COMPARISON BETWEEN ANTERIOR-POSTERIOR GLIDE ALONG WITH CONVENTIONAL PHYSIOTHERAPY AND CAUDAL GLIDE ALONG WITH CONVENTIONAL PHYSIOTHERAPY FOR THE TREATMENT OF PATIENTS WITH SHOULDER CAPSULITIS AT MUSCULOSKELETAL UNIT OF CENTRE FOR THE REHABILITATION OF THE PARALYSED.

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled **COMPARISON BETWEEN ANTERIOR-POSTERIOR GLIDE ALONG WITH CONVENTIONAL PHYSIOTHERAPY AND CAUDAL GLIDE ALONG WITH CONVENTIONAL PHYSIOTHERAPY FOR THE TREATMENT OF PATIENTS WITH SHOULDER CAPSULITIS AT MUSCULOSKELETAL UNIT OF CENTRE FOR THE REHABILITATION OF THE PARALYSED.**

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DECLERATION

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

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CONTENTS

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Acronyms

BHPI Bangladesh Health Professions Institute

BMRC Bangladesh Medical Research Council

CRP Centre for the Rehabilitation of the Paralysed

IRBInstitutional Review Board

MSMusculo-skeletal

MWMMovement with Mobilization

NSAIDsNon-steroidal Anti-inflammatory Drug

PT Physiotherapy

RCT Randomized Clinical Trial

ROMRange of Motion

TENS Transcutaneous Electrical Nerve Stimulation

UST Ultrasound Therapy

VAS Visual Analogue Scale

WHO World Health Organization

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Abstract

Purpose: The study was conducted to identify and investigate the therapeutic effectiveness of anterior posterior glide along with conventional physiotherapy and caudal glide along with conventional physiotherapy for the treatment of shoulder capsulitis. This study has made the comparison, in order to discover the most effective treatment protocol to alleviate the symptoms of the condition. *Objectives:* To assess the effect on pain after introducing of anterior posterior glide along with conventional physiotherapy and caudal glide along with conventional physiotherapy for shoulder capsulitis patient, to measure the severity of pain by using Visual Analogue Scale (VAS), to measure the range of motion (ROM) by using goniometer to explore the reduction of range of motion of the participants. *Methodology:* The study was a Randomized clinical trialdesign. 14 samples were allocated randomly from Out-patient treatment service of Musculoskeletal Unit, Physiotherapy Department, Centre for the Rehabilitation of the Paralysed (CRP), Savar. Initially all the subjects were assessed by Peripheral Assessment Form at the clinical settings and then data were collected by questionnaires, Visual Analogue Scale (VAS) was used to assess pain intensity and Goniometer was used to measure the range of motion of the patients. There were two groups including Experimental Group A and Experimental Group B. Experimental GroupAreceivedanterior posterior glide along with conventional physiotherapy while experimental Group Breceivedcaudal glide along with conventional physiotherapy. *Results:* The study has used statistical analysis by paired t test and unrelated *t*test to compare the Experimental group A and Experimental Group B and analysed by interpreting the probability level of significance of *t* value. The results were found to be significant for *t* value. *Conclusion:* The study concludes that the caudal glide with conventional physiotherapy technique is significantly capable of producing beneficial effects on pain reduction and improvement of range of motion than anterior posterior glide with conventional physiotherapy.

Keywords: *Anterior posterior (AP) glide, Caudal glide, shoulder capsulitis*

CHAPTER –I: INTRODUCTION

1.1Background

Among the musculoskeletal condition of upper extremity shoulder capsulitis is most common and the symptoms including increased pain, decreased joint range of motion and functional disability which causes harmful effect on quality of life(Santoboni et al.,2017).

Although frozen shoulder was first described by Duplayin in 1872 but Codman introduced the term “frozen” first time in 1934 and he described painful shoulder which is a condition of insidious onset that was related to stiffness as well as sleep difficulties on the affected side (Zukerman et al.,2011). Among the industrial population 2 to 5% are usually affected with this condition and 40 to 60 years of age is typically common in which non-dominant arm has also chance for involvement even though the 12% people are involved bilaterally (Nambi& Kamal, 2017).

Shoulder capsulitis is seen most commonly in the age of 56 in which woman are more affected than man and within five year 6 to 17% patient have the chance of occurring this condition in the opposite shoulder (Nath, 2015). Frozen shoulder usually affects patients aged 40-70, with females affected more than males, and no predilection for race and In Bangladesh, Adhesive capsulitis is one of the common disabling disease affecting both elderly male and female (Arshad et al., 2015).

There are many classification suggestedin the literature although frozen shoulder is most commonly classified as either primarily or secondarily as well as in Primary frozen shoulder is usually idiopathic in nature and normal finding shows in radiograph where some disease process is responsible for secondary type of frozen shoulder and also this secondary type of frozen shoulder also can be classified as systemic, extrinsic or intrinsic.(Favejee et al 2011). Frozen shoulder or adhesive capsulitis is a problem which have 26% of chance of occurrence among adult population (Shih et al., 2017)

After one side of shoulder has resolved then there are 5-13% chance of occurring in the another shoulder and simultaneously bilateral shoulder involvement occurs often 14% of the time (Ludewig& Reynolds, 2009).

The average general practice list of 6250 patients in England is expected to see 15 to 16 new events per year (Shah & Lewis, 2007).It is accepted that 3% population in Europe

augment the problem in their livelihood (Tighe et al.,2008). The predominance rate is 2–5.3% with people in those age class between 40 to 70years usually influenced (Agarwal et al., 2016). 2-5% in common grown population and 10-20% of population with diabetes are affected from this painful disabling condition as well as this state is more repeatedly affects people aged with 40 to 60 years old(Sarkari et al., 2006).

According to Center for the Disease Control and Prevention in United State about 13.7 million people took medical care for shoulder problem (Thomas et al., 2007). In the state of Washington (USA) each year accepted over 6000 work disability claims related to shoulder problems from 1947 to 1995 (Goyal et al., 2013).

Shoulder Capsulitis is a rarely understandable cause of shoulder pain in which beginning is regular and specified by pain and a continuous whole limitation of both active and passive range of motion of shoulder joint (Ryans et al., 2005).The pathophysiology of shoulder capsulitis is however weakly understood which cause is unknown (Kraal et al., 2017). Shoulder capsulitis is a general disabling but self-limiting state which Leading fibrosis as well as eventual contracture of the glenohumeral joint capsule also known as frozen shoulder and Lack of axillary folding, capsular breakdown, thickening of internal rotator as well as fibrosis including destruction of the coracohumeral ligament and union of the subacromial bursae is seen in frozen shoulder which is exposed by arthroscopy and imaging studies(Cho et al.,2018).

The pathophysiology of shoulder Capsulitis include a string inflammatory synovitis along with consequent adherence of the capsule and a reducing a normal axillary bag as well as joint size which causes a remarkable deprivation of motion of shoulder joint that’s why cytokine is generate due to contracture of the capsule is thought to cause from adhesion of the capsular surface or fibroblastic proliferation (Naik et al.,2018). Shoulder capsulitis happens in three different phases in where primary stage is named as freezing stage and this periods duration is 3 to 9 months and occurred by glenohumeral joint synovitis (Jason et al., 2015). In Stage II (frozen stage) pain gradually subsides but stiffness is marked which lasts 4–12 months and in Stage III (thawing phase); pain resolves and improvement in range of motion (ROM) appears (Guler&Kozanoglu., 2004).

Through this condition can ultimately resolve itself without treatment and solve slowly within three years but the series of the disease can spread more than three years that causes a wide emotional as well as economical problem that's why patient can suffer from chronic pain and limited range of motion (Agarwal et al., 2016).The problem is consist of pain, restricted range of motion , sleep disturbance, anxiety and disability which may be broadly disruptive as well as influence almost all scene of daily living and occupational activities of each person (Kim, Y. and Lee, G et al., 2017). it is identified by long time pain, impairment of mobility & functional restriction as well as among all the functional problem ,it is mobility dysfunction which significantly impact Patients quality of life (Shih & Kao, 2017).

Many treatments have been employed in the management of shoulder disorders; few have been proven to be effective in randomized controlled trials including non-steroidal anti-inflammatory drugs, local anesthetic and corticosteroid injections into the glenohumeral joint, calcitonin and antidepressants, distension arthrography, closed manipulation, physical therapy modalities and stretching exercises can be listed among the most common non-surgical approaches to treatment in adhesive capsulitis but Physical therapy is often the first line of management for Frozen Shoulder (Griggs et al., 2010).

In general practice it is known that cumulative rate of consultation of frozen shoulder is 2.4/1000/year (Uppal et al., 2015). 90% patients of frozen shoulder usually improves by non-surgical treatment (Shaheen et al.,2017). According to the literature glenohumeral posterior mobilization (GPM) is a member of the greatest extensively technique for this purpose (Espinoza et al., 2015). In a wide range of exercise joint mobilization used to treat irritant as well as hard synovial joints which is a type of passive movementandfor the treatment of a patient with joint hypomobility joint mobilization has become a broadly effective physical therapy procedure (Hsu et al., 2000). To mobilize the joint to lesser pain, increase mobility and recover normal range of motion physical therapist frequently employ anterior posterior glide & caudal glide mobilizations (Sarkari et al., 2006)

1.2 Rational

Adhesive capsulitis (frozen shoulder) is a common cause of shoulder pain and affects approximately 2-4% of the general population. Nowadays it is one of the most commonly occurring musculoskeletal diseases around the globe that causes pain and restriction of range of motion in our day to day life.

To develop evidence based project study to strengthen physiotherapy practice as well as the betterment of the patients as a physiotherapy student and being a researcher, my interest is to work in this area and to establish an evidence based physiotherapy treatment technique for shoulder capsulitis enormously.

Evidence from research on the role of joint mobilization is also presented. Joint mobilization is a way to move the joint surfaces to increase motion. The technique involves some sliding and gliding of the shoulder joint in a variety of different directions. Which way to go is determined by areas of movement restriction as well as it decreases the pain in the shoulder joint. All joint mobilizations are followed up with an active home program of stretching. Although joint mobilization has some positive benefits, it's not clear that this treatment technique is better than some other methods of working with the patient.

