mobilization at different functional position. (Sitting, Standing, Walking, sleeping, neck turning, neck bending).
- To estimate the disability after introducing Maitland Mobilization
- To evaluate the intensity of pain at resting position after introducing Maitland Mobilization

1.4 Hypothesis

Null hypothesis

Ho: $\mu1-\mu2 = 0$ or $\mu1=\mu2$, where there is no effectiveness of Maitland Mobilization for neck pain patients.

Alternative hypothesis

Ha: $\mu1- \mu2 \neq 0$ or $\mu1 \neq \mu2$, where there is effectiveness of Maitland Mobilization for neck pain patients.

1.5. 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.

Or,

Pain in the neck is an unpleasant sensory and emotional experience in the neck area associated with actual or potential tissue damage or described in terms of such damage and it is an unspecified pain symptom (or syndrome) rather than a clinical sign

Mobilization

A manual therapy technique comprising a continuum of skilled passive movements to the joint complex that are applied at varying speeds and amplitudes, that may include a small-amplitude with the intent to restore optimal motion, function, and/or to reduce the pain.

Or

Mobilization involves a lower- velocity, sustained or repeated manual technique intended to reduce pain and spasm and/or increase range of motion.

Maitland Mobilization

Also known as the Maitland technique, the Maitland concept uses passive and accessory Mobilizations of the spine to treat mechanical pain and stiffness. There are 5 grades of mobilization in the Maitland concept.

Musculoskeletal pains are very common in society and it mainly includes the pains of back, neck and shoulder and 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 sedentary life style and especially dependence on computer and laptops at the workplace (Waqas et al., 2016). Neck pain is a common musculoskeletal disorder in modern society that can produce severe pain and disability (Lee &Lee, 2017). Prevalence of neck pain is about 70% of adults will experience neck pain during their lifetime, and its point prevalence in the general population is around 22% (Gemmell& Miller, 2010). According to Damgaard et al. (2013) the prevalence of chronic neck pain varies and the 12-month prevalence of pain typically ranges between 30% and 50%; the 12-month prevalence of activity-limiting pain is 1.7% to 11.5%.

The annual prevalence in 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 United Kingdom was 34%, the prevalence in Australia of neck pain was 27.1% . One population based cohort study in Canada showed that the annual incidence of neck pain was 14.6% and each year, 0.6% of the population developed disabling neck pain .The prevalence of chronic neck pain in India among the computer operators was found 47%. (Rahman et al., 2017).

Musculoskeletal disorders are threatened the quality of life by having the potential to restrict daily activities. It cause absence from work, and result in a change or discontinuation in employment (Damgaard et al., 2013). Neck problems are not life threatening, but they do cause major problems such as pain and stiffness, often resulting in utilization of healthcare resources, absenteeism from work, and disability (Ingeborg et al.,2003). Patients with chronic neck pain experience many problems such as functional impairments including weakening of deep bending neck muscles due to the activation of neck surface muscle, increased deformity of the forward head posture, proprioception impairment, and poor balance and additionally, decreased

movement of the cervical spine restricts the range of motion of the spine and decreases breathing function (Lee et al., 2017).

Women are more likely than men to develop neck pain and more likely to suffer from persistent neck problems and less likely to experience resolution (Rahman et al., 2017).

These musculoskeletal disorders are very expensive for society and for patients and these are responsible for the highest number of healthy years lost (Damgaard et al., 2013). Mustafa & Sultan (2013) mentioned that among those loss of days due to musculoskeletal disorders, work related pain is one of the common musculoskeletal disorders that affects millions of workers throughout the world across variant works or sectors of services. In the Netherlands the total costs of neck pain are estimated at $686m per year and there is a need to determine the most cost effective intervention for neck pain (Ingeborg et al.,2003). The prevalence of neck pain in the region of Asia, demonstrated in the peak position in West and the Midwest of the Asia whereas in the South part of Asia showed relatively lower. In the age between 30 - 50 years were majority of the participants. On the other hand, no relevant study was found on neck pain prevalence among Bangladeshi people till date. One study showed that 22.22% office workers experienced neck pain on regular basis and 52.22% of the respondent sometimes (Rahman et al., 2017).

Vaajoki (2013) sated that pain in the neck is an unpleasant sensory and emotional experience in the neck area associated with actual or potential tissue damage or described in terms of such damage and it is an unspecified pain symptom (or syndrome) rather than a clinical sign. On the other hand, Tanveer et al. (2017) stated that neck pain (NP) is an unpleasant sensory and emotional experience in the neck region connected with genuine or potential tissue harm or describe as far as such harm.

The definition of chronic neck pain is in the neck with or without pain referred into one or both upper limbs that lasts for at least 3 months (Rahman et al., 2017).

Tanveer et al. (2017) said that neck pain is a pain symptom (or syndrome) not a clinical sign and that covers a variety of neck disorders, for example spinal tumors, spinal infections, and fractures.

In Greek word, pain means penalty and Plato expressed that pain arises from within the body and indicating that pain is more of an emotional experience. In recent times, the concept of pain has changed from one-dimensional to a multi-dimensional entity involving sensory, cognitive, motivational, and affective qualities and pain is always subjective and every individual use this word through their previous experience related to the injury (Kumar &Elavarasi, 2016).

Task force on taxonomy of the International Association for the Study of Pain (IASP) said that pain is "An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage". The North American Nursing Diagnosis Association stated that pain is a condition, in which an individual experiences and reports severe discomfort or an uncomfortable sensation; the reporting of pain may be either by direct verbal communication or by encoded descriptors (Kumar &Elavarasi, 2016).

Definition of pain by Medical dictionary by Farlex: Pain is an unpleasant feeling that is conveyed to the brain by sensory neurons and the discomfort signals actual or potential injury to the body. Though, pain is more than a sensation or the physical awareness of pain; it also includes perception, the subjective interpretation of the discomfort (Kumar &Elavarasi, 2016). Perception gives us information on the pain's location, intensity, and something about its character and the different conscious and unconscious responses to both sensation and perception, including the emotional response, add further definition to the overall concept of pain (Kumar &Elavarasi, 2016).

Pain is described in countless of ways:

In duration: chronic pain, sub-acute pain, and acute pain

In nature: intermittent pain, intractable pain, lancinating pain, referred pain, burning pain, and dull pain

In clinical diagnoses: phantom pain, cancer pain, vascular pain, arthritic pain, nerve pain, muscle pain, fibromyalgia, Myofascial pain, sympathetically maintained pain, and complex regional pain syndrome

In mechanism: neuropathic and nociceptive pain

In anatomic perceptional terms: headache, back pain, neck pain, facial pain, limb pain, abdominal pain, etc.

In source / origin terms: central pain as originating in the spinal cord or brain, or peripheral pain

In psychiatric/psychogenic terms: psychosomatic ("all-in-the-head") pain, etc. (Woessner,2006).

The neck is situated in the top end of the spinal column or spine, which supports the head and also protects the spinal cord. The neck is composed of 7 bones which are known as cervical vertebrae. These seven vertebrae are called as the bony building blocks of the spine in the neck surrounding the spinal cord (Barbuto et al., 2008). In different way we can say that the neck (cervical spine) is composed of vertebrae which begin in the upper torso and end at the base of the skull (Neck Pain, 2000).Nerves of neck passes through between those vertebrae and many ligaments and muscles are linked to the spine, shoulder blade and back to make it more stable (Barbuto et al., 2008). Stability of the spine provided by these bony vertebrae along with the ligaments (like thick rubber bands). Support and motion are allowed by the muscles (Neck Pain, 2000).Structures of the neck include the neck muscles, arteries, veins, lymph glands, thyroid gland, parathyroid glands, esophagus, larynx, and trachea (Barbuto et al., 2008).

The neck has allowed a significant amount of motion and it is supports the weight of the head (Neck Pain, 2000). The upper thoracic spine is involved in the physiologic motion of the neck and allowed maximum movement of the neck (Lee & Lee, 2017).
Exact clinical presentation is not known, but limited range of motion and patient's feeling of stiffness may be started with neck pain (Tanveer et al. 2017).
One study showed that for the predominance of neck complaints there is no absolute pathology or any malfunctioning of anatomical structures and for this reason they are termed as non-specific. This creates a deficient of a gold standard assessment for (NSNP) nonspecific neck pain (Hussain et al., 2016).

Causesmechanical neck pain are minor injuries or sprain to muscles and ligaments in the neck (Sabeen et al., 2013). One study said that neck pain can be caused by the stress over the musculoskeletal system due to postural disorders and may also be

associated with other causes such as intervertebral disc herniation, nerve compression, or fracture (Shehri et al., 2018). Less common causes of neck pain are pathological cause. It involves degenerative and inflammatory diseases like osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, infection, epidural abscess, meningitis, metastatic carcinoma, osteoma, spinal cord tumors (Chan et al., 2014).

Different types of arthritis can cause major stiffness and pain (Leonard et al., 2009). Another study said that slightly bent positions like the forward head posture may cause mechanical neck pain, cause a greater load by affecting the movement order of the muscles operating when the arm is raised, and restrict the range of motion and these changes reduce the ability to maintain balance and increase the risk of falls and injury of the musculoskeletal system (Lee & Lee, 2017).

Childs et al. (2008) said that in some people, neck problems maybe the source of pain in the upper back, shoulders or arms and when cervical disc causes pressure on the spinal cord or nerve roots then it's known as herniated cervical disc. Another major cause of neck pain is cervical disc herniation and neck pain is also related to whiplash-associated disorders (WADs) most commonly results from motor vehicle accidents (Hoy et al., 2011). Falling asleep in incompatible position and long-time use of a computer keyboard also causes of neck pain (Barbuto et al., 2008). In whiplash injury, first the body is carried forward and the head flips backwards. Then, as the body stops, the head is thrown forwards and following a whiplash injury there is often a delay before the pain and stiffness start (Hoy et al., 2011).There are different theories about why so many people suffer neck pain, but they are not supported by scientific proof. For majority of people, no specific reason for the pain can be found (Childs et al., 2008)

The main criteria of mechanical neck pain is pain in the cervical region, which is often accompanied by restriction of the range of motion in the neck and associated with functional limitations (Sabeen et al., 2013). It may be caused by soft tissue abnormality due to injury or prolong wear or tear and soft tissues includes muscles, ligaments and nerves around the spine (Childs et al., 2008). Pain is experienced when free nerve endings are irritated by mechanically deformed innervated structures and long term lower intensity stresses and improper posture are believed to be the most common causal factor for neck pain (Sabeen et al., 2013).

The risk factors for NSPN (non-specific neck pain) includes old age, gender, smoking, low socio economic status and working atmosphere is not supporting, high job demands like heavy labor and previous history of lumbosacral and cervical pains (Hussain et al., 2016). Other risk factors are also included such as overweight, lifting heavy weights, leaning forward to operate the computer, during using computer reduce activity of the cervical extensor muscles and higher activity in the upper trapezius (Hoy et al., 2011).

Another study stated that factors such as Physical workload includes repetitive motion, static posture, poor posture and neck flexion or rotation have significant association with Neck Pain and psychological factors are also caused neck pain associated with disturbed sleep, headache, depression, anxiety and fear (Leonard et al., 2009).

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, dentist, nurses, surgeons, bankers and teachers (Mustafa & Sultan, 2013).