Anterior posterior glide and caudal glide mobilization has been successfully used by physiotherapists. It has been suggested that it can be used to treat diseases like shoulder capsulitis however there has a lack of evidence.

Some research articles have been published about physiotherapy interventions of patient with shoulder capsulitis but there’s no well-developed research on this area in our country.

On the other hand this study will be helpful for professions and professionals of physiotherapy & with this connection to other professionals will have a chance to gather their knowledge from this study.

1.3 Hypothesis

Null hypothesis

H_o: $\mu_1-\mu_2=0$ wherethe experimental group A and experimental group B initial and final difference of mean is same.

Alternative hypothesis

H_a: $\mu_1-\mu_2 \neq 0$ where the experimental group A and experimental group B initial and final difference of mean is not same.

1.4 Objectives

General objective

To identify and analyze the therapeutic effectiveness of anterior posterior glide and caudal glide mobilizations along with conventional physiotherapy for the treatment of patients with shoulder capsulitis.

Specific objectives

1. To find out the effectiveness of anterior posterior glide and caudal glide mobilization.

2. To find out the outcome of pain in different functional position after receiving the treatment.

3. To find out the improvement of ROM after receiving treatment

4. To explore the socio demographic (age, gender, education, occupation, health status) characteristics of patient with shoulder capsulitis.

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1.5 Operational Definitions

Shoulder capsulitis: Shoulder capsulitis, also known as adhesive capsulitis, is a condition characterized by stiffness and pain in your joint. Signs and symptoms typically begin gradually, worsen over time and then resolve, usually within one to three years.

Anterior posterior glide: To improve the external rotation ROM of the shoulder, glenohumeral anterior glide mobilization has been used by physical therapists, which follows the principle of the "convex on concave rule" of joint movement. Physical therapist do posterior directed glide mobilization based on the "capsular constraint mechanism to restore external as well as internal rotation ROM.

Caudal glide: Inferior/caudal glide mobilization. This technique can be performed in varying degrees of flexion. During this mobilization, some longitudinal distraction is performed to decrease compression .it increases the abduction range of motion of.

Basic physiotherapy treatment

Basic physiotherapy treatment include active range of motion exercise, soft tissue mobilizationCounter-traction, myofascial release, Maitland mobilization, hot pack, Four-direction shoulder stretching in forward elevation, external rotation, horizontal adduction, and internal rotation was performed.

CHAPTER –II LITERRATURE REVIEW

Frozen shoulder or shoulder capsulitis of the shoulder has a prevalence of 2–5% in the general population and occurs mostly in middle age between 40 and 60 years and women are more commonly affected than men as well as both shoulders can be affected simultaneously or one side becomes affected first and then the other side a few years later in 6–17% of patients (Sharma et al., 2017). One has observed a significantly adverse impact on pain, function and quality of life in patients with shoulder adhesive capsulitis that burden of shoulder conditions, in terms of affecting a patient's perception of his or her general health, has been ranked as highly as the burden of having any of hypertension, congestive heart failure, acute myocardial infarction, diabetes mellitus and/or depression (Page et al.,2014).

Shoulder capsulitis is characterized by pain, stiffness, and limited function of the glenohumeral joint, which adversely affects the entire upper extremity and patients typically describe onset of shoulder pain followed by a loss of motion as well as the most common limitations in range of motion are flexion, abduction, and external rotation (Mulligan et al.,2015). Approximately 70% of frozen shoulder patients are women; however, males with frozen shoulder are at greater risk for longer recovery and greater disability. Although the exact pathophysiologic cause of this pathology remains elusive, there are two types identified in the literature: idiopathic and secondary adhesive capsulitis. Idiopathic ("primary") adhesive capsulitis occurs spontaneously without a specific precipitating event. Primary adhesive capsulitis results from a chronic inflammatory response with fibroblastic proliferation, which may actually be an abnormal response from the immune system. Secondary adhesive capsulitis occurs after a shoulder injury or surgery, or may be associated with another condition such as diabetes, rotator cuff injury, cerebrovascular accident (CVA) or cardiovascular disease, which may prolong recovery and limit outcomes(Kirkley et al., 2010).

In a profile study of 32 patients with adhesive capsulitis, heart disease and diabetes were more prevalent in those suffering from adhesive capsulitis than a control group (McNeely et al., 2004).

In a study, 19% of older diabetic patients had adhesive capsulitis; however, recent estimates place the incidence as high as 71% when patients with pre-diabetes (metabolic syndrome) are included. Both Type I and Type II diabetics are susceptible to frozen shoulder; unfortunately, diabetics have worse functional outcomes as measured by disability and quality of life questionnaires compared to non-diabetics with frozen Shoulder (Laska&Hanning, 2001).

Frozen shoulder is also a common complication following stroke, occurring in 25% of patients within 6 months in USA (Riley et al., 2005).

Three stages of frozen shoulder have been described in the literature: painful stage, stiffness or "frozen" stage, and recovery or "thawing" stage, with the average length of symptoms lasting 30 months. The average range of motion in frozen-stage shoulder patients is 98° of abduction, 117° of flexion, 33° external rotation and 18° of internal rotation with the shoulder abducted to 90°. While the "stiffness stage" is the longest of the stages, adhesive capsulitis is thought to be reversible in the acute pain stage. In addition to limited range of motion, shoulder complex muscle imbalances lead to altered shoulder motion. The upper trapezius tends to be more activated than the lower trapezius, creating an imbalance of the scapular stabilizers leading to increased elevation and upward rotation of the scapula during elevation of the glenohumeral joint in both the frontal and sagittal planes .Patients with adhesive capsulitis have higher EMG ratios of upper trapezius to lower trapezius during arm elevation when compared to asymptomatic subjects, indicating a muscular imbalance (Thomas et al., 2007).

The literature reports that adhesive capsulitis progresses through three overlapping clinical phases:

Acute/freezing/painful phase: gradual onset of shoulder pain at rest with sharp pain at extremes of motion, and pain at night with sleep interruption which may last anywhere from 3-9 months.

Adhesive/frozen/stiffening phase: Pain starts to subside, progressive loss of glenohumeral motion in capsular pattern. Pain is apparent only at extremes of movement. This phase may occur at around 4 months and last till about 12 months.
Resolution/thawing phase: Spontaneous, progressive improvement in functional range of motion which can last anywhere from 1 to 3.5 years (Moosmayer et al., 2014)

Patients with frozen shoulder exhibit significant deficits in shoulder kinematics, including increased elevation and upward scapular rotation. Eventually, patients with adhesive capsulitis develop the characteristic "shrug sign" during glenohumeral joint elevation, where the scapula migrates upward prior to 60 degrees of abduction. This indicates compensation due to lack of capsular extensibility as well as a change in the central nervous system motor patterning due to maladaptive movement (Dierckset al., 2014).

Patients with adhesive capsulitis may also develop adaptive postural deviations such as anterior shoulders or increased thoracic kyphosis as the function of the shoulder complex remains limited and painful. Adhesive capsulitis is generally related to a shortening and fibrosis of the joint capsule (ligaments) surrounding the shoulder joint. Nevisian was among the first to report thickening and contraction of the shoulder capsule as well as inflammatory changes through histologic analysis (Ludewig& Reynolds, 2009).
The contracture of the shoulder ligaments actually decreases the volume of the capsule, thus limiting range of motion. It is likely that limitations in range of motion and the pain associated with frozen shoulder are not only related to capsular and ligamentous tightness, but also fascia restrictions, muscular tightness, and trigger points within the muscles. Physical therapists can address impairments and limitations associated each of these contributors to the pathology of adhesive capsulitis with a variety of treatment methods (Thomas et al., 2007).

Physical therapy interventions for frozen shoulder syndrome are joint mobilization and exercise. Physical therapy is the most effective interventions. Non-aggressive physical therapy interventions are generally more effective than aggressive or intensive interventions (Itoi et al.,2015). Physical therapy interventions used with patients with

frozen shoulder frequently include modalities, manual techniques, and therapeutic exercise. While some of these interventions have been studied in patients with adhesive capsulitis, it is important to remember that not all clinical interventions have evidence to support their use in specific patient populations. Recall that evidence-based practice is best defined as the use of the best evidence available along with clinical experience while taking into consideration the unique needs of an individual patient (Bunker et al, 2005).

The rationale for using modalities in patients with shoulder capsulitis includes pain relief and affecting scar tissue (collagen). However, the use of modalities such as ultrasound, massage, iontophoresis, and phonophoresis has not been proven to be beneficial in treatment of patients with adhesive capsulitis (Bal et al., 2008).

Interestingly, transcutaneous electrical stimulation (TENS) has been shown to significantly increase range of motion more than heat combined with exercise and manipulation. Research also suggests that low-power laser therapy is more effective than a placebo for treatment of patients with adhesive capsulitis. Recently, deep heating through diathermy combined with stretching was shown to be more effective than superficial heating for treating frozen shoulder patients (Vermeulen et al., 2002).

Because adhesive capsulitis involves fibrotic changes to the capsule ligamentous structures, continuous passive motion or dynamic splinting are thought to help elongate collagen fibers. Continuous passive motion (CPM) was recently compared with conventional PT in 57 patients with adhesive capsulitis. Both groups improved after 4 weeks of treatment; while there was no significant difference between the groups, the CPM patients had greater reduction in pain levels(McHardy et al., 2008).

Dynamic splinting was also recently evaluated in patients with Stage 2 (“frozen stage”) adhesive capsulitis.The experts noted better outcomes when physical therapy was combined with the protocol, although there was no statistically significant difference between standard physical therapy or the Dynasplint alone. The concept of total end-range time (TERT) has also been described in the treatment of patients with adhesive capsulitis, suggesting maintenance of a stretch in the maximally lengthened range of motion for a total of 60 minutes per day (Bunker, 2005).

As stated previously, joint mobilization is an effective intervention for adhesive capsulitis. Several studies have demonstrated the effectiveness of joint mobilization in adhesive capsulitis patients. In particular, posterior glide mobilization was determined to be more effective than anterior glide for improving external rotation range of motion in patients with adhesive capsulitis (Mantone et al., 2000).

Chang (2004), randomly assigned 20 consecutive adhesive capsulitis patients to physical therapy interventions including grade III stretch mobilization with distraction at end range of abduction and external rotation using either an anterior or posterior directed linear translation. After 3 sessions, the posterior mobilization group had significantly improved their external rotation range of motion by 31 degrees versus only 3 degrees in the anterior mobilization group. In addition, high-grade joint mobilization techniques were more effective than low-grade mobilization in improving glenohumeral mobility and reducing disability in a recent randomized controlled trial of treatment of patients with adhesive capsulitis(Ko et al., 2011).

Myofascial trigger points, focal areas of increased tension within a muscle, may be present in the musculature around the shoulder complex in patients with adhesive capsulitis. In Travel and Simons' classic textbook, the authors describe how the subscapularis muscle in particular is referred to as the “Frozen Shoulder” muscle because trigger points in the subscapularis cause limitations in shoulder elevation and external rotation. The Spray and Stretch technique for the subscapularis and latissimusdorsi muscle may be effective at reducing trigger point irritation, pain, and helping to gradually lengthen tight muscles (Critchley et al., 2008).

Soft tissue mobilization and deep friction massage may benefit adhesive capsulitis patients. Deep friction massage using the Cyriax method was shown to be superior to superficial heat and diathermy in treatment of patients with adhesive capsulitis (McNeely et al., 2008).

Probably the most commonly prescribed therapeutic exercises for adhesive capsulitis are active-assisted range of motion (AAROM) exercises. These typically involve the patient using the uninvolved arm, or using equipment such as rope-and-pulley, wand/T-bar, or exercise balls. Generally, these exercises are performed for flexion, abduction and

external rotation ranges of motion which are frequently the most limited (Kazemi, 2000). Griggs and colleagues found that physical therapy including 4 self-stretches (passive flexion, horizontal adduction, internal rotation behind the back with the unaffected arm, and external rotation at 0° using a cane) performed at least twice a day produced a satisfactory outcome in 90 percent of stage 2 adhesive capsulitis patients. These patients significantly improved in pain, range of motion, and shoulder function; however, the study did not compare the intervention to other types of treatment. Despite this limitation, the authors suggested that more aggressive treatments such as manipulation are rarely necessary (Ludewig et al., 2009). Resistive exercises typically include strengthening of the scapular stabilizers and rotator cuff, when range of motion has progressed enough for strengthening to be an appropriate intervention. Muscles prone to weakness in a variety of shoulder dysfunctions include the lower trapezius, serratus anterior, and infraspinatus. Patients with adhesive capsulitis have significantly weaker lower trapezius muscles compared to asymptomatic controls. It is important that treating therapists facilitate normal movement patterns rather than allowing pathological adaptive patterns to prevail during movement for the sake of completing an exercise (Walker et al., 2012)

If a patient demonstrates a “shrug sign” while performing resisted abduction, the exercise should be stopped and modified with less resistance or be attempted in an altered position, while cuing of the patient for proper movement patterns. The “Shoulder Sling” exercise can be used to help re-train the initial setting phase of the rotator cuff when initiating abduction. The Shoulder Sling exercise for a “rotator cuff set” is considered analogous to a “quad set” exercise in the lower extremity. The elastic band creates an “upward and inward” vector of resistance that the patient must push against in a “down and out” vector. This movement simulates the initiation of abduction as well as the depression and stabilization functions of the rotator cuff, which occur prior to and during abduction. Anecdotally, this exercise helps reduce early activation of the upper trapezius during abduction in patients demonstrating a shrug sign(Robinson et al., 2012).

Non-operative treatment may also include injections directly into the glenohumeral joint. These injections often contain both a corticosteroid and an anesthetic, and can also include saline to distend the capsule, stretching the fibers. When saline is used to distend

the capsule, it is known as “distension arthrography” or “hydroplasty”. Corticosteroid injections have been shown to be as effective as exercise for treating frozen shoulder, particularly when provided in the early stages of the pathology (Manske&Prohaska, 2010). In their systematic review, Blanchard et al. suggested that corticosteroid injections have a greater effect when compared to physical therapy when utilized within the first 6 weeks of treatment, although these differences diminished over time.They noted a moderate effect of corticosteroid injections on pain, external rotation ROM, and disability at 6 weeks, and only small effects after 12 weeks (Trampas&Kitsios, 2006).

Distension arthrography is often successfully combined with physical therapy.In fact, therapeutic exercise, including physical therapy, is more effective when combined with a corticosteroid injection (Lin et al., 2009).

Adhesive capsulitis patients not responding to physical therapy are often treated with manipulation under anesthesia (MUA), where the shoulder is forcefully moved by the physician into the full ranges of motion, breaking the adhesions located within of the shoulder capsule. In addition to increased risk of complications from anesthesia, MUA can cause severe damage including labral tears, tendon tears, fractures, and ruptures of the shoulder ligaments. Most recently, steroid injections with distention arthrography have been shown to be as effective as MUA and are therefore the recommended course of treatment because of the risks associated with MUA (Dodenhoff et al., 2000).

Joint mobilization, including Maitland’s oscillatory techniques and Kaltenborn’s sustained stretch technique, is used clinically to treat adhesive capsulitis. The purpose of the mobilizing exercise therapy for a frozen shoulder is primarily to increase shoulder movement by stretching the glenohumeral joint capsule (Celik et al., 2016). Research has shown that Maitland’s and Kaltenborn’s techniques are similarly effective in reducing pain and improving ROM in adhesive capsulitis patients. These techniques mobilize the glenohumeral joint while keeping the scapula fixed relative to the thorax and glenohumeral joint (Do et al., 2015). To improve the external rotation ROM of the shoulder, glenohumeral anterior glide mobilization has been used by physical therapists, which follows the principle of the “convex on concave rule” of joint movement (Harryman et al.2009).caudal glide increased flexion and abduction ROM. Johnson et al. (2017) Conducted a randomized control trial in 20 patients with adhesive capsulitis,

which compared anterior and posterior glide mobilization with lateral traction of the glenohumeral joint. It was concluded that an increase in external rotation ROM can be achieved by Kaltenborn's grade III posterior glide mobilization (Johnson et al., 2017). Glenohumeral abduction ROM in these patients canbeimproved by end-range caudal and posterior glide mobilization (Sarkari et al., 2006). The glenohumeral joint capsule can be stretched by fixing the scapula and moving the humerus or by fixing the humerus and moving the scapulapostulated the capsular constraint mechanism, which contrasts the convex on concave theory. Some researchers have found that the external and internal rotation ROM increases with posterior gliding manipulation of the shoulder (Neviaser et al., 2010)caudal glide increased flexion and abduction ROM(Sarkari et al., 2006). A randomized control trial in 20 patients with adhesive capsulitis, which compared anterior and posterior glide mobilization with lateral traction of the glenohumeral joint. It was concluded that an increase in external rotation ROM can be achieved by Kaltenborn's grade III posterior glide mobilization. Glenohumeral abduction ROM in these patients can be improved by end-range caudal and posterior glide mobilization (Johnson et al., 2007).

CHAPTER –III METHODOLOGY

This research was a quantitative evaluation of the comparison between anterior posterior glide with conventional physiotherapy and caudal glide with conventional physiotherapy management for the patients with shoulder capsulitis. To identify the effectiveness of this treatment approach Visual Analogue Scale (VAS),Goniometer& SPADI (Shoulder Pain and Disability Index)questionnaire was used as measurement tools for measuring the pain intensity in several functional positions.

3.1 Study design

The study was conducted by using Randomized Clinical Trail (RCT). From the outdoor patients with adhesive capsulitis, 14 patients was randomly selected and then 7 patients with Adhesive Capsulitis was randomly assigned to anterior posterior glide mobilization with conventional physiotherapy group (Group-A) and 7 patients to the caudal glide with conventional physiotherapy group (Group-B) for this randomized clinical trial study. The study is a single blinded study which was conducted at musculoskeletal department of CRP, Savar. A pre-test (before intervention) and post-test (after intervention) was administered with each subject of both groups to compare the pain effects and ROM changes before and after the treatment.

3.2 Study area

Outpatient Physiotherapy, Musculoskeletal Unit, Department of Physiotherapy, CRP, Savar, Dhaka- 1343.

3.3 Study Population

A population refers to the entire group of people or items that meet the criteria set by the researcher. The population of this study wasthe Adhesive capsulitis Patients.

3.4 Sample Scheme

The study group subjects where studied in such way that this patients coming to CRP at Savar with a particular time period. As these patients attained at CRP randomly without the choice of CRP authority or the researchers choice, so they may beconsidered as a random sample.