Diagnosis was recommended as the first tool for successful management of patient's problems (Guzman, et al., 2008). Mintken& Cleland (2012) stated that in case of chronic neck pain, during history taking the duration of symptoms, behavior of pain, deformity of cervical spine and presence of neck disability was urgent to be included. According to McColl (2013) exclude vascular headache from cervical headache which usually originated from cervical spine.

Johnson &Cordett (2014) mentioned that physical examination of the cervical spine combination of general observation, palpation, active, passive, resisted movements and special test for cervical spine. General observation includes examining posture, symmetry, muscle bulk and previous scars should be part of the observation and Palpation of the cervical spine may elicit focal tenderness which is the appropriate clinical context may increase the clinician's suspicion for threatening pathology.

A neurological examination most commonly emphasis on any upper (example: cord compression) or lower (nerve root) motor neuron involvement and potential myotomal or dermatomal involvement to localize an anatomical level and provocative

technique such as neck compression and upper limb tension tests did not have adequate sensitivity or specificity to be recommended as routine practice (Nee et al., 2012)

A plain x-ray of cervical spine was recommended for the early diagnosis of the source of neck pain in an emergency case. According to Pompan (2011) magnetic resonance imaging (MRI) was found highly effective for the diagnosis of neck pain. There is no emergency about the use of laboratory test for the diagnosis of mechanical chronic neck pain. However Hooten, et al. (2013) recommended that accurate diagnosis was said as the key to make successful treatment plan for patient with mechanical neck pain.

Different pharmacological way are existing for the treatment for neck pain such as the use of paracetamol (Acetaminophen), NSAIDs, opioids, antidepressant or muscle relaxant, local anesthetics, Cannabinoids and others (Guidon et al., 2007). Traditional NSAIDs are widely prescribed and used as analgesics and anti-inflammatory agents but in long term anti-inflammatory therapy may develop serious gastrointestinal adverse effects and other adverse effects (Rao&Knaus, 2008). In everyday life, paracetamol is the most commonly used drug due to low cost although the mechanism of action of its analgesic action is poorly understood (Graham & Scott, 2005). Recently transdermal spray with Iontophorosis is commonly practicing method and apply for neck pain (Guindon et al., 2007).

Many treatment approaches are being used to reduce and alleviate pain; however, many clinical questions are still unanswered. In the recent years, several advances are expected in the basic and clinical sciences of pain, which will provide improved new therapies for patients(Guindon et al., 2007).

Conservative treatments that include manual therapies, physical medicine methods, medication and patient education relieved pain or improved function/disability, patient satisfaction and global perceived effect in adults with mechanical neck disorders (Ganesh et al., 2014).

Physiotherapy includes using electrotherapy, applying therapeutic exercise, and manual therapy to treat neck pain and stretching exercises for the neck and upper limbs, strengthening exercises, static and dynamic stabilization exercises were recommended as highly effective (Lee & Lee, 2016).

Few studies have found that manual therapy techniques provide effective relief of neck pain (Gross et al., 2004). Nowadays manual therapy is being a common approach to diminish neck pain which has been suggested to be an effective one as well by a number of clinical guidelines and variety of procedures is used in manual therapy related to the musculoskeletal structures for treating mechanical pain. It includes soft tissue therapies, such as the types of massage, focal soft tissue therapy, such as trigger point therapy, shiatsu, acupressure, mobilization, manipulation, and manual traction (Shehri et al. 2018).

Manipulation & Mobilization or exercise is very beneficial in patients with suffering from neck pain when applied as single-modal treatment approaches (kay et al., 2012). These techniques include manipulation (i.e. a high velocity thrust directed at the joints of the spine) and mobilization techniques that do not involve a high velocity thrust and professionals debate whether the use of neck manipulation does more harm than good (Ganesh et al., 2014).

Manipulation is has a small risk of serious cerebrovascular injury whereas mobilization is generally considered to be a safer technique and cervical mobilization using Maitland technique relieves pain and normalizes function. Maitland mobilization is one of the most common manual therapy approaches used by physiotherapists this mobilization is a passive oscillatory technique, applied over the hypo-mobile vertebra level, and the methods are considered valid (Ganesh et al., 2014).

Shehri et al. (2018) stated that Maitland's techniques involve the application of passive and accessory oscillatory movements to spinal and vertebral joints to treat pain and stiffness in 5 grades. Lee & Lee (2016) found that Maitland mobilization grade 3 and 4 treatment for the cervical spine and upper spine significantly decreases neck disability index (NDI), the pain indexand increases the range of motion.

Maitland also prescribes stretching techniques to deal with muscle spasm.Other mobilization technique such as the Mulligan concept is now an integral component of many manual physiotherapists' clinical practice and the concept has its foundation built on Kaltenborn's principles of restoring the accessory component of physiological joint movement (Ganesh et al., 2014).

Mulligan is one of the mobilization techniques that can be applied in case of neck pain and being an important treatment tool used by most of the manual physical therapists, Mulligan mobilization techniques (MMTs) include several methods such as sustained natural epiphyseal glides (SNAGs) and natural epiphyseal glides that target the spine (Shehri et al., 2018).

One study said that manual therapy (spinal mobilization) is more effective and less costly for treating neck pain than physiotherapy or care by a general practitioner (Ingeborg et al.,2003).

Shehri et al (2018) showed that Maitland's grades of oscillatory mobilizations:

Grade 1: Small amplitude movement performed at the beginning of motion.

Grade 2: Large amplitude movement performed within the range.

Grade 3: Large amplitude movement performed up to the limit of the range.

Grade 4: Small amplitude movement performed at the limit of range.

Grade 5: High velocity thrust performed at the limit of the range.

The technique of central posterior-anterior mobilization is achieved by applying a force on a vertebral segment in a posterior-anterior direction (back to front) with the patient in the prone lying position and similarly, the sustained natural apophyseal glide (SNAG) technique and central posterior anterior (CPA) mobilization produces sympatho-excitatory effects that aimed at gaining range and reducing pain (Shehri et al., 2018)

In one study 30 subjects were selected according to the inclusion and exclusion criteria were randomly divided into three groups: Maitland, Mulligan mobilization along with conventional treatment. Pre and post-test reading at 0 day, 14th day and 21th day were recorded for NDI and NPRS scale and after three weeks protocol the present finding shows that Group B (Maitland) shows significant improvements in the NDI score and Group C (Mulligan) would shows significant improvements in the NPRS scores in the patients with nonspecific neck pain. The present study shows that Maitland mobilization along with the conventional treatment prove to be more effective in improving NDI and NPRS scores in patients with nonspecific neck pain than Mulligan mobilization along with the conventional treatment(Inderpreet et al., 2013)

Most commonly used outcome measure for patients with neck pain are the NDI and the numeric rating scale (NRS) for pain. The Neck Disability Index (NDI) is a

commonly used health outcome measure to capture perceived disability in patients with neck pain   (Shehri et al.,2018; Lee & Lee, 2017; Joshua et al., 2008).

CHAPTER-III:	METHODOLOGY

This research was designed to evaluate the efficacy of the Maitland Mobilization among patients withneck pain. To identify the efficacy of this treatment approach Numeric pain Rating Scale was used as measurement tools for measuring the pain intensity in several functioning position and Disability was measured by Neck Disability Index (NDI).

3.1 Study Design

The study was a Quasi-experimental quantitativeresearch design.An experimental design that was not meet all requirements necessary for controlling impacts of extraneous variables. Quasi-experimental research was similarities with the traditional experimental design or randomized controlled trial. Since quasi-experimental designs was used when randomization will impractical and or unethical, they are typically easier to set up than true experimental designs, which require random assignment of subjects.Here researcher was chosen the Single-Group as the subjects in the experimental group was act as their own control.The subjects was given a pre-test, followed by treatment intervention and a post-test. But this also keeps many challenges for the investigator. This lack of randomization makes it harder to rule out confounds and introduces new threat to internal validity. Utilizing quasi-experimental designs minimizes threats to external validity. Since quasi-experiments are natural experiments, findings in one may be applied and setting, allowing for some generalizations to be made about population. Also, this experimentation method will efficient in longitudinal research that involves longer time periods which will be followed up in different environments.

3.2. Study Site

Physiotherapy department of Musculoskeletal Unit, CRP, Savar, Dhaka- 1343.

3.3. Study Population

The study population was the patients diagnosed as neck pain attended in the musculoskeletal outpatient unit of physiotherapy department at CRP, Savar, Dhaka.

3.4. Study Duration

February 2019 to August 2019.

3.5. Method of sample selection

3.5.1. Inclusion criteria

- Patients who have neck pain

- **Age between 18-60 years old:**This age range was selected because most of the people around the age range showed most prevalent time of neck pain in their life (Gautam, et al., 2014).

- **Both male and female both are included :**Both male and female were included because one study conducted by Schopflocher, et al. (2011) showed that chronic neck pain affects male before 30 years and predominately male suffered from neck pain with prevalence of 16.3% and after 30 years predominately more female reported neck pain with prevalence of 17.6%.

- The participants who have been assessed, treated & discharged by a qualified physiotherapist

- Pain duration at least 2 weeks.

- **Included those who showed willingness to participation:**Included these patients because they provided written consent form and might be helpful or might not leave treatment during the study (Gautam, et al., 2014).

3.5.2. Exclusion criteria

- **Age below 18 years and above 60 years:** This age range participants were excluded as chronic neck pain due to mechanical origin is less prevalent (Hussain, et al., 2016)

- **Sustaining red flags of neck pain:** Subjects were excluded when they showed red flags such as weight loss, fever, malignancy, inflammatory arthritis, vascular headache, cervical cord compression, vertibro- basillary insufficiency and referred pain from myocardial ischemia (McColl, 2013).

- Incomplete assessment

- **Traumatic neck pain:** The patients who had traumatic neck pain were excluded (Hussain, et al., 2016)

3.6. Sample Size

According to inclusion and exclusion criteria the researcher selected 38 sample. So, the sample size for this study was 38.This 38 participants was in a single group for pre-test & post-test intervention.

3.7. Sampling Technique

As the period of data collection was limited so the researcher was selected 38 neck painpatients for this study. The sampling procedure was Hospital based simple random sampling technique. In this sampling procedure; sample contains subjects who were simply available in a convenient way to the researcher. Subjects, who met the inclusion criteria, was taken as sample in this study. The study subjects were selected in such a way that those patients who were coming to CRP at Savarwithin a particular time period. 38 patients with neck pain was selected randomly from musculoskeletal outpatient unit of physiotherapy department at CRP, Savar, Dhaka during this particular period.

The samples was given numerical number A01, A02, A03 etc.

3.8. Method of Data collection

3.8.1. Data Collection Tools

Data collection tools were informed consent form, structured questionnaire, papers, pen and pencil.

3.8.2. Measurement Tools

Socio-demographic questionnaire was used to know the socio-economic status of the patient that was related to neck pain.

Numeric pain rating scale for measuring pain intensity. The 11-point NPRS was used to capture the patient's level of pain. The scale is anchored on the left with the phrase ''no pain'' and on the right with the phrase ''worst imaginable pain.'' Patients rate their current level of pain and their worst and least amount of pain in the last 24 hours. The average of the 3 ratings or any single rating may be used to represent the patient's level of pain. Numeric pain scales have been shown to be reliable and valid (Mintken, et al.,2009).

50 points **Neck disability scale** to measure the disability status among patients with neck pain. The NDI was modified from the Oswestry Low Back Pain Disability Questionnaire by Vernon and Mior, and consists of 10 items concerning pain intensity, personal care, lifting, reading, headache, concentration, work, driving,

sleeping, and recreation. Each item is scored from 0 (no disability) to 5 (greatest disability). The total score is the sum of each completed item expressed as a percentage of the maximum possible points of all the completed items (Salo, et al., 2010). Percentage of NDI score measured by-

The NDI (Neck pain Disability Index), the numeric rating scale (NRS) for pain is also a commonly used outcome measure for patients with neck pain (Joshua A. Cleland et al., 2008;WaqasS et al., 2016; Al Shehri et al., 2018).

3.9. Data collection procedure

After meeting inclusion and exclusion criteria the data collection procedure was conducted through assessing the patient, initial recording, treatment and final recording. After screening at the department, patients were assessed by a graduate physiotherapist. 6 sessions of treatment was provided for each participant. Data was gathered through a pre-test, intervention and post-test and the data was collected by using a written questionnaire form which was formulated by the researcher. Pre-test was performed before beginning the treatment and the intensity of pain was noted with numeric pain rating scaleand disability by Neck disability index.The same procedure was performed to take post-test at the end of 6 sessions of treatment. The researcher was collected the data from the group in front of the qualified physiotherapist in order to reduce the biasness.

3.10. Intervention

Physiotherapists who were expert in treatment of musculoskeletal patient were involved in treatment of patients. The treatment protocol for this patients were mainly Maitland Mobilization then usual care, they were- stretching exercise, isometric exercise, active range of motion exercise and electrical modalities such as- IRR and home advice.

3.11. Data Analysis

Statistical analysis was performed by using statistical package for social science (SPSS) version 20.The Numeric rating scale (NRS) for pain was analyzed by Wilcoxon Singed Rank test. The NDI (Neck pain Disability Index) was analyzed by pair t-test.

3.11.1 Statistical Test

Statistical analysis refers to the well-defined organization and interpretations of the data by systemic and mathematical procedure and rules.

Hypothesis Test

Wilcoxon Test

This test also known as Wilcoxon matched pair signed ranked test, is an alternative to the paired t test , when the assumption of normality or equality of variances is not meet. When there are just two measures to be compared from the same case, and data are normally distributed or the sample size is large, we apply a paired **t** test. In this situation if the data is not normally distribute then use Wilcoxon test. Since, my study sample was 38 and it was not normally distributed so I used Wilcoxon singed rank test.

Formula:

$$z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

Here,

T= Lowest value among positive & negative rank

N= Total number of the participants

Z= Value of the Wilcoxon matched pair signed rank test.

Interpretation:

Calculated z value is compared with table z value to find p value. If p < .05, we reject the null hypothesis. If otherwise, we cannot reject the null hypothesis and accept it.

Table 3.1. Pain intensity

variable	Wilcoxon singed rank test Z	Significant level	Total sample =38		
1.Pain in general	-5.26	0.000	Positive ranks	36	
			Negative ranks	0	
			Ties	2	
2.Pain at neck region	-5.252	0.000	Positive ranks	36	
			Negative ranks	0	
			Ties	2	
3.Pain at scapular region	-5.318	0.000	Positive ranks	37	
			Negative ranks	0	
			Ties	1	
4. pain at shoulder region	-5.410	0.000	Positive ranks	38	
			Negative ranks	0	
			Ties	0	
5.Pain at forearm	-5.175	0.000	Positive ranks	35	
			Negative ranks	0	
			Ties	3	
6.Pain during sitting	-5.319	0.000	Positive ranks	37	
			Negative ranks	0	
			Ties	1	
7.Pain during standing	-5.269	0.000	Positive ranks	36	
			Negative ranks	0	
			Ties	2	
8.Pain during walking	-5.334	0.000	Positive ranks	37	
			Negative ranks	0	
			Ties	1	
9.Pain during activity	-5.190	0.000	Positive ranks	35	
			Negative ranks	0	
			Ties	3	
10.Pain during resting	-5.239	0.000	Positive ranks	35	
			Negative ranks	1	
			Ties	2	
11.Pain during sleeping	-4.953	0.000	Positive ranks	36	
			Negative ranks	1	
			Ties	1	
12.Pain during neck turning	-5.194	0.000	Positive ranks	35	
			Negative ranks	0	
			Ties	3	
13.Pain during neck forward bending	-5.221	0.000	Positive ranks	35	
			Negative ranks	1	
			Ties	2	

Pair t test

Pair ttest is used to compare difference means of paired samples.

Assumptions

Paired data

The data are quantitative

Distributions are normal

Null hypothesis&Alternative hypothesis

Ho: $\mu1 - \mu2 = 0$ or $\mu1 \geq \mu2$; where the initial and final mean difference was same.

Ha: $\mu1 - \mu2 \neq o$, $\mu1 < \mu2$; where the initial and final mean difference was not same

Here,

Ho= Null hypothesis

Ha= Alternative hypothesis

$\mu1$= Mean difference in initial assessment

$\mu2$= Mean difference in final assessment.

Formula:pair *t* test defined by-

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

Where,

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

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

SD= standard deviation of the differences and

n= number of paired observations

Table 3.2. Statistical outcome of Neck Pain Disability Index

Paired difference		Paired t	df	Significant Value
Mean	Standard deviation			
33.809	13.46	15.49	37	0.000

3.12. Level of Significance

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

3.13. Ethical Consideration

The researcher maintained some ethical considerations: Aresearch proposal was submitted to the physiotherapy department of BHPI for approval and the proposal was approved by the faculty members and gave permission initiallyfrom the supervisor of the research project and from the course coordinator before conducting the study. The proposal of the dissertation including methodology was presented to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) for oral presentation defense was done in front of the IRB. Then the necessary information was approved by Institutional Review Board and was permitted to do this research. After getting the permission of doing this study from the academic institute the researcher had been started to do it. The researcher had been taken permission for data collection from the Musculoskeletal unit of Savar, CRP. Researcher followed the Bangladesh Medical Research Council (BMRC) guideline & WHO research guideline.The researcher was eligible to do the study after knowing the academic and clinical rules of doing the study about what should be done and what should not. All rights of the participants were reserved and researcherwas accountable to the participant to answer any type of study related question.

3.14. Informed Consent

Written consent was given to all participants prior to completion of the questionnaire. The investigator explains to the participants about his or her role in this study.Theinvestigator received a written consent form every participants including signature. So theparticipant assured that they could understand about the consent form and their participation was on voluntary basis. The participants were informed clearly that their information would be kept confidential. The investigator assured the participants that thestudy would not be harmful to them. It was explained that there might not a direct benefitfrom the study for the participants but in the future cases like them might get benefit fromit. The participants had the rights to withdraw consent and discontinue participation at any time without prejudice to present or future care at the community. Information from this study was anonymously coded to ensure confidentiality and was not personally identified in any publication containing the result of this study.

CHAPTER-IV	RESULTS

4.1. Age group

The study was conducted on 38 participants with Neck pain. Out of the participant the mean age of the participants was 39.29 (±10.95) years.There were several age groups among 38 participants. The range wasminimum age 18 years and maximum 67 years.The participants with 18-27 years were 15.7% (n=6), 28-37 years were 26.31% (n=10), 38-47 years were 28.94% (n=11), 48-57 years were 23.68% (n=9), 58-67 years were 5.26% (n=2).

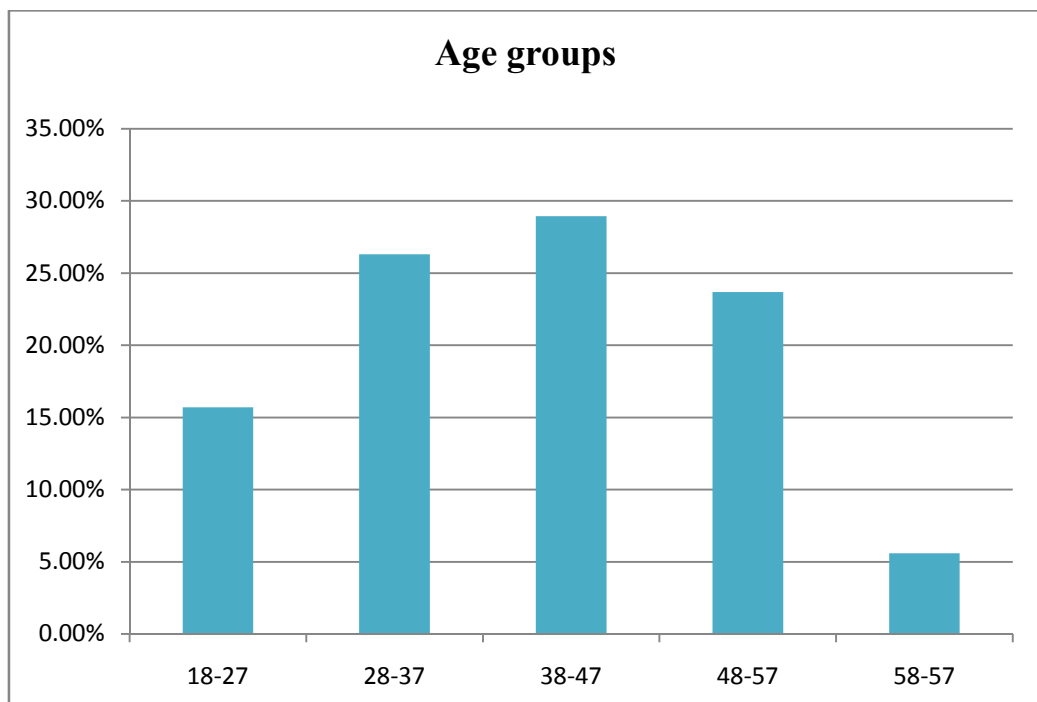**Figure 1: Age groups of the participants.**

4.2. Gender of the participants

38 Patients with neck pain were included as sample of the study. Among 38 participants most of them were female 65.8% (n=25) and male were 34.2% (n=13).According to data view that maximum participants were female and there is a relationship with neck pain.
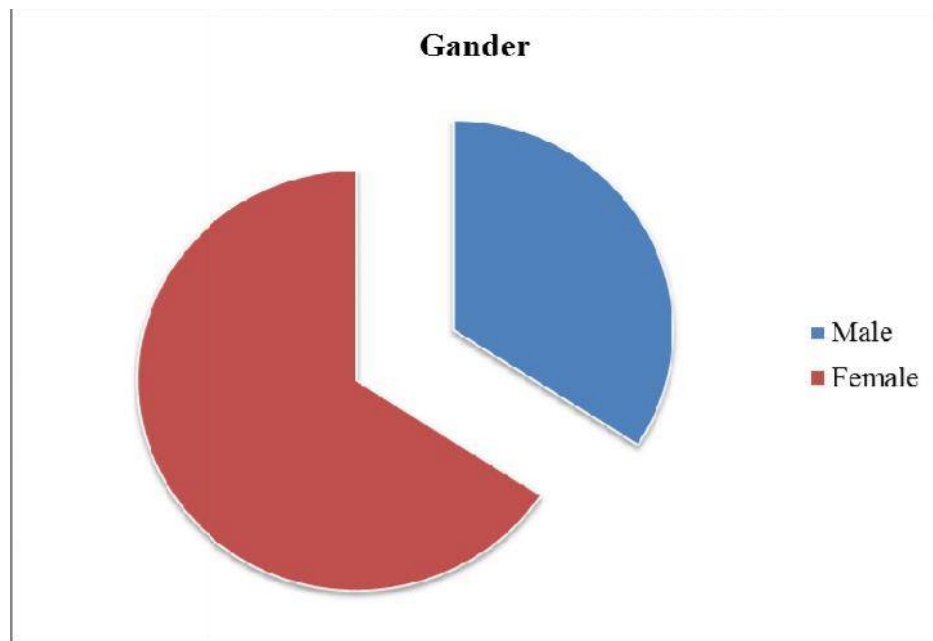
Figure 2: Gender of the participants