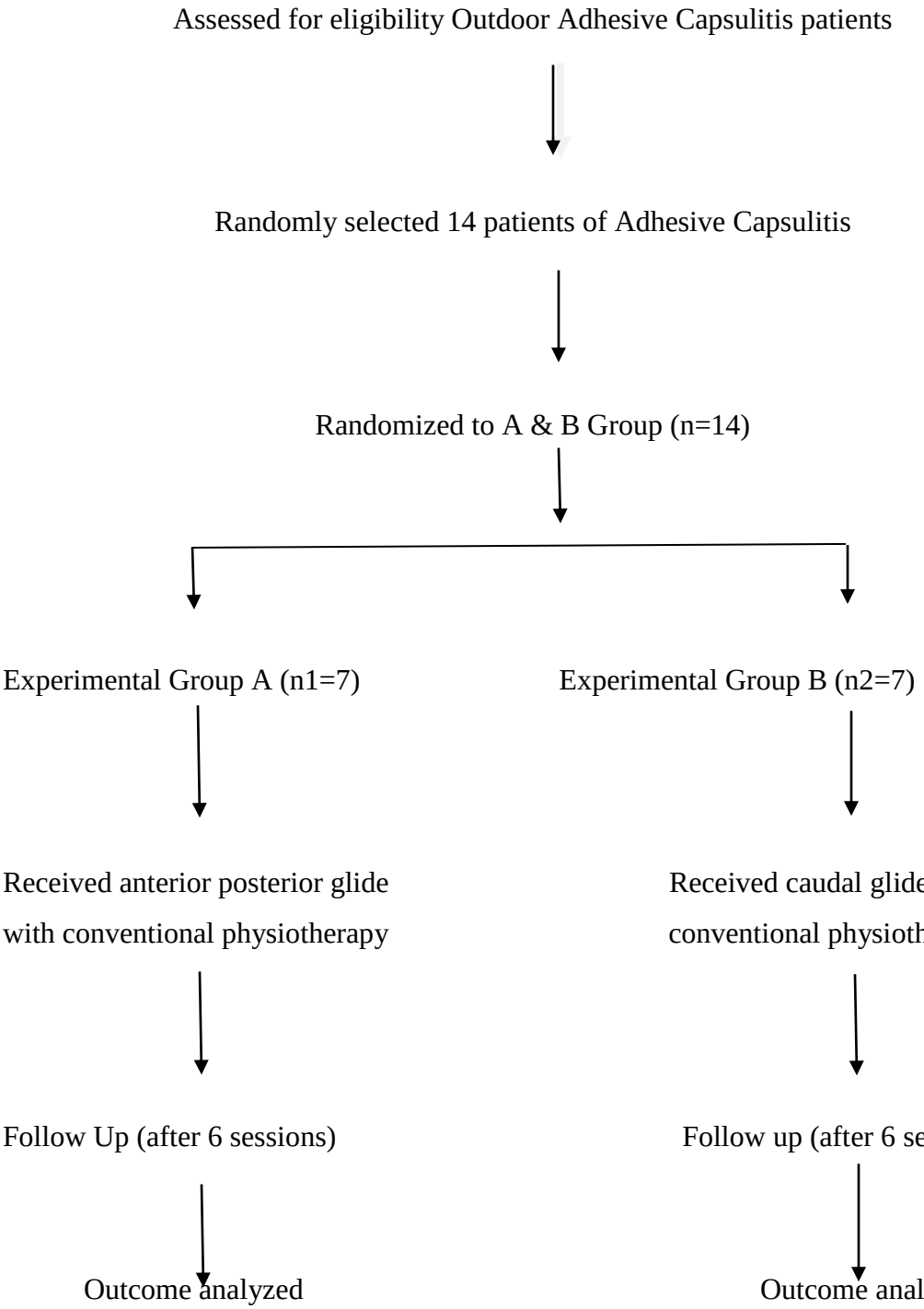
3.5 Inclusion criteria

- The participants were those individuals who has been diagnosed previously as Adhesive Capsulitis or recently diagnosed by Physiotherapist.
- Voluntary participants.
- Age group: 21-60 years old of both genders.

3.6 Exclusion criteria

- Subject who has history of taking physiotherapy intervention, oral NSAID or corticosteroid injection previously.
- Subjects who were mentally unstable.
- Pregnancy.
- History of metastatic cancer.
- Unstable angina.
- Prior surgery.
- Arthritis of shoulder joint.

Flowchart of the phases of randomized clinical trial:



A flowchart for a randomized clinical trial of a treatment program including conventional physiotherapy with anterior posterior glide and caudal glide mobilization exercise for patient with Adhesive Capsulitis.

3.7 Sample Size

14 sampleswere taken by the researcher. Obviously that was a small sample but still we belief they provided a representative picture of the study.

3.8 Sample technique

Subjects, who was met the inclusion criteria, was taken as sample in this study. Fourteen patients with Adhesive capsulitis was selected from outdoor musculoskeletal physiotherapy department of CRP (Savar) and then 7 patients with Adhesive Capsulitis was randomly assigned to anterior posterior glide with conventional physiotherapy group (Group-A) and 7 patients to the caudal glide with conventional physiotherapy group (Group-B) for this randomized clinical trial study. The study was a single blinded study. When the sample was collected, the researcher randomly assigned the participants into two experimental groups, because it improves internal validity of experimental research. The samples was given numerical number A1, A2, A3 etc for the group A and B1, B2, B3 etc. for the group B. Total 14 samples was included in this study, among them 7 patients was selected for the group A (received anterior posterior glide with conventional physiotherapy) and rest 7 patients will select for group B (caudal glide with conventional physiotherapy)

3.9 Measurement Tools

To conduct the study questionnaire was developed under the advice and permission of the supervisor following certain guidelines. The researcher used Visual Analogue scale (VAS) for pain measurement in different working position. There was eightclose ended questions with visual analogue scale (VAS) with some objective questions which was measured by examiner and each question was formulated to identify the change of pain with each activity and improvement of ROM and A written questionnaire, pen, paper and a Goniometer were used as data collection tools in this study.

3.9.1 Visual Analogue Scale (VAS)

In this study researcher was used visual analogue scale for measuring the intensity of pain. The VAS is a simple and accurate way of subjectively assessing pain along a continuous visual spectrum. VAS consists of a straight line on which the individual being assessed marks the level of pain. The ends of the straight line are the extreme limits of pain with 0 representing no pain and 10 representing the worst pain ever experienced. According to Myles (1999), the visual analog scale (VAS) is a tool widely used to measure pain and a change in the visual analog scale score represents a relative change in the magnitude of pain sensation.

3.9.2 Goniometer

In this study researcher was used Goniometer for measuring the Range of Movement (ROM) of Abduction, Lateral rotation and Medial rotation. The Goniometer is a simple and accurate way of objective assessment of ROM.

3.10Data collection procedure

The study procedure was conducted through assessing the patient, initial recording, treatment and final recording. After screening the patient at department, the patients was assessed by qualified physiotherapist. Six sessions of treatment was provided for every subject.

Fourteen subjects were chosen for data collection according to the inclusion criteria. The researcher divided all participants into two groups and coded A1-A7 for group A and B1-B7 for group B. Group A was received anterior posterior glide with conventional physiotherapy and group B was received for caudal glide with conventional physiotherapy.

Data was gathered through a pre-test, intervention and post-test and the data was collected by using a written questionnaire form which was formatted by the researcher. Pretest was performed before beginning the treatment and the intensity of pain& ROM of movements. The same procedure was performed to take post-test at the end of six session of treatment. Researcher gave the assessment form to each subject before starting treatment and after six session of treatment and instructed to put mark on the line of VAS

according to their intensity of pain. The researcher collected the data both in group A and group B in front of the qualified physiotherapist in order to reduce the biasness. At the endof the study, specific test was performed for statistical analysis.

3.11 Intervention

A common intervention program was executed for both groups as conventional physiotherapy, it includes- . Capsular stretching, pendulum exercise, soft tissue manipulation, pulley exercise and Infra-red radiation which are the most frequently, used interventions. Clinical physiotherapist applied the anterior posterior glide exercise with the conventional physiotherapies and caudal glide exercise with conventional physiotherapies. Each group got 6 sessions of treatment. There is no evidence of exact repetition for exercise, but in practice expert opinion suggests that 6 sessions is minimal enough for patients with adhesive Capsulitis to get more effectiveness.

3.12 Data Analysis

Data was analyzed by SPSS version 20 to compute the descriptive statistics using pie chart and also percentage and parametric test were conducted using paired t test and unrelated t test

The researcher has calculated the variables mean, mean difference, standard deviation, standard error, degree of freedom and significant level to show that experimental group and control group mean difference in within group was significantly different than the standard table values. In the between group than the standard table values. In the between group, the data shows that the mean difference was greater than the control group. The researcher had tested mean variables stating problem test using t statistic, which is paired t test and also unrelated t test and was predicted as normally distributed if $Df \geq 30$

Estimated predictor

Hypothesis test of mean difference between the experimental group A and experimental group B, within groups and also between groups, assuming normal distribution of the parent population, two different and or independent variables, variables were quantitative by estimated predictor of paired t test or unrelated *t*-test.

Hypothesis test

Paired T test

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

Assumption

Paired variables

Variables were quantitative

Parent population of sample observation follows normal distribution

Null and Alternative hypothesis

H_o: $\mu_1-\mu_2=0$ where the experimental group A and experimental group B initial and final mean difference is same.

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

Here,

H_0= Null hypothesis

H_a= Alternative hypothesis

μ_1= Mean difference in initial assessment

μ_2= Mean difference in final assessment

Formula: Test statistic t is follows

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

Where,

d= mean of difference (d) between paired values

SE (d)= Standard Error of the mean difference

SD= standard deviation of the difference d

n = number of paired observationcalculation of paired t value of the pain at rest as below

$$t = \frac{d}{SE(d)} = \frac{d}{\frac{SD}{\sqrt{n}}} = \frac{4.057}{\frac{0.647}{\sqrt{7}}} = \frac{4.057}{0.244} = 16.627$$

Level of significant

The researcher has used 5% level of significant to test the hypothesis. Calculated t value and compared with standard t value is with appropriate degrees of freedom; the null hypothesis was rejected when observed t value is large than the standard t value and alternative hypothesis is accepted. On the other hand reversed decision has taken when the calculated value of t is smaller than the standard t value. All this decision are taken with a prefixed level of significance.(for this case is 5%)

Table 3.1: Shoulder Pain and Disability Index Questionnaire(Initial and Final assessment paired t test)

		Experimental Group A			**Experimental Group B**	
Serial no	**variables**	***t***	**Sig (2-tailed)**	**d*f***	***t***	**Sig (2-tailed)**
Pair 1	Pain at rest	12.182	.000	6	16.627	.000
Pair 2	Pain at abduction	16.812	.000	6	31.814	.000
Pair 3	Pain at lateral rotation	29.005	.000	6	39.080	.000
Pair 4	Pain at medial rotation	26.350	.000	6	47.878	.000
Pair 5	Pain at lying	12.840	.000	6	31.658	.000

Unrelated *t* test

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

Assumption

Different and independent variables

Variables were quantitative

Normal distribution of the variables

Formula: test statistic t is follows:

$$t = \frac{\bar{x_1} - \bar{x_2}}{s\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where,

x_1=Mean of experimental group

x_2= Mean of control group

n_1=Number of participants in the experimental group A

n_2= Number of participants in the experimental group B

S= Combined standard deviation of both group

Table 3:2 SPADI questionnaire unpaired *t* test

Variables	*t*	d*f*	Sig. (2-tailed)
Pain at rest	2.103	12	.057
Pain at abduction	4.798	12	.000
Pain at lateral rotation	2.986	12	.011
Pain at medial rotation	3.684	12	.003
Pain at lying	3.232	12	.007

3.13 Ethical consideration

Research proposal was submitted to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) and approval was obtained from the board. Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) Research guideline also followed to conduct this study.