4.3. Educational background

Among 38 patients, illiterate were 7.9% (n=3), 23.7% (n=9) participants had some primary level education, 13.2% (n=5) participants had some secondary level education, 10.5% (n=4) participants completed secondary level education, 10.5% (n=4) participants had completed higher secondary level education, 21.1% (n=8) participants completed graduation, 13.2% (n=5) participants completed masters.
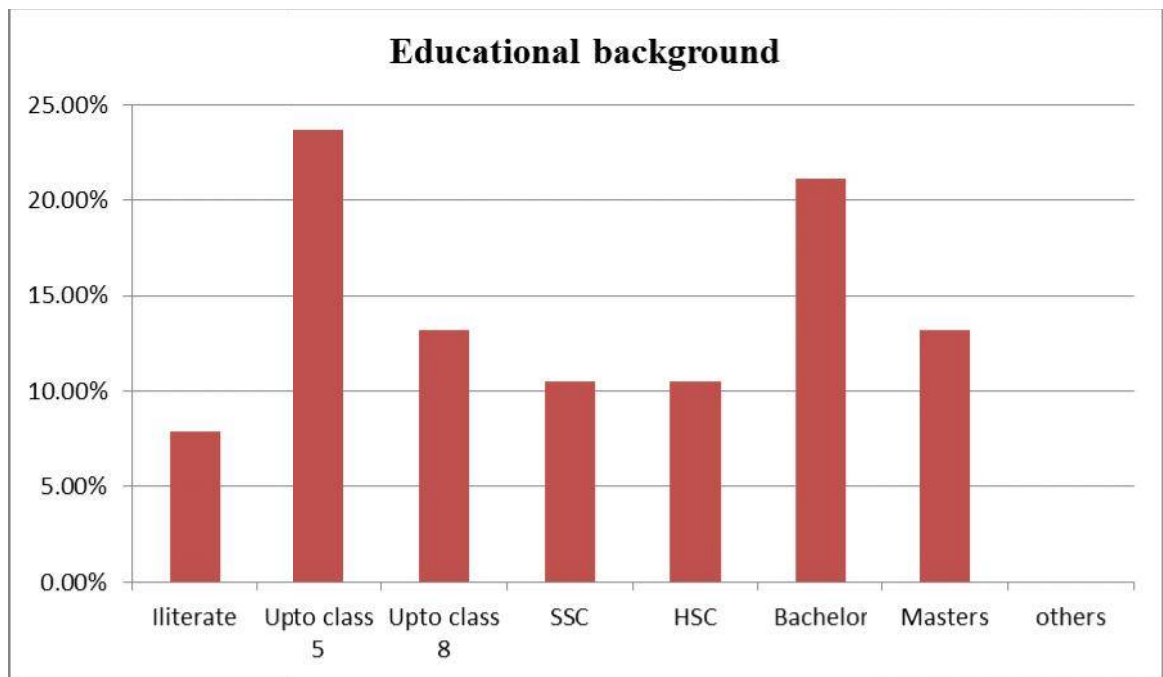
Figure 3:Educational background

4.4. Occupation of the participants

Among 38 participants, most of them were house wife 44.7% (n=17), 10.5% (n=4) participants were students, 2.6% (n=1) was farmer, 7.9% (n=3) participants were teacher, 15.8% (n=6) participants were businessman, 2.6% (n=1) participant was banker.So it is shows that according to individual occupation housewives were mostly affected part. But cluster of profession can experienced neck pain and occupation has great relation with neckpain.
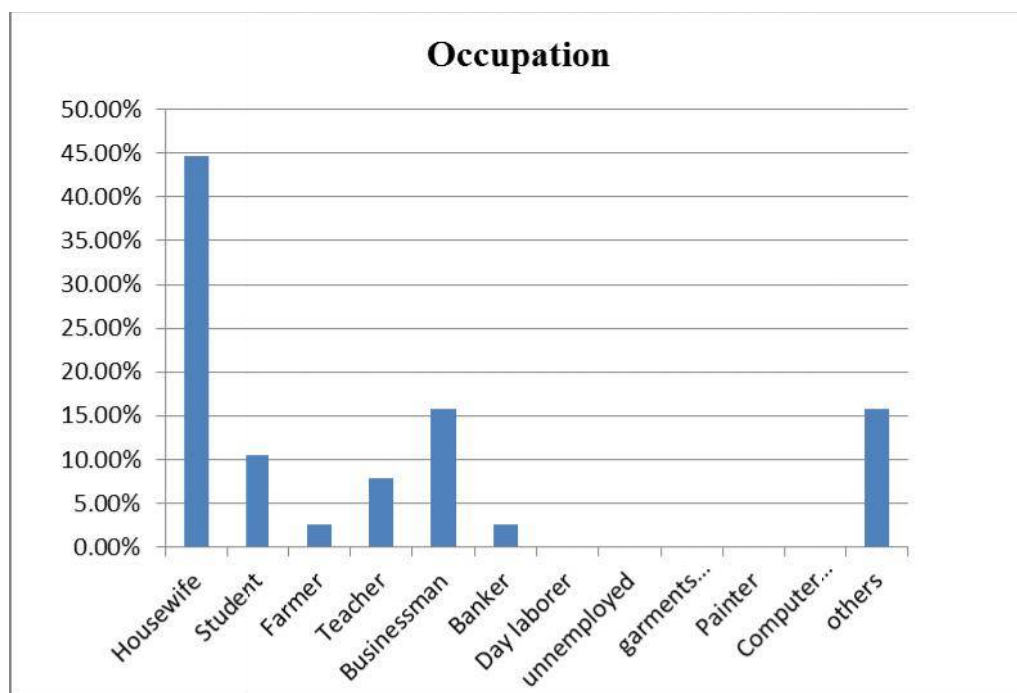
Figure 4 : Occupation of the participants

4.5. Marital status of the participants

Among the 38 participants 31 participants were married, and 6 participants were unmarried, 1 participant was widow. In percentage 81.6% participants were married and 15.8% participants were unmarried, 2.6% were widow. So we have to understand that married person are mostly affected and they are mostly vulnerable for experiencing neck pain.
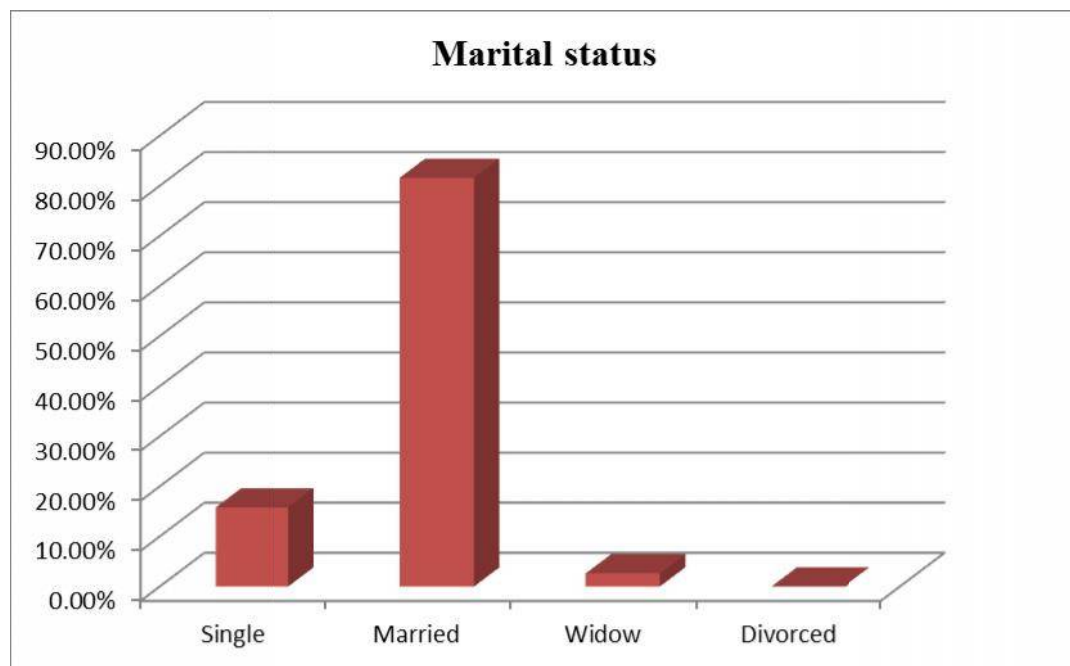
Figure 5 : Marital status of the participants

4.6. Residential area

Among the 38 participants, 28.9% (n=11) participants were from rural area, 39.5% (n=15) participants were from semirural area and 31.6% (n=12) participants were from urban area.

Figure 6 : Residential area

4.7. Posture of the participants

Among 38 participants, 21.1% (n=8) participants had good posture, 78.9% (n=30) participants had fair posture.

posture

Figure:Posture of the participants

4.8. Pain intensity

4.8.1. Pain in general at this moment

The study found that, there is a comparison among participants before (pre) and after (post) in general pain score. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 36 patients had decreased pain and 2 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in neck pain (Z= -5.26, P=0.000).

4.8.2. Pain at neck region

The study found that, there is a comparison among participants before (pre) and after (post) pain intensity at neck region. 38 participants had hi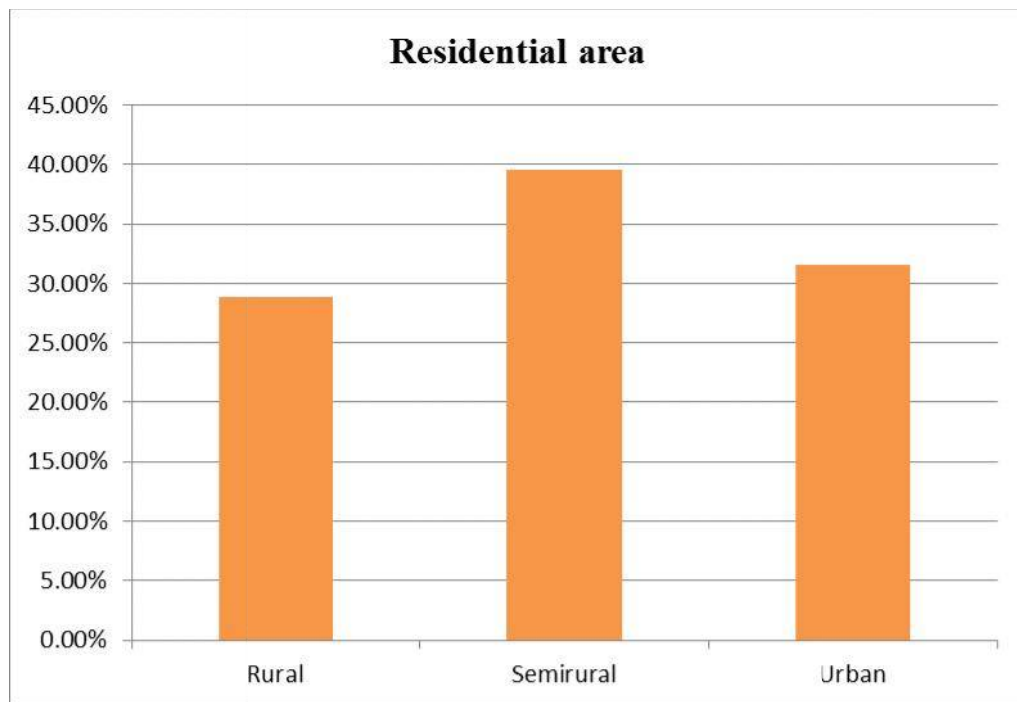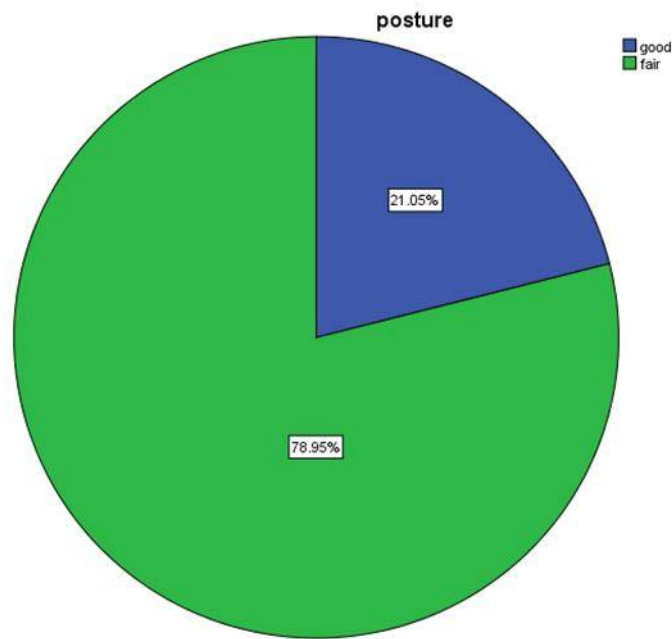gher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 36 patients had decreased pain and 2 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain at neck region (Z= -5.252, P=0.000).

4.8.3. Pain at scapular region

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity at scapular region. 38 participants had higher pain score before application of Maitland Mobilization. It is found that any participants did not have increased pain after this treatment. In addition, 37 patients had decreased pain and 1 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain at neck region (Z= -5.318, P=0.000).

4.8.4. Pain at shoulder region

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity at scapular region. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 38 patients had decreased pain and no patient had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain at scapular region (Z= -5.410, P=0.000).

4.8.5. Pain at forearm

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity at forearm. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 35 patients had decreased pain and 3 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain at forearm (Z= -5.175, P=0.000).

4.8.6. Pain during sitting

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity during sitting position. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 37 patients had decreased pain and 1 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during sitting position (Z= -5.519, P=0.000).

4.8.7. Pain during standing

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity during standing position. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 36 patients had decreased pain and 2 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during sitting position (Z= -5.269, P=0.000).

4.8.8 Pain during walking

This research found that, there is a comparison among participants before (pre) and after (post) pain intensity during walking. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 37 patients had decreased pain and 1 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during standing (Z= -5.334, P=0.000).

4.8.9. Pain during activity

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity during activity. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 35 patients had decreased pain and 3 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during activity (Z= -5.334, P=0.000).

4.8.10. Pain during resting

This found that, there is a comparison among participants before (pre) and after (post) pain intensity during resting. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that 1 patient had increased pain after this treatment. In addition, 35 patients had decreased pain and 2 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during resting (Z= -5.239, P=0.000).

4.8.11. Pain during sleeping

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity during sleeping. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that 1 patient had increased pain after this treatment. In addition, 36 patients had decreased pain and 1 patient had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during sleeping (Z= -5.953, P=0.000).

4.8.12. Pain during neck turning

This study found that, there is a comparison of participants before (pre) and after (post) pain intensity during neck turning. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that any participants did not have increased pain after this treatment. In addition, 35 patients had decreased pain and 3 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during neck turning (Z= -5.194, P=0.000).

4.8.13. Pain during neck forward bending

This study found that, there is a comparison among participants before (pre) and after (post) pain intensity during neck forward bending. 38 participants had higher pain score before application of Maitland Mobilization. It is showed that 1 patient had increased pain after this treatment. In addition, 35 patients had decreased pain and 2 patients had equal pain after treatment.

By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that the group received 6 sessions of this treatment and coursed showed a statistically significant change in pain during neck forward bending ($Z= -5.221$, $P=0.000$).

4.9. Neck pain Disability Index (NDI)

This research found that, within group analysis of NDI (Neck Pain Disability Index) score the improvement was significant ($P=.000$ and $t= 15.49$).

CHAPTER-V	DISCUSSION

The purpose of this study was to find out the effectiveness of Maitland Mobilization for neck pain patients. In this experimental study 38 patients with neck pain were randomly assigned. Among these 38 patients, there was a single group design.These group attended for 6 sessions (each session for 30 minutes) of treatment in the physiotherapy outdoor department of CRP Savar. The different measurement tools were used to examine the hypothesis and test the hypothesis whether the null hypothesis were accepted or not based on the smaller or larger p. Self-oriented structural questionnaire was used to find out the socio demographical indicators. Significant improvements occurred in most of the measures that were recorded before and after treatment. And the outcome of pain intensity measured by using Numeric Pain Rating scale (NPRS) and disability status measured by using Neck pain disability Index (NDI) scale among patients with neck pain.

Mean age of the participants was 39.29 ($\pm$10.95) years. Among them female were 65.8% and male were 34.2%.Among 38 participants, most of them were house wife 44.7%, 10.5% participants were students, 2.6% were farmer, 7.9% participants were teacher, 15.8%participants were businessman, 2.6% participant were banker.Out of total participants 7.9% were illiterate, 23.7% participants had some primary level education, 13.2% participants had some secondary level education, 10.5% participants completed secondary level education, 10.5% participants had completed higher secondary level education, 21.1% participants completed graduation, 13.2% participants completed masters.In percentage 81.6% participants were married and 15.8% participants were unmarried, 2.6% were widow.28.9% participants were from rural area, 39.5% participants were from semirural area and 31.6% participants were from urban area. 21.1% participants had good posture, 78.9% participants had bad posture.

Cheng et al.(2014)and Tanveeret al. (2017) stated that women are more likely to experience persistent neck pain than men. The analysis of this study sample reveals that women are more affected than man.The results of the study revealed that 34.2% participants were male and 65.8% participants were female. The average age of thesample was 39 years indicates thatmost ofthe affected persons were of working age.Loose et al. (2008) said that older people did have risk factors for neck pain and neck pain increases with age even though in healthy population. Occupation is very important variable to be considered not only in research process, but also in daily practice.Among 38 participants, most of them were house wife 17 (44.7%). 4 (10.5%

) participants were students, 1 (2.6%) was farmer, 3 (7.9%) participants were teacher, 6 (15.8%)participants were businessman, 1 (2.6%) participant was banker.So it is shows that according to individual occupation housewives were mostly affected part. But cluster of profession can experienced neck pain and occupation has great relation with neck pain.In this study, participants in these group received 6 sessions of treatment.This study found that most of the patient had bad posture. Posture is an important factor to produce neck pain. In this study, among 38 patients 30 (78.9%) patients had bad posture. According to this study, It was also found thatamong all the participants of neck pain 81.6% participants were married and 15.8%% participants were unmarried. That is showed thatmarried person are mostly affected and they are mostly vulnerable for experiencing neck pain. According to a study conducted in University Kebangsaan Malaysia Medical Centre,Most of them were married and that is 72.3% when compared to 27.7% were single.So the investigator could said that the literature support the result of this study (Mustafa &Sutan, 2013).

Different studies found (Gupta et al., 2013; Sambyal& Kumar, 2013) conventional physiotherapy as an effective treatment for patients with chronic neck pain.

Lee& Lee (2017) did a research on 18 patients, between two groups and one group received only therapeutic exercise and another group received Maitland mobilization with therapeutic exercise andthe intervention was carried out for 60 minutes a day, three times a week, for two weeks for each group, followed by a post-test using the same protocol as the pre-test. The researcher found that, in the group to which both Maitland mobilization and therapeutic exercise were applied, significantly more improvement in the pain index, neck disability levels, and AROM was seen than in the group that received only therapeutic exercise.

Shehri et al (2018) found in one study Maitland mobilization is significant in reducing the patient's symptoms when it compared with conventional therapy and SNAGs mobilization. This indicates that Maitland approach is clinically beneficial in treating chronic neck pain. In this study,a total of 50 patients were included as and randomly assigned into two groups each having 25 patients. Group A was given conventional therapy (Active, Isometrics exercises, moist hot packs) plus SNAG while Group B was given conventional therapy (Active, Isometrics exercises, moist hot packs) plus Maitland mobilization for 4 weeks, 3 sessions per week one session per day.

On contrast, one study Hussain et al.(2016) showed that Mulligan mobilization NAGS was more effective than Grade 1 and II Maitland mobilization in nonspecific neck pain to decrease pain and restoration of function and the design of this study was experimental study, sample was 50 and two groups.In group A Mulligan mobilization NAGS was applied and in group B Grade 1 and II Maitland mobilizations were applied Therapy was offered 4 times a week for absolute 4 weeks.

Patient rated general pain was measured in the pre-test level and after completing of 6 sessions of treatment and pain intensity was measured by NPRS (Numeric Pain Rating Scale) and disability was measured by NDI scale.

In recent past, several studies assessed pain intensity after application of only Maitland mobilization and found improvement of pain reduction . Significant difference between Pre-test Post-test($p<0.05$) (Shehri et al.,2018; Lee& Lee, 2017).

The analysis of significant level of pain intensity was carried out by using Wilcoxon signed rank test to find out the effectiveness of Maitland mobilization.By using Wilcoxon test on the data the results were found to be significant ($P < .05$ for a one-tailed hypothesis). The results of Wilcoxon signed rank test showed that there significant improvement of pain reduction in different area neck region($P < .05$), scapular region ($P < .05$), shoulder region ($P < .05$), forearm ($P < .05$) and different functional position during sitting ($P < .05$), during standing ($P < .05$), during walking ($P < .05$), during activity ($P < .05$), during resting ($P < .05$), during sleeping ($P < .05$), during neck turning ($P < .05$), during bending ($P < .05$).The null hypothesis can therefore be rejected.

The analysis of significant level of disability was carried out by using paired-ttest. Based on the results of the study disability has reduced significantly after application of Maitland mobilization. Result of neck disability index (NDI) showed significant ($p< 0.05$) improvement of disability. In recent past, several studies assessed NDI after application of only Maitland mobilization and found improvement of disability. Significant difference between Pre-test Post-test($p<0.05$) (Shehri et al.,2018; Lee& Lee 2017).

5.1. Limitation

There might be some limitations in every research. The study was conducted within short period which is the main limitation of this study.In this study small sample size mayconstitute a limitation. As the study was conducted at selected area of Center for the Rehabilitation of the Paralyzed (CRP) in musculoskeletal unit which might not represent the whole population with neck pain in the context of Bangladesh. As the study period was short so the adequate number of sample could not arrange for the study. There was no system of long term follow-up after the post-test of the study. There was no available research done in this area in Bangladesh. So, relevant information about neck pain patient with specific intervention for Bangladesh was very limited in this study.