3.14 Informed Consent

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

3.15 Elimination of confounding variables

Confounding variable has an effect on the study variables which can affect the result of the study. There were some confounding variables in this study such as patients age, history of taking recent physiotherapy intervention, oral NSAID, steroid injection or other treatment which can influence the result of the study. To control the confounding variables, researcher set the inclusion criteria as to include only those subjects who have no history of taking recent physiotherapy intervention, oral NSAID, steroid injection or other treatment.

CHAPTER –IV RESULTS

4.1.1 Age of the participants

Variables	Group (Mean± SD)			
	Experimental Group A	**N**	**Experimental Group B**	**N**
Age of the participants	**48± 11.633**	**7**	**51.86±7.471**	**7**

Table–4.1.1: Comparison of Age of the Participants.

Table 4.1.1 compares the baseline characteristics of age of the participants between Experimental Group A and Experimental Group B. In addition, two groups did not show significant differences. In Experimental Group A, the mean age (± SD) of the participants was 48 (± 11.633) years and in experimental group B 51.86 (± 7.471) years.

4.1.2 Gender of the participants

14 Patients with shoulder capsulitis were included as sample of the study, among them 43% (n=6) were Female and 57% (n=8) were Male.

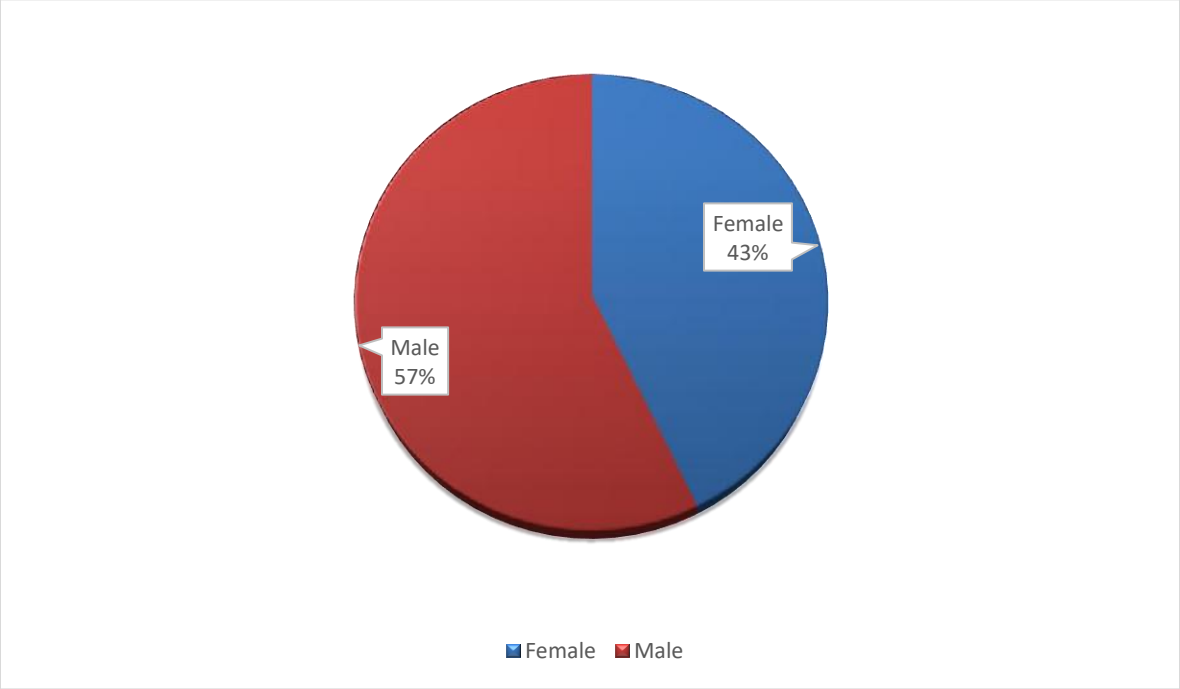


Figure – 4.1.2: Gender of the Participants.

4.1.3 Occupation of the participants:

14 Patients with adhesive Capsulitis were included as sample of the study, among them almost 36% (n=5) housewife, about 22 % (n=3) were labour, about 21% (n=3) were others, about 14% (n=2) were businessman and about 7% (n=1) were Teacher.

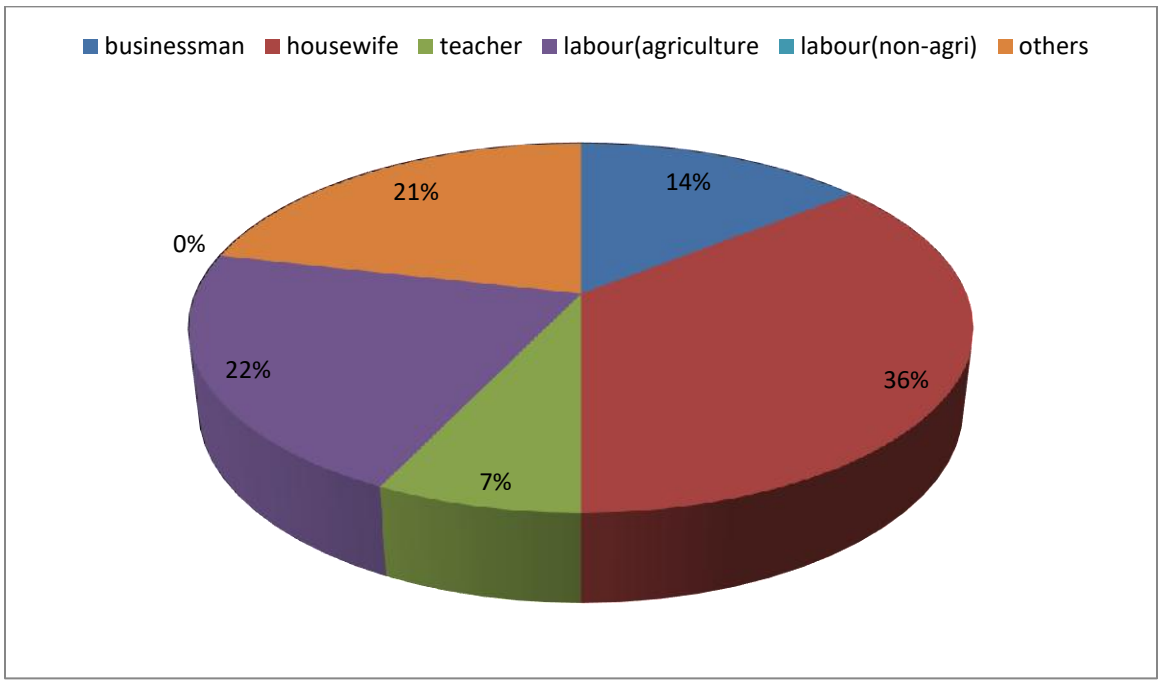


Figure – 4.1.3: Occupation of the Participants.

4.1.4 Health status of the participants

Health status of 14 Patients with adhesive Capsulitis were included as sample of the study, among them almost 57% (n=8) was fair, about 43 % (n=6) was good and about 0% (n=0) was poor.

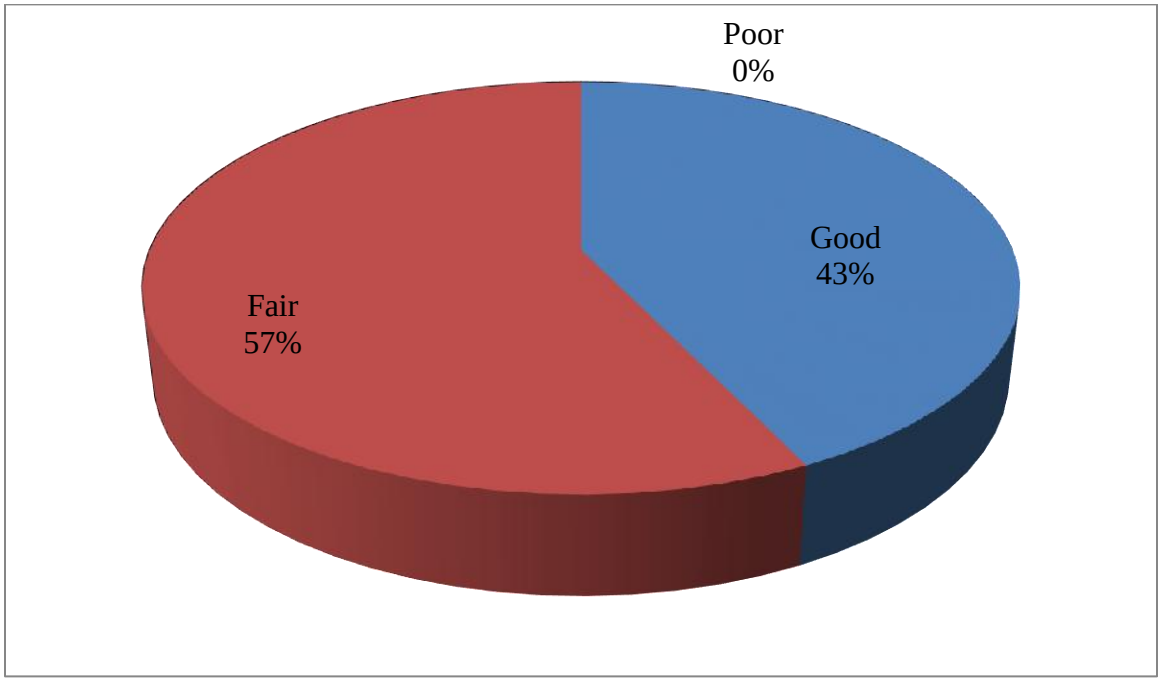


Figure – 4.1.4: Health status of the Participants.

4.2 Results of pain in different position:

4.2.1 Pain at rest:

The study found that in the pain at rest observed t value was 12.182 in experimental group A at two tailed paired t test while this same variable for experimental group B observed value was 16.573 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at rest in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of pain at rest were significant at 0.000% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient was more effective than anterior posterior glide with conventional physiotherapy in case of pain at rest. The unrelated or independent t test in between group at 5% level of significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 2.103. The observed t value was less than the table value that mean null hypothesis was accepted and alternative hypothesis was rejected which meant there was no difference between caudal glide with conventional physiotherapy treatment group and anterior posterior glide with conventional physiotherapy group.

4.2.2 Pain at abduction:

The study found that in the pain at abduction observed t value was 16.812 in experimental group A at two tailed paired t test while this same variable for experimental group B observed value was 31.814 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at abduction in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of pain at abduction were significant at 0.000% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient

was more effective than anterior posterior glide with conventional physiotherapy in case of pain at rest. The unrelated or independent t test in between group at 5% level of significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 4.798. The observed t value was greater than the table value that mean null hypothesis was rejected and alternative hypothesis was accepted which meant caudal glide with conventional physiotherapy was more effective than the anterior posterior glide with conventional physiotherapy.

4.2.3 Pain at lateral rotation:

The study found that in the pain at lateral rotation observed t value was 29.005 in experimental group A at two tailed paired t test while this same variable for experimental group B observed value was 39.080 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at abduction in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of pain at lateral rotation were significant at .000% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient was more effective than anterior posterior glide with conventional physiotherapy in case of pain at rest. The unrelated or independent t test in between group at 5% level of significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 2.986. The observed t value was greater than the table value that mean null hypothesis was rejected and alternative hypothesis was accepted which meant caudal glide with conventional physiotherapy was more effective than the anterior posterior glide with conventional physiotherapy.

4.2.4 Pain at medial rotation:

The study found that in the pain at medial rotation observed t value was 26.350 in experimental group A at two tailed paired t test while this same variable for experimental group B observed value was 47.878 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at abduction in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of pain at medial rotation were significant at .000% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient was more effective than anterior posterior glide with conventional physiotherapy in case of pain at rest. The unrelated or independent t test in between group at 5% level of significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 3.684. The observed t value was greater than the table value that mean null hypothesis was rejected and alternative hypothesis was accepted which meant caudal glide with conventional physiotherapy was more effective than the anterior posterior glide with conventional physiotherapy.

4.2.5 Pain at lying on affected side:

The study found that in the pain at lying on affected side observed t value was 12.840 in experimental group A at two tailed paired t test while this same variable for experimental group B observed value was 31.658 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at abduction in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of pain at lying on affected side were significant at .000% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient was more effective than anterior posterior glide with conventional physiotherapy in case of pain at rest. The unrelated or independent t test in between group at 5% level of

significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 3.232. The observed t value was greater than the table value that mean null hypothesis was rejected and alternative hypothesis was accepted which meant caudal glide with conventional physiotherapy was more effective than the anterior posterior glide with conventional physiotherapy.

4.3: Results of ROM in different movement:

4.3.1: ROM in passive Abduction:

The study found that in the range of motion in abduction observed t value was 12.394 in experimental group A at two tailed paired t test while this same variable for experimental group B observed value was 25.562 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at abduction in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of ROM at abduction were significant at 0.00% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient was more effective than anterior posterior glide with conventional physiotherapy in case of abduction ROM. The unrelated or independent t test in between group at 5% level of significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 1.080. The observed t value was less than the table value that mean null hypothesis was accepted and alternative hypothesis was rejected which meant there was no difference between caudal glide with conventional physiotherapy treatment group and anterior posterior glide with conventional physiotherapy group.

4.3.2 ROM in passive Lateral Rotation:

The study found that in the range of motion in lateral rotation observed t value was 12.728 in experimental group A at two tailed paired t test while this same variable for

experimental group B observed value was 15.884 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at abduction in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of ROM at lateral rotation were significant at 0.000% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient was more effective than anterior posterior glide with conventional physiotherapy in case of abduction ROM. The unrelated or independent t test in between group at 5% level of significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 1.949. The observed t value was less than the table value that mean null hypothesis was accepted and alternative hypothesis was rejected which meant there was no difference between caudal glide with conventional physiotherapy treatment group and anterior posterior glide with conventional physiotherapy group.

4.3.3 ROM in passive Medial Rotation:

The study found that in the range of motion in medial rotation observed t value was 15 in experimental group A at two tailed paired t test while this same variable for experimental group B observed value was 7.937 in within group. 5% level of significant at 6(six) degree of freedom standard t value was 2.44 and observed t value in pain at abduction in both group which was greater than standard t value that mean null hypothesis was rejected and alternative hypothesis was accepted in the within group. Both groups in aspect of ROM at medial rotation were significant at 0.000% level. But the mean difference of experimental group B was greater than the experimental group A mean that means Caudal glide with conventional physiotherapy treatment for shoulder capsulitis patient was more effective than anterior posterior glide with conventional physiotherapy in case of abduction ROM. The unrelated or independent t test in between group at 5% level of significant and 12 degree of freedom standard table value was 2.179 and at the same significant level and same degree of freedom observed t value was 3.020. The observed t value was greater than the table value that mean null hypothesis was rejected

and alternative hypothesis was accepted which mean caudal glide with conventional physiotherapy treatment group was more benefited than anterior posterior glide with conventional physiotherapy group.

CHAPTER –V DISCUSSION

The purpose of this study was to evaluate the effectiveness of anterior posterior glide with conventional physiotherapy compare to caudal glide with conventional physiotherapy for Adhesive capsulitis.

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 large p. self-structured questionnaire was used to find out the socio demographic indicator. Significant improvement occurred in the most of the measures that were recorded before and after treatment. In this study, the mean age of the participants was 48 years in Experimental group A and 51.86 years in Experimental group B. Frozen shoulder usually affects the patients age range between 40 to 60 years (Evans et al.,2010)

14 Patients with shoulder capsulitis were included as sample of the study, among them 43% were Female and 57% were Male. The prevalence rate of frozen shoulder is more in female than male as they have greater chance of occurring thyroid problem and diabetes mellitus (Milgrom et al., 2008).

14 Patients with adhesive Capsulitis were included as sample of the study, among them almost 36% housewife, about 22 % were labour, about 21% were others ,about 14% were businessman and about 7% were Teacher. Physical workplace strains such as overhead working, heavy lifting and forceful work as well as working in an awkward posture increase the risk of shoulder disorders (Linaker et al., 2015).

The mean difference of pain reduction from both experimental group A and experimental group B shows that the study was effective in reducing pain intensity and proves clinically significant.Self-structured questionnaire was used to find out the improvement of pain in different functional position. The analysis of significance was carried out by using paired t test and unrelated *t*-test to compare the effectiveness of anterior posterior glide with conventional physiotherapy compare to caudal glide with conventional physiotherapy for shoulder capsulitis.

In case of paired sample t test there was significant improvement occurred in pain at rest, pain at abduction , pain at lateral rotation and pain at medial rotation and in all cases the p value was <0.05. But in experimental group the significant level was more than the control group. In case of Independent sample t test on the data the results were found to be significant in case of pain during abduction (p <0.05), pain during lateral rotation (p <0.05), pain during medial rotation & (p<0.05) pain during sleeping on affected side but not statistically significant in case of pain during pain in rest.

In accordance with previous study there a significant improvement of pain by applying mobilizations specially the caudal glide mobilization and it is attributed by various mechanism such as neuro-physiological effects achieved by the stimulation of type II mechanoreceptors and by inhibition of type IV nociceptive, stimulation of Golgi tendon organ activity, and reflex inhibition of the muscle (Vermeulen et al., 2011)

In case of paired t test researcher also found that significant improvement at ROM in abduction, medial rotation and lateral rotation as well as observed p value was <0.05 in all cases. But in case of independent sample t test the result of ROM in passive abduction and lateral rotation was not significant and observed p value was >0.05 but there was significant improvement in ROM in medial rotation.

A quasi experimental study showed that among the 100 participants, control group was received conventional physiotherapy and experimental group was received MWM for 2 months to improve range of motion that result concluded that in trail group, significant Improvement of ROM in case of Abduction (p<.05) and Medial rotation (p<.05) but improvement of lateral rotation was same in control group (Arshad et al., 2015).

By a single blinded randomized clinical trial was to investigate the effects of caudal glide and anterior posterior glide along with conventional physiotherapy then reported thepain and range of motion in patients with shoulder pain. Seventeen patients referred to physiotherapy for shoulder pain were randomly assigned to a treatment group that received caudal glide mobilization along with conventional physiotherapy (n = 7) named as experimental group B and the another group called experimental group A received the treatment anterior posterior glide along with conventional physiotherapy (n = 7).

Measurements were taken both before and after the experimental period.Passiverange of motion was measured for abduction, medial rotation and lateral rotation. Pain was assessed with the Shoulder pain & disability Index Questionnaire (SPADI).

This study provides preliminary evidence that antero-posterior glide is also effective in improving glenohumeral abduction ROM when given at the end of available range. However, it is less effective than the traditional caudal glide mobilization (Sarkari et al., 2006).

We conclude that anterior posterior glide with conventional physiotherapy and caudal glide with conventional physiotherapy both was effective in improvement of pain and range of motion of the shoulder capsulitis patient. But the comparison of both improvements shows that, shoulder pain had significant improvement caudal glide with conventional physiotherapy than anterior posterior glide with conventional physiotherapy.

Limitations

The study was conduct with 14 patients of Adhesive Capsulitis, which is a very small number of samples in both groups and is not sufficient enough for the study to generalize the wider population of this condition.

Researcher only explored the effect of anterior posterior glide and caudal glide exercise of after 6 session, so the long term effect of anterior posterior glide and caudal glide exercise was not explored in this study.

The research was carried out in CRP Savar such a small environment, so it is difficult to keep confidential the aims of the study for blinding procedure. Therefore, single blind method is used in this study.

There is no available research done in this area in Bangladesh. So, relevant information about Adhesive Capsulitis patient with specific intervention for Bangladesh will be very limited in this study.