CHAPTER-VI   CONCLUSION AND RECOMMENDATIONS

The result of this experimental study has identified the efficacy ofMaitland mobilization in patients with neck pain. The current study has proved that Maitland mobilization was more effective among patients with neck pain.Reduction of pain and associated symptoms were maximum in the patients treated with Maitland Mobilization technique, reduce pain intensity as well as Reduction of Functional Disability was also found clinically significant. The result also indicate that the significant changes in patients due to the selection of a well-defined population of neck pain patients using specific inclusion and exclusion criteria. It may be helpful for patient with neck pain to increase functional abilities for neck pain. The outcome of this study would denote physiotherapists to imply Maitland mobilization for selected neck pain patients in their clinical practice. Conversely, the aim and objectives of this study has been fulfilled and the null hypothesis was rejected favoring the Maitland mobilization for neck pain patients.

The aim of the study was to find out the effectiveness of Maitland mobilization for neck pain among the patient attending at musculoskeletal unit, CRP. Though the study had some limitations but investigator identified some further step that might be taken for the better accomplishment of further research.The main recommendations would be as follow:

A long duration of study with a proper follow-up can be done. The duration of the study was short, so in future wider time would be taken for conducting the study. Investigator use only 38 participants as the sample of this study, in future the sample size would be more. In this study, the investigator took the participants only from the musculoskeletal unit, CRP as a sample for the study. So for further study investigator strongly recommended to include the neck pain patient from all over the Bangladesh to ensure the generalizability of this study. Future research is required to investigate the effect of joint mobilization and therapeutic exercise on the functional impairments caused by chronic neck pain using diverse subjects and intervention periods, and research on the persistence of the effect also needs to be conducted

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Appendix

CONSENT FORM (English)

Assalamu-alaikum.

My name is BintyRahman, student of BSc in physiotherapy at Bangladesh Health Professions Institute (BHPI), CRP. I am conducting a study for partial fulfillment of Bachelor of Science in Physiotherapy degree, titled, "**Effectiveness of Maitland Mobilization for Neck pain"**.

Through this research, I will find out the efficacy of Maitland Mobilization for neck pain. For this purpose, I would need to collect data from the patient having neck pain.Considering the area of research, you have met the inclusion criteria and I would like to invite you as a subject of this study. If you participate in this study, I will give you particular intervention& evaluate the efficacy of Maitland Mobilization for Neck pain. The interventions that will be given are safe and will not cause any harm. I want to meet you a few couple of sessions during your regular therapy. Your participation will be voluntary. You may have the right to withdraw consent and discontinue participation at any time . If you have any query about the study or your right as a participant, you may contact with, researcher BintyRahman or my supervisor, **Mohammad Anwar Hossain,**Associate Professor of Physiotherapy BHPI, Senior consultant & Head, Department ofPhysiotherapy, CRP Savar, Dhaka-1343.

Do you have any questions before I start?

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

Yes………

Signature of the Interviewer _____

I …………………………………………….have read and understand the contents of the

form. I agree to participant in the research without any force.

Signature of the participant _____

সম্মতিপত্র ( )

50

আস্সালামুআলাইকুম, আমার নাম বিন্তি রহমান। আমি বাংলাদেশ হেলথ প্রফেশনস ইন্সটিটিউট (   )চতুর্থ বর্ষের

ছাত্রী । আমি এই গবেষণাটি ফিজিওথেরাপী স্নাতক কোর্সের পূর্ণতার জন্য করছি। আমার গবেষণার শিরোনাম **"ঘাড়ঘাড় ব্যথায়**

মেইটল্যান্ড মোবিলাইজেশন এর কার্যকারিতা।"এই গবেষণার মাধ্যমে আমি ঘাড় ব্যথায় মেইটল্যান্ড মোবিলাইজেশন এর

কার্যকারিতা খুঁজে বের করার চেষ্টা করবো।   এর জন্য আমার ঘাড় ব্যথার রোগীদের থেকে প্রয়োজনীয় তথ্য জানতে হবে।

গবেষণার ক্ষেত্র অনুযায়ী, আপনি এই গবেষণায় অন্তভূক্তির যোগ্যতা অর্জন করেছেন। আমি আপনাকে এই গবেষণায়

অংশগ্রহনের আমন্ত্রণ জানাচ্ছি।যদি আপনি এই গবেষণায় অংশগ্রহণ করেন, আপনার উপর নির্দিষ্ট চিকিৎসা পদ্ধতি প্রয়োগ করা

এবং ঘাড় ব্যথায় এর কার্যকারিতা দেখা হবে। যে সব চিকিৎসা পদ্ধতি আপনার উপর প্রয়োগ করা হবে তা সম্পূর্ণ নিরাপদ

এবং নিশ্চিত যে কোন ক্ষতি সাধন করবে না।আমি আপনার সাথে বেশ কয়েকবার দেখা করব। গবেষণায় আপনার অংশগ্রহণ

সেচ্ছাপ্রণোদিত। এই গবেষণায় যে কোনো মুহূর্তে আপনি আপনার সম্মতি দিতে পারেন কিংবা অংশগ্রহণ থেকে বিরত থাকতে

|আপনার যদি এই গবেষণা সম্পর্কিত কোনো জিজ্ঞাসা থাকে তাহলে অনুগ্রহণপূর্বকগবেষক বিন্তি রহমান অথবা

মোহাম্মদ আনোয়ার হোসেন, সহযোগী অধ্যাপক,ফি   ,   , এবংসিনিয়র কনসাল্ট্যান্ট এবং

বিভাগীয় প্রধা ,   ,   ,   -   এ যোগাযোগ করতে পারেন।

সাক্ষাৎকার শুরু করার আগে আপনার কি কোন প্রশ্ন আছে?

আমি কি আপনার সম্মতি সাপেক্ষে সাক্ষাৎকার গ্রহণ করতে পারি?   হ্যাঁ ....

গবেষকের স্বাক্ষর..................   ....

                    ....এই সম্মতি পত্রটি পড়েছি ও বুঝেছি। আমি স্বেচ্ছায় এই গবেষণায় অন্তভূক্ত হচ্ছি।

অংশগ্রহণকারীর স্বাক্ষর ....

স্বাক্ষীর স্বাক্ষর ....

Questionnaire :

Part-1

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Title: Effectiveness of Maitland Mobilization for neck pain.

<div align="right">**Code No:**</div>

Personal details:

1.1. Identification number: ……………………...

1.2. Date of interview: …………………………...

1.3. Name of respondent: ………………………….

1.4. Address: House no/village: ………………….

P.O: …………………………………………...

P.S: ………………………………………….

District: ………………………………………….

1.5. Contact number: ………………………………

1.6. Dependent contact number:………………………

1.7. Place of data collection: ……………………….

Part :2

Socio-demographic information :

Title: Effectiveness of Maitland Mobilization for neck pain.

2.1. Age: ………………..years

2.2: Gender:

1= Male   2= Female

2.2. Educational status:

1=Illiterate   2= Up to class- 5   3= Up to class- 8

4= Secondary school certificate (SSC)   5= Higher secondary certificate (HSC)

6= Bachelor   7= Masters   8= Other (specify)

2.4.Occupation :

1= Housewife   2=Student   3= Farmer

4=Computer operator   5= Garment's worker   6= Teacher

7= Businessman   8= Day laborer   9= Unemployed

10=Painter   11.Banker   12= Other (specify)

2.5. Religion:

1=Islam   2= Hinduism

3= Christian   4= Buddhism

5= Other (specify)

2.6. Marital status:

1= Single   2= Married

3= Divorced   4= Widow

2.8. Residential area:

1= Rural

2= Semirural

2.8. Residential area:

1= Rural

2= Semirural

3= Urban

2.8. Family type:

1=Nuclear family

2=Extended family

2.9. Earning member:

1= Himself /Herself   2= Husband/Wife

3= Father/Mather   4= Other (specify)

2.10. Average monthly income:

………………………TK.

Part :3

Painrelated questions:

Title: Effectiveness of Maitland Mobilization for neck pain.

3.1. Pain duration:

Day ……………..month………….year…………..

3.2. Location of pain:

1= Neck2= Scapular region 3= Shoulder

 4=Arm 5= Forearm 6= Hand7= Headache

3.3. Posture:

1=Good   2= Fair 3= poor

3.4. Previous Treatment:

 1=Medication

 2= Physiotherapy: Manual, Traction ,Electrical Modalities.

 3= Surgery

 4= Other (specify)

3.5. Protruded Head:yes/no

3.6.General health:

1= Good   2= Fair   3= Poor

Part :4

**Pre-test questionnaire for neck pain:**

Title :Effectiveness of Maitland Mobilization for neck pain.

Code No:

There are some questions and with each question there is a long line. The line represents pain situation. The left hand end represents no pain and right hand end represents severe pain. Please a mark on the line where you feel it shows how much pain you have
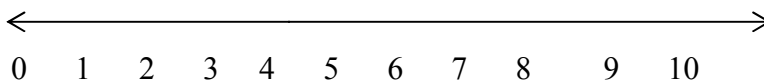
For example:

If your neck pain is between 7 and 9 then circle like below:

0 1 2 3 4 5 6 7 8   10
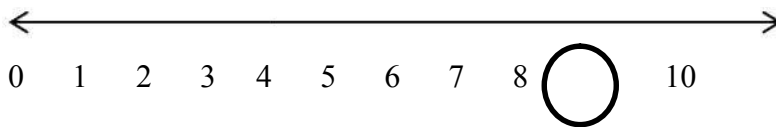
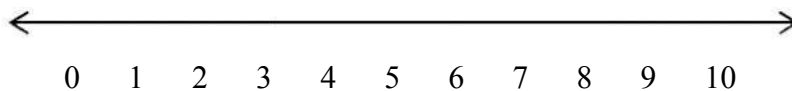(A Zero (0) indicates no pain, 1-3 indicates mild pain, 4-6 indicates moderate pain and 7-
10 indicates severe pain)

4.1. How severe is your pain at this moment?
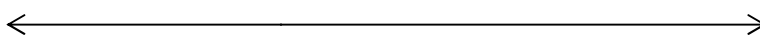
0 1 2 3 4 5 6 7 8 9 10

4.2. How severe is your pain at neck region?

0 1 2 3 4 5 6 7 8 9 10

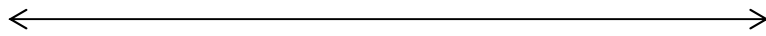4.3. How severe is your pain at scapular region?
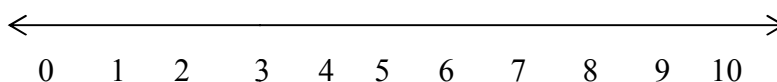
0 1 2 3 4 5 6 7 8 9 10

4.4. How severe is your pain at shoulder/arm?

0   1   2   3   4   5   6   7   8   9   10

4.5. How severe is your pain at forearm/hand?

$\longleftarrow$ _____ $\longrightarrow$

0   1   2   3   4   5   6   7   8   9   10

4.6. How severe is your pain during sitting?

$\longleftarrow$ _____ $\longrightarrow$
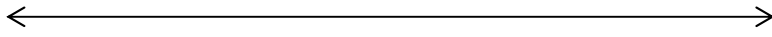
0 1 2 3 4 5 6 7 8 9 10

4.7. How severe is your pain during standing?

$\longleftarrow$ _____ $\longrightarrow$
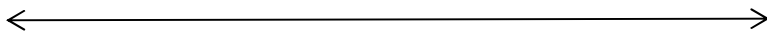
0   1   2   3   4   5   6   7   8   9   10

4.8. How severe is your pain during walking?

$\longleftarrow$ _____ $\longrightarrow$
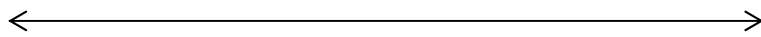
0 1   2   3 4 5 6 7 8 9   10

4.9. How severe is your pain during activity?

$\longleftarrow$ _____ $\longrightarrow$
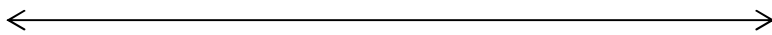
0 1 2 34 56 7 8 9 10

4.10. How severe your pain is at resting position?

$\longleftarrow$ _____ $\longrightarrow$

01 2 34 5 6 7 8 9 10

4.11. How severe is your pain during sleeping?

$\longleftarrow$ _____ $\longrightarrow$
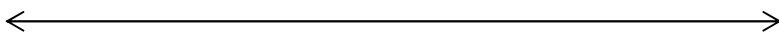
0   1   2   3   4   5   6   7   8   9   10

4.12. How severe is your pain during neck turning?

$\longleftarrow$ _____ $\longrightarrow$
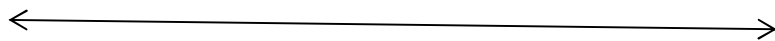
0 1 2 3 4 5 6 7 8 9 10

4.13. How severe is your pain during neck forward bending?

$\longleftarrow$ _____ $\longrightarrow$

0   1   2   3   4   5   6   7   8   9   10

Part:5

Pre-test:

57

NECK PAIN DISABILITY INDEX QUESTIONNAIR

> **Please read**: this questionnaire is designed to enable us to understand how much your neck pain has affected your ability to manage your everyday life. Please answer each section by circling the ONE CHOICE that most applies to you .We realize that you may feel that more than one statement may relate to you, but please just circle the one choice which most closely describes your problem right now.

Section 1-pain

A I have no pain at the moment.

B The pain is very mild at the moment.

C The pain is moderate at the moment.

D The pain is fairly severe at the moment.

E The pain is very severe at the moment.

F The pain is the worst imaginable at the moment.

Section 2-personal care(washing, dressing, etc.)

A I can look after myself normally without causing extra pain.

B I can look after myself normally, but it causes extra pain.

C It is painful to look after myself and I am slow and careful.

D I need some help, but manage most of my personal care.

E I need help every day in most aspects of self-care.

F I do not get dressed, I wash with difficulty and stay in bed.

Section 3-lifting

A I can lift heavy weights without extra pain**.**

B I can lift heavy weights, but it gives extra pain.

C Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned, for example, on a table.

D Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned.

E I can lift very light weights.

F I cannot lift or carry anythingat all

Section4-reading

A I can read as much as I want to with no pain in my neck**.**

B I can read as much as I want to with slight pain in my neck.

C I can read as much as I want to with moderate pain in my neck.

D I cannot read as much as I want because of moderate pain in my neck.

E I cannot read as much as I want because of severe pain in my neck.

F I cannot read at all.

Section 5- headaches

A I have no headaches at all.

B I have slight headaches which come infrequently.

C I have moderate headaches which come infrequently.

D I have moderate headaches which come frequently.

E I have severe headaches which come frequently.

F I have headaches almost all the time.

Section 6- concentration

A I can concentrate fully when I want to with no difficulty.

B I can concentrate fully when I want to with slight difficulty.

C I have a fair degree of difficulty in concentrating when I want to.

D I have a lot of difficulty in concentrating when I want to.

E I have a great deal of difficulty in concentrating when I want to.

F I cannot concentrate at all.

Section 7- work

A I can do as much work as I want to.

B I can only do my usual work, but no more.

C I can do most of my usual work, but no more.

D I cannot do my usual work.

E I can hardly do any work at all.

F I cannot do any work at all.

Section 8- driving

A I can drive my car without any neck pain**.**

B I can drive my car as long as I want with slight pain in my neck.

C I can drive my car as long as I want with moderate pain in my neck.

D I cannot drive my car as long as I want because of moderate pain in my neck.

E I can hardly drive at all because of severe pain in my neck.

F I cannot drive my car at all

Section 9 sleeping

A I have no trouble sleeping.

B My sleep is slightly disturbed (less than 1 hour sleepless).

C My sleep is mildly disturbed (1-2 hours sleepless).

D My sleep is moderately disturbed (2-3 hours sleepless).

E My sleep is greatly disturbed (3-5 hours sleepless).

F My sleep is completely disturbed (5-7 hours).

Section 10 – Recreation

A I am able to engage in all of my recreational activities with no neck pain at all.

B I am able to engage in all of my recreational activities with some pain in my neck.

C I am able to engage in most, but not all of my recreational activities because of pain in my neck.

D I am able to engage in a few of my recreational activities because of pain in my neck.

E I can hardly do any recreational activities because of pain in my neck.

F I cannot do any recreational activities at all.

A=0 B=1 C=2 D=3 E=4 F=5

Total Score:

PATIENT'S SCORE X 100 = %DISABILITY
 # OF SECTIONS COMPLETE

প্রশ্নপত্র (   )

পর্ব:১ (ব্যক্তিগত তথ্যাবলী)

শিরোনামঃ ঘাড় ব্যথায় মেইটল্যান্ড মোবিলাইজেশন এর কার্যকারিতা।

কোড নং

. সনাক্তকরণ নম্বরঃ...

. সাক্ষাতকারেরতারি   ....

. উত্তরদাতার নামঃ.............................

. ঠিকানাঃ

        /গ্রামঃ.............................

                ....

                ....

    জেলাঃ.............................

. যোগাযোগনম্বরঃ.............................

. বিকল্প নম্বরঃ.............................

. উপাত্তসংগ্রহেরস্থানঃ ....

পর্ব:২

(রোগীর সামাজিক জনতাভিত্তিক তথ্যাবলী)

শিরোনামঃ ঘাড় ব্যথায় মেইটল্যান্ড মোবিলাইজেশন এর কার্যকারিতা।

কোড নং

..   ..

. লিঙ্গঃ

=পুরুষ   =

. শিক্ষাগত যোগ্যতাঃ

=নিরক্ষর   =প্রাথমিক   =নিম্নমাধ্যমিক

=মাধ্যমিক   (=উচ্চমাধ্যমিক   ৬=স্নাতক

=স্নাতকোত্তর   ৮=অন্যান্য (নির্দিষ্টকরণ)

. পে

=   =শিক্ষার্থী   ৩=

=পোশাকশ্রমিক   ৫=শিক্ষক   =ব্যবসায়ী

=   =বেকার   =ব্যাংক কর্মকর্তা

=চিত্রশিল্পী   ১১=কম্পিটার অপারেটর : =অন্যান্য(নির্দিষ্টকরণ)

. ধর্মঃ

=   =হিন্দু   =খ্রিষ্টান

=বৌদ্ধ   =অন্যান্য (নির্দিষ্টকরণ)

. বৈবাহিক অবস্থাঃ

=   =

=তালাকপ্রাপ্তঃ =   /বিপত্নীক

.

=গ্রাম

=মফস্বল

=

.

    =

    = যৌথপরিবার

. উপার্জনকারী ব্যক্তিঃ

    =

    =   /

    =স্বামী

    =অন্যান্য (নির্দিষ্টকরণ)

.

    ....

পর্বঃ৩

ব্যথা সম্পর্কিত প্রশ্নাবলীঃ

শিরোনামঃ ঘাড় ব্যথায় মেইটল্যান্ড মোবিলাইজেশন এর কার্যকারিতা।

কোড নং:

. ব্যথার স্থায়িত্বকালঃ

    ....

. ব্যথার স্থানঃ

    =   =স্ক্যাপুলা্   ৩=কাঁধ

    =বাহু   =   =কব্জি   =

. আঙ্গবিন্যাসঃ

    =   =মোটামুটি   ৩=খারাপ

. পূর্ববর্তীচিকিৎসার ধরণঃ

        =

        =ফিজিওথেরাপীঃ ম্যানুয়াল, ট্রাকশন, ইলেকট্রিকাল ডিভাইস।

        =শল্যচিকিৎসা

        =অন্যান্য(নির্দিষ্টকরণ)

. প্রট্টেড মাথাঃ   হ্যাঁ /না

. জেনারেল স্বাস্থ্যঃ

    =   =মোটামুটি   ৩=খারাপ

পর্বঃ৪

(ঘাড় ব্যথার জন্য চিকিৎসা পূর্ববর্তী প্রশ্নাবলী)

(MaCaffery& Beebe(1993) রোগীদের ব্যথার অভিজ্ঞতা ব্যাখ্যা করার জন্য নিওমারিক পেইন রেটিং স্কেল ব্যবহার করেন)

শিরোনামঃ ঘাড় ব্যথায় মেইটল্যান্ড মোবিলাইজেশন এর কার্যকারিতা।

কোড নং:

এখানে কিছু প্রশ্ন আছে এবং প্রতিটি প্রশ্নের সঙ্গে একটি দীর্ঘ লাইন আছে। লাইনটি ব্যথার পরিস্থিতি উপস্থাপন করে। বাম

হাতের দিকে শূন্য(০)কোনো ব্যথা নেই এবং ডান হাতের দিকে দশ(১০)তীব্র ব্যথা প্রতিধ্বিত করে। নিম্নলিখিত প্রশ্নে আপনার

ব্যথার পরিমাণ লাইন চিন্হিত করুন-

উদাহরণ স্বরপঃ

যদি কারো ঘাড়ে ব্যথার পরিমাণ হয় ৭ থেকে ঃ এর মধ্যে তাহলে তিনি পূরণ করবেন-

$\longleftrightarrow$

$\bigcirc$

এখানে শূন্য মানে কোনো ব্যথা নেই,(১-৩)মানে হালকা ব্যথা,(৪-৫)মানে সহনীয় ব্যথা এবং (৭-১)মানে তীব্র ব্যথা।

. এই মুহূর্তে আপনার ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

. রোগীদের ব্যথার অভিজ্ঞতা ব্যাখ্যা করার জন্য নিওমারিক পেইন রেটিং স্কেল ব্যবহার করেন। ■

$\longleftrightarrow$

. আপনার স্ক্যাপুলায় ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

65

. আপনার কাঁধে ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

. আপনার বাহুতে ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

. বসা অবস্থায় আপনার ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

. দাড়ানো অবস্থায় আপনার ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

. হাটার সময় আপনার ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

. কাজের সময় আপনার ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

. বিশ্রামরত অবস্থায় আপনার ব্যথার তীব্রতা কতটুকু?