CHAPTER –VII CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The result of this study have identified the effectiveness of Caudal glide with conventional physiotherapy is better treatment than the Anterior Posterior glide with conventional physiotherapy alone for reducing pain and improve ROM in shoulder capsulitis patient. Participants in the Caudal glide with conventional physiotherapy showed a greater benefit than those in the Anterior Posterior glide with conventional physiotherapy group, which indicate that the conventional physiotherapy with Caudal glide can be an effective therapeutic approach for patient with Adhesive capsulitis. From this research the researcher wishes to explore the effectiveness of Caudal glide along with conventional physiotherapy to reduce the features of patient with Adhesive capsulitis, which will be helpful to facilitate their rehabilitation and to enhance functional activities.

Adhesive Capsulitis is a global gleno-humeral disease that just not affects a specific joint but the entire complex. The manifestations are not only pain but also limitation in movements and restriction to activities of daily living. From this research, researcher also concluded the specific variables and comparison of their improvement rates. This will aid the professionals to decide the specific evidence based protocol for applying interventions in Adhesive capsulitis.

6.2 Recommendations

As a consequence of this researcher it is recommended to do further study including comparison of anterior posterior glide with conventional physiotherapy &caudal glide with conventional physiotherapy alone to assess the effectiveness of these interventions with double blinding procedure. It is recommended to do further study with more number of subjects and with a longer time frame. It is also recommended to include the functional outcome assessment of patient and to identify the average number of sessions that are needed to be discharged from treatment to validate the treatment technique.

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Annexure

1. IRB
2. Permission Letter
3. Consent Form (Bengali Version)

4.Questionnaire (Bengali Version)

5.Consent Form (English Version)

6.Questionnaire (English Version)

7.Statistical Probability Tables

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

Ref. CRP-BHPI/IRB/11/18/1273

Date: 15/11/18

To,
Mahnaz Tamannur,
B.Sc. in Physiotherapy,
Session: 2013-2014, Student ID:112130205
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Subject: Approval of the thesis proposal "**comparison between anterior posterior glide with conventional physiotherapy and caudal glide with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP (centre for rehabilitation of the paralised) Bangladesh**" by ethics committee.

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

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

The purpose of the study is to identify comparison between anterior posterior glide with conventional physiotherapy and caudal glide with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP. The study involves use of a questionnaire of self-structure and measurement tools to explore the result 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 11 AM on 24th January, 2018 at BHPI.

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

Best regards,

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

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন ঃ ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স ঃ ৭৭৪৫০৬৯
CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org

July 19, 2018

Head

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

CRP-Chapain, Savar, Dhaka-1343

Through: Head, Department of Physiotherapy, BHPI

Subject: Seeking permission to collect data to conduct my research project on "Comparison between anterior posterior glide with conventional physiotherapy and caudal glide with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP (Centre for the rehabilitation of the paralyzed) Bangladesh".

Sir,

With due respect and humble submission to state that I am Mahnaz Tamannur, a student of 4th Professional B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). As per approval of ethical review committee of BHPI, I have been conducting a research project on "Comparison between anterior posterior glide with conventional physiotherapy and caudal glide with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP(Centre for the rehabilitation of the paralyzed) Bangladesh"Mohammad Anwar Hossain., Associate professor and Head of the Physiotherapy Department, CRP has been supervising me in order to accomplish this study. However, conducting this research project is partial of the requirement for the degree of B.Sc. in Physiotherapy. I want to collect necessary data from the patients attending at musculoskeletal outpatient department of CRP Savar. Therefore I need to obtain your kind written permission to initiate data collection from the targeted patients. I would like to assure that ethical principles would be followed as per guidelines of my institution/department.

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

Your obediently,

Mahnaz Tamannur

Mahnaz Tamannur
4th Professional B.Sc. in Physiotherapy
Session: 2013-2014
Bangladesh Health Professions Institute (BHPI)
(An academic institution of CRP)
CRP-Chapain, Savar, Dhaka-1343.

Approved

19/07/18

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

সম্মতিপত্র

আসসালামুয়ালাইকুম/নমস্কার, আমি ,মেহনাজতামান্নুরঢাকা বিশ্ববিদ্যালয়ের চিকিৎসা অনুষদের অধিভুক্ত বাংলাদেশ হেলথ প্রফেশনস্ ইন্সিটিউট এর বি.এস.সি ইন ফিজিওথেরাপী কোসের ৪র্থ বর্ষের একজন শিক্ষার্থী। অধ্যায়নের অংশ হিসেবে আমাকে একটি গবেষণা সম্পাদন করতে হবে এবং এটা আমার প্রাতিষ্ঠানিক কাজের একটা অংশ। নিম্নোক্ত তথ্যাদি পাঠ করার পর অংশগ্রহণকারীদের গবেষণায় অংশগ্রহনের জন্য অনুরোধ করা হলো। আমার গবেষণার বিষয় " সোল্ডারক্যাপ্সুলাইটিসরোগীদেরএপিগ্লাইডএবংকডালগ্লাইডএরকার্যকারিতা"। এই পরীক্ষামূলক গবেষণার মাধ্যমে আমি একটি অনুমান পরীক্ষা করব যে, সোল্ডারক্যাপ্সুলাইটিস রোগীদের ক্ষেত্রে শুধুমাত্র প্রচলিত ফিজিওথেরাপি অপেক্ষা প্রচলিত ফিজিওথেরাপির সাথেএ-পি গ্লাইড এবং কডাল গ্লাইড এর মধ্যে কোনটা বেশি কার্যকর। আমার গবেষণার উদ্দেশ্য হলো থেরাপী দেবার পূর্বে ও পরে রোগীদের ব্যথা পরিমাপ করা। আমি যদি আমার গবেষণাটি সার্থকভাবে সম্পূর্ণ করতে পারি তবে যেসব রোগীরা সোল্ডার ক্যাপ্সুলাটিস রোগে ভুগছেন তারা উপকৃত হবেন এবং এটি হবে একটি পরীক্ষামূলক প্রমাণ।

গবেষণাটি সম্পাদনের জন্য, আমার তথ্য সংগ্রহ করা প্রয়োজন হবে। গবেষণার ক্ষেত্র বিবেচনা করে আপনার মাঝে আমার গবেষণায় অংশগ্রহণ করার জন্য প্রয়োজনীয় বৈশিষ্ট্য লক্ষ্য করা গেছে। এজন্য, আপনি আমার গবেষণার একজন সম্মানিত অংশগ্রহণকারী হতে পারেন এবং আমি আপনাকে আমার গবেষণায় অংশগ্রহন করতে অনুরধ জানাচ্ছি।

আমি প্রতিজ্ঞা করছি যে, এই গবেষণা আপনার জন্য ঝুঁকিপূর্ণ হবে না অথবা আপনার কোন ক্ষতি করবে না। গবেষণা চলাকলীন সময়ে কোন রকম দ্বিধা বা ঝুঁকি ছাড়াই যেকোন সময়ে আপনি এটাকে বাদ দিতে পারবেন। এই গবেষণার প্রাপ্ত তথ্য সম্পূর্ণভাবে গোপনীয় থাকবে এবং অংশগ্রহণকারীর ব্যাক্তিগত তথ্য অন্য কোথাও প্রকাশ করা হবে না।

যদি আপনার গবেষণা সম্পর্কে কোনো জিজ্ঞসা থাকে তবে আপনি অনুগ্রহপূবক যোগাযোগ করতে পারেন গবেষক মেহনাজ তামান্নুর অথবা আনোয়ার হোসেন, হেড অফ ডিপার্টমেন্ট, ফিজিওথেরাপি বিভাগ , সিআরপি, সাভার, ঢাকা-১৩৪৩ এর সাথে।

শুরু করার আগে আপনার কি কোন প্রশ্ন আছে ?

আমি কি শুরু করতে পারি ?

☐ ☐

হ্যা না

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ .....

গবেষকের স্বাক্ষর ও তারিখ .....

সাক্ষীর স্বাক্ষর ও তারিখ .....

প্রশ্নপত্র (বাংলা)

সোল্ডার ক্যাপ্সুলাইটিস রোগীর জন্য (মাস্কুলোস্কেলেটাল ইউনিট) সি. আর. পি বাংলাদেশ এ এনটেরিওর-পোসটেরিওর গ্লাইড এর সাথে প্রচলিত ফিজিওথেরাপি এবং কডাল গ্লাইড এর সাথে প্রচলিত ফিজিওথেরাপি চিকিৎসা এর তুলনা।

শাখা ১: রোগীরপরিচিতি	
১.১কোডনংঃ	
১.২সাক্ষাতকারের তারিখঃ	
১.৩উত্তরদাতার নামঃ	
১.৪ঠিকানাঃ বাসার নম্বর\ গ্রামঃ পোস্ট অফিসঃ থানাঃ জেলাঃ	
১.৫যোগাযোগের নম্বরঃ	
১.৬তথ্য সংগ্রহের স্থানঃ	
১.৭সম্মতি হ্যানা	

শাখা ২: সামাজিক-জনতাত্ত্বিক তথ্য

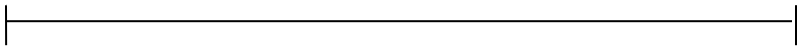
	প্রশ্ন	প্রতিক্রিয়া
২.১	আমি কি আপনার বয়স জানতে পারি?	|__|__| বছর
২.২	লিঙ্গ	১.মহিলা ২.পুরুষ
২.৩	ঠিকানা এবং যোগাযোগের নম্বর	
২.৪	আপনার শিক্ষা কোনটি?	১.আমি কখনো স্কুল এ যাইনি ২.সামান্য প্রাথমিক শিক্ষা ৩.প্রাথমিক শিক্ষা সম্পূর্ণ করেছি ৪.সামান্য মাধ্যমিক শিক্ষা ৬.উচ্চতর শিক্ষা ৭.স্নাতক অথবা তার চেয়ে বেশি ৮.এছাড়া
২.৫	আপনার পেশা কি?	১.সরকারি কর্মকর্তা ২.ব্যবসায়ী ৩.গ্রিহিনি ৪.শিক্ষক ৫.শ্রমিক (কৃষি) ৬.শ্রমিক (কৃষি ব্যাতিত) ৭.এছাড়া