$\longleftrightarrow$

ঘুমানোর সময় আপনার ব্যথার তীব্রতা কতটুকু?

$$\longleftrightarrow$$

ঘুমানোর সময় আপনার ব্যথার তীব্রতা কতটুকু?

$$\longleftrightarrow$$

ঘাড় ভাঁজ করার সময় আপনার ব্যথার তীব্রতা কতটুকু?

$$\longleftrightarrow$$

পর্বঃ৫

ঘাড়ের অক্ষমতা সূচক প্রশ্নাবলী

<center>(চিকিৎসা পূর্ববর্তী)</center>

কোড নং

এই প্রশ্নাবলী আপনার ঘাড় ব্যথা দৈনন্দিন জীবন পরিচালনা করার জন্য আপনার ক্ষমতাকে কিভাবে প্রভাবিত করেছে সে

সম্বন্ধে আমাদের তথ্য দিতে তৈরি করা হয়েছে। আপনি দয়া করে নীচের প্রতিটি বিভাগ হতে যে কোনো একটি উক্তি টিক

দিয়ে চিনিহত করুন যেটি আপনার বর্তমান অবস্থাকে সবচেয়ে ভালভাবে ব্যাখ্যা করে।

অনুচ্ছেদঃ ১ ব্যথার তীব্রতা

ক আমার এই মুহূর্তে কোন ব্যথা নেই

খ আমার এই মুহূর্তে খুব হালকা ব্যথা আছে

গ আমার এই মুহূর্তে মাঝারি ব্যথা আছে

ঘ আমার এই মুহূর্তে ব্যথা মোটামুটি গুরতর

মার এই মুহূর্তে ব্যথা খুব গুরতর

চ আমার এই মুহূর্তে ব্যথা সবচেয়ে খারাপ।

অনুচ্ছেদঃ ২ নিজের দেখাশোনা বা ব্যক্তিগত যত্ন(কাপড় ধৌতকরণ, পরিধান ইত্যাদি)

ক আমি সাধারণত অতিরিক্ত ব্যথা ছাড়াই নিজের দেখাশোনা করার কাজ করতে পারি

খ আমি সাধারণত নিজেকে দেখাশোনা করতে পারি কিন্তু এতে অতিরিক্ত ব্যথা হয়

গ আমি নিজেকে দেখাশোনার কাজ করতে গেলে ব্যথা অনুভব করি এবং আমি ধীরগতি এবং সতর্কতা অবলম্বন করি

ঘ আমাকে সামান্য সাহায্য করলে আমি আমার ব্যক্তিগত যত্নের অধিকাংশ কাজই পরিচালনা করতে পারি

ঙ আমার ব্যক্তিগত যত্নের অধিকাংশ ক্ষেত্রেই প্রতিদিনই সাহায্য প্রয়োজন হয়

, আমার কাপড় ধৌত করতে অসুবিধা হয় এবং বিছানায় শুয়ে থাকতে হয়।

অনুচ্ছেদঃ ৩ উত্তোলন

<center>68</center>

ক আমি অতিরিক্ত ব্যথা ছাড়াই ভারী ওজন উত্তোলন করতে পারি

খ আমি ভারী ওজন উত্তোলন করতে পারি কিন্তু এটা অতিরিক্ত ব্যথা দেয়

গ ব্যথা আমাকে মেঝে থেকে ভারী ওজন উত্তোলন করতে বাধা দেয়, কিন্তু আমি তা পারি যদি সেটা সুবিধামত কোথাও স্থাপন , উদাহরণস্বরপ,কোন একটি টেবিল এর উপর থেকে

ঘ   ব্যথা আমাকে মেঝে থেকে ভারী ওজন উত্তোলন করতে বাধা দেয় কিন্তু আমি মাঝারি থেকে হালকা ওজন উত্তোলন করতে যদি সেটা সুবিধামত কোথাও স্থাপন করা থাকে

ঙ আমি শুধুমাত্র খুব হালকা ওজন উত্তোলন করতে পারি

চ আমি কোনোকিছু উত্তোলন বা বহন করতে পারি না।

অনুচ্ছেদঃ ৪

ক আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই যতটা আমি চাই ততটাই পড়তে পারি

খ আমি আমার ঘাড়ে সামান্য ব্যথা নিয়ে আমি যতটা চাই পড়তে প

গ আমি ঘাড়ে সহনীয় ব্যথা নিয়ে যতটা আমি চাই পড়তে পারি

ঘ আমি আমার ঘাড়ে মাঝারি ব্যথার কারণে আমি যতটা চাই পড়তে পারি না

ঙ আমি আমার ঘাড়ে তীব্র ব্যথার কারণে খুব কম পড়তে পারি

চ আমি ব্যথার কারণে একদমই পড়তে পারি না।

অনুচ্ছেদঃ ৫ মাথাব্যথা

র মাথাব্যথা নেই

খ আমার সামান্য মাথাব্যথা আছে, যা কদাচিৎ আসে

গ আমার সহনীয় মাথাব্যথা আছে, যা কদাচিৎ আসে

ঘ আমার সহনীয় মাথাব্যথা আছে, যা

ঙ আমার তীব্র মাথাব্যথা আছে, য

চ আমার প্রায় সব সময় মাথাব্যথা হয়।

অনুচ্ছেদঃ ৬

ক আমি কোন অসুবিধা ছাড়াই যখন চাই তখনই আমি সম্পূর্ণরূপে মনোযোগ দিতে পারি

খ আমি সামান্য অসুবিধার সঙ্গে যখন চাই তখনই আমি সম্পূর্ণরূপে মনোযোগ দিতে পারি

গ আমি যখন মনোযোগ দিতে চাই তখন চলনসই মাত্রার অসুবিধা হয়

যোগ দিতে চাই তখন গুরতর অসুবিধা হয়

।

অনুচ্ছেদঃ ৭

খ আমি শুধুমাত্র স্বাভাবিক কাজ করতে পারি, কিন্তু এর বেশি না

গ আমি আমার অধিকাংশ স্বাভাবিক কাজ করতে পারি, কিন্তু এর বেশি না

স্বাভাবিক কাজ করতে পারি না

ঙ আমি খুব কমই কোন কাজ করতে পারি

।

অনুচ্ছেদঃ ৮

ক আমি কোন ঘাড় ব্যথা ছাড়াই আমার গাড়ি চালনা করতে পারি

খ আমি আমার ঘাড়ে সামান্য ব্যথা নিয়ে যতক্ষণ দীর্ঘ খুশি ততক্ষন আমার গাড়ি চালনা করতে পারি

আমি আমার ঘাড়ে সহনীয় ব্যথা নিয়ে যতক্ষন দীর্ঘ খুশি ততক্ষন আমার গাড়ি চালনা করতে পারি

ঘ আমি আমার ঘাড়ে মাঝারি ব্যথার কারণে যতক্ষন দীর্ঘ খুশি ততক্ষন আমার গাড়ি চালনা করতে পারি না

ঙ আমি আমার ঘাড়ে তীব্র ব্যথার কারণে গাড়ি চালনা করতে পারি না

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অনুচ্ছেদঃ ৯

ক আমার ঘুম আসতে কোন কষ্ট হয় না

খ আমার ঘুম আসতে সামান্য সমস্যা হয়(১ ঘন্টার কম সময় নির্ঘুম কাটে)

গ আমার ঘুম আসতে সামান্য সমস্যা হয়(১- ঘন্টা সময় নির্ঘুম কাটে)

ঘ আমার ঘুম পরিমিতরূপে নষ্ট হয়(২- ঘন্টা সময় নির্ঘুম কাটে)

ঙ আমার ঘুম ব্যাপকভাবে নষ্ট হয়(৩-৫ ঘন্টা সময় নির্ঘুম কাটে)

চ আমার ঘুম সম্পূর্ণরূপে নষ্ট হ্য(৫-৭ ঘন্টা সময় নির্ঘুম কাটে)।

অনুচ্ছেদঃ ১ চিত্তবিনোদনমূলক কার্যক্রম

ক আমি আমার ঘাড়ে কোন ব্যথা ছাড়াই সব চিত্তবিনোদনমূলক কার্যক্রমে অংশগ্রহন করতে পারছি

ঘাড়ে কিছু ব্যথা নিয়ে সব চিত্তবিনোদনমূলক কার্যক্রমে অংশগ্রহন করতে পারছি

গ আমি আমার ঘাড়ে ব্যথার কারণে অধিকাংশ কার্যক্রমে অংশগ্রহন করতে পারছি, কিন্তু আমার সকল স্বাভাবিক চিত্তবিনোদনমূলক কার্যক্রমে অংশগ্রহন করতে পারছি না

ঘ আমি আমার ঘাড়ে ব্যথার কারণে আমার স্বাভাবিক চিত্তবিনোদনমূলক কার্যক্রমের কয়েকটি কাজে অংশগ্রহন করতে পারছি

ঙ আমি আমার ঘাড়ে ব্যথার কারণে আমার স্বাভাবিক চিত্তবিনোদনমূলক কার্যক্রমের খুবই কম কাজে অংশগ্রহন করতে

চ আমি একদমই কোন চিত্তবিনোদনমূলক কার্যক্রমে অংশগ্রহন করতে পারছি না।

 = , = , = , = , = , =

Total Score:

<u>PATIENT'S SCORE</u> X 100   =   %DISABILITY

OF SECTIONS COMPLETED

Permission Letter

April 11, 2019

The Head of the Department

Department of Physiotherapy

Bangladesh Health Professions Institute (BHPI)

CRP, Chapain, Savar, Dhaka.

Through: The Head of the Department, Department of Physiotherapy, BHPI.

Subject: Prayer for seeking permission to collect data for research project.

Sir,

With due respect I state that I am a 4th year student of B. Sc. in Physiotherapy Department of BHPI, the academic Institute of CRP. I sincerely seeking permission to collect data for my research project as the partial fulfillment of Bachelor of Science in Physiotherapy degree.

The title of this research project is **"Effectiveness of Maitland Mobilization for Neck pain"** under the supervision of **Mohammad Anwar Hossain,** Associate Professor & Head, Department of physiotherapy. In order to accomplish this study, I want collect necessary data from the patients attending at out-patient, department of **Musculoskeletal Unit** CRP, Savar. I would like to assure that anything of this research project will not be harmful for the participants.

So, I therefore, pray and hope that you would be kind enough to grant my application and permit me to collect data to accomplish this research project.

Sincerely yours,

Binty Rahman

Binty Rahman

4th Year, B. Sc. in Physiotherapy,

Roll no: 11, Session: 2014-15,

Bangladesh Health Professions Institute (BHPI),

(An academic institution of CRP)

CRP, Chapain, Savar, Dhaka.

Forwarded & Recommended

16.04.19
Prof. Md. Obaidul Haque
Head, Department of Physiotherapy
BHPI, CRP, Savar, Dhaka-1343

Rumana
27/04/19

FARJANA SHARMIN
Junior Consultant and OPD Incharge
Physiotherapy Department
CRP Savar, Dhana

Approved
Please contact with
Farjana Sharmin Rumana,
Incharge, OPD, PTD.

23/04/19
Mohammad Anwar Hossain
Associate Professor & Head
Physiotherapy Dept., CRP
CRP-Chapain, Savar, Dhaka-1343

Ref: CRP-BHPI/IRB/09/19/1337   Date: 18/09/2019

To
Binty Rahman
B.Sc. in Physiotherapy
Session: 2014-15, Student ID:112140243
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal **"Effectiveness of Maitland Mobilization for Neck pain patients"** by ethics committee.

Dear Binty Rahman,
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. The Following documents have been reviewed and approved:

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

The study involves use of a questionnaire to explore effectiveness of Maitland Mobilization for neck pain patients that may take 15 to 20 minutes to answer the questionnaire and there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 10.00 AM on 11th August, 2018 at BHPI.

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

Best regards,

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

Treatment protocol

- Stretching exercise: Hold 20 seconds and repeat for 4 to 5 times.
- Maitland Mobilization: (5-7) minutes.
- Isometric exercise: 5-10 seconds brief but maximum contraction each heal for 5-16 seconds for flexor, extensor, side flexor & rotators.
- Active range of motion exercise: 10 repetitions in all direction in pain-free range.
- Electrical modalities: IRR- 15 minutes.
- Home advice.