২.৬	আপনার বাসস্থান কোনটি ?	১.শহুরে ২.গ্রাম্য ৩. অর্ধ -গ্রাম্য
২.৭	সাস্থের অবস্থা	১.ভালো ২.মোটামোটি ভালো ৩.খারাপ

শাখা ৩: সোল্ডার ক্যাপ্সুলাইটিস সম্পরকিত তথ্য

এই প্রশ্নপত্র সোল্ডার ক্যাপ্সুলাইটিস রোগীর জন্য প্রণীত।৩.১ নং থেকে ৩.৫ নং পর্যন্ত প্রশ্ন রোগীর ব্যাথা নির্দেশ করে, প্রতিটি প্রশ্নের শেষে একটি লম্বা লাইন আছে, আপনার হাত এর বাম পাশ নির্দেশ করে কোনো ব্যাথা নেই আর ডান পাশ নির্দেশ করে তিব্র ব্যাথা। আপনি যতটুকু ব্যাথা অনুভব করেন তা চিণহিত করুন।৩.৬ নং থেকে ৩.৮ নং প্রশ্নের উত্তর পরীক্ষক লিপিবদ্ধ করবে।৩.৯ নং থেকে ৩.১৬ নং প্রশ্নের উত্তর নির্দেশ করবে আপনার কতটুকু শারীরিক অক্ষমতা আছে।

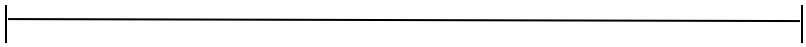
৩.১ বিশ্রামরত অবস্থায় আপনার ব্যাথার পরিমান কত?



০১০ সে.মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

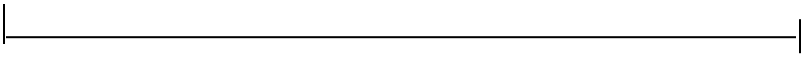
৩.২ পাশাপাশি হাত তুলতে আপনার ব্যাথার পরিমান কত?



০১০ সে.মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

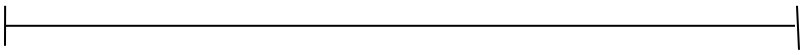
৩.৩ চুল আচরাতে আপনি কেমন বেথা পান?



০ ১০ সে.মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

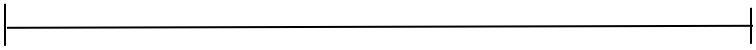
৩.৪ হাত নিয়ে পিঠ চুলকাতে আপনার কেমন ব্যাথা লাগে?



০১০ সে. মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

৩.৫ আক্রান্ত পাশে ঘুমাতে আপনার কেমন ব্যাথা হয়?



০১০ সে. মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

৩..৬ আক্রান্ত কাধের পেসিভ এবডাকসন (পরীক্ষক পরিমাপ করবেন)

…….. ডিগ্রী

৩.৭আক্রান্ত কাধের পেসিভ লেটারাল রোটেশন

……..ডিগ্রী

৩.৮ আক্রান্ত কাঁধের পেসিভ মিডিয়াল রোটেসন

…….. ডিগ্রী

প্রশ্নপত্রবাংলা (চিকিৎসাপরবর্তী)

সোল্ডার ক্যাপ্সুলাইটিস রোগীর জন্য (মাস্কুলোস্কেলেটাল ইউনিট) সি. আর. পি বাংলাদেশ এ এনটেরিওর-পোসটেরিওর গ্লাইড এর সাথে প্রচলিত ফিজিওথেরাপি এবং কডাল গ্লাইড এর সাথে প্রচলিত ফিজিওথেরাপি চিকিৎসা এর তুলনা।

শাখা১: রোগীরপরিচিতি	
১.১কোডনংঃ	
১.২সাক্ষাতকারের তারিখঃ	
১.৩উত্তরদাতার নামঃ	
১.৪ঠিকানাঃ বাসার নম্বর\ গ্রামঃ পোস্ট অফিসঃ থানাঃ জেলাঃ	
১.৫যোগাযোগের নম্বরঃ	
১.৬তথ্য সংগ্রহের স্থানঃ	
১.৭সম্মতি হ্যানা	

শাখা ২: সামাজিক-জনতাত্ত্বিক তথ্য

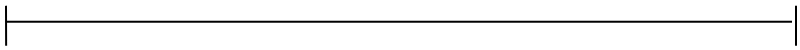
	প্রশ্ন	প্রতিক্রিয়া
২.১	আমি কি আপনার বয়স জানতে পারি?	|__|__| বছর
২.২	লিঙ্গ	১.মহিলা ২.পুরুষ
২.৩	ঠিকানা এবং যোগাযোগের নম্বর	
২.৪	আপনার শিক্ষা কোনটি?	১.আমি কখনো স্কুল এ যাইনি ২.সামান্য প্রাথমিক শিক্ষা ৩.প্রাথমিক শিক্ষা সম্পূর্ণ করেছি ৪.সামান্য মাধ্যমিক শিক্ষা ৬.উচ্চতর শিক্ষা ৭.স্নাতক অথবা তার চেয়ে বেশি ৮.এছাড়া
২.৫	আপনার পেশা কি?	১.সরকারি কর্মকর্তা ২.ব্যবসায়ী ৩.গ্রিহিনি ৪.শিক্ষক ৫.শ্রমিক (কৃষি) ৬.শ্রমিক (কৃষি ব্যাতিত) ৭.এছাড়া

২.৬	আপনার বাসস্থান কোনটি ?	১.শহুরে ২.গ্রাম্য ৩. অর্ধ -গ্রাম্য
২.৭	সাস্থের অবস্থা	১.ভালো ২.মোটামোটি ভালো ৩.খারাপ

শাখা৩: সোল্ডারক্যাপ্সুলাইটিসসম্পরকিততথ্য

এই প্রশ্নপত্র সোল্ডার ক্যাপ্সুলাইটিস রোগীর জন্য প্রণীত।৩.১ নং থেকে ৩.৫ নং পর্যন্ত প্রশ্ন রোগীর ব্যাথা নির্দেশ করে, প্রতিটি প্রশ্নের শেষে একটি লম্বা লাইন আছে, আপনার হাত এর বাম পাশ নির্দেশ করে কোনো ব্যাথা নেই আর ডান পাশ নির্দেশ করে তিব্র ব্যাথা। আপনি যতটুকু ব্যাথা অনুভব করেন তা চিণহিত করুন।৩.৬ নং থেকে ৩.৮ নং প্রশ্নের উত্তর পরীক্ষক লিপিবদ্ধ করবে।

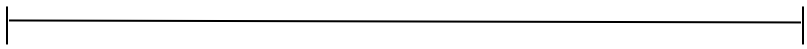
৩.১চিকিৎসার পর বিশ্রামরত অবস্থায় আপনার ব্যাথার পরিমান কত?



০১০ সে.মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

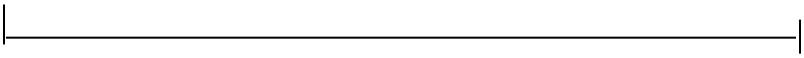
৩.২চিকিৎসার পর পাশাপাশি হাত তুলতে আপনার ব্যাথার পরিমান কত?



০১০ সে.মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

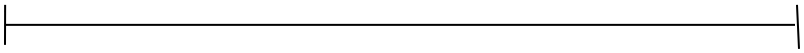
৩.৩চিকিৎসার পর চুল আচরাতে আপনি কেমন ব্যাথা পান?



০ ১০ সে.মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

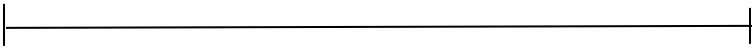
৩.৪ চিকিৎসার পর হাত নিয়ে পিঠ চুলকাতে আপনার কেমন ব্যাথা লাগে?



০১০ সে. মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

৩.৫চিকিৎসার পর আক্রান্ত পাশে ঘুমাতে আপনার কেমন ব্যাথা হয়?



০১০ সে. মি.

এখানে, ০ মানে কোনো ব্যাথা নেই এবং ১০ মানে তীব্র ব্যাথা

৩..৬চিকিৎসার পর আক্রান্ত কাধের পেসিভ এবডাকসন (পরীক্ষক পরিমাপ করবেন)

…….. ডিগ্রী

৩.৭চিকিৎসার পর আক্রান্ত কাধের পেসিভ লেটারাল রোটেশন

……..ডিগ্রী

৩.৮চিকিৎসার পর আক্রান্ত কাঁধের পেসিভ মিডিয়াল রোটেসন

…….. ডিগ্রী

Consent Form

Assalamualaikum\ Namashker,

I am MahnazTamannur, 4th Professional B.Sc. in Physiotherapy student of Bangladesh Health Professions Institute (BHPI) under the Medicine faculty of University of Dhaka. To obtain my Bachelor degree, I shall have to conduct a research and it is a part of my study. The participants are requested to participate in the study after reading the following.

My research title is "Comparison between anterior posterior glide with conventional physiotherapy and caudal glide with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP (Centre for the rehabilitation of the paralyzed) Bangladesh". Through this study I will find the effectiveness of anterior posterior glide and caudal glide along with conventional physiotherapy for the treatment of shoulder capsulitis. If I can complete this study successfully, patient may get the benefits who have been suffering from shoulder capsulitis and it will be an evidence based treatment.

To fulfill my research project, I need to collect data. Considering the area of my research, which criteria is necessary for my research is present of you. So, you can be a respected participant of my research and I would like to request you as a subject of my study. I want to meet you a few couple of session, during your regular therapy. The exercises that will be given are pain free and safe for you.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. I assure that all data will be kept confidential. Your participation will be voluntary. You may have the right to withdraw consent and discontinue participation at any time of the experiment. You also have the right to answer a particular question that you don't like.

If you have any query about the study or right as a participant, you may contact with me.

Do you have any questions before I start?

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

Yes No

Signature of the participant & Date…….

Signature of the researcher & Date……..

Signature of the witness & Date……..

Questionnaire

"Comparison between anterior posterior glide along with conventional physiotherapy and caudal glide along with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP (Centre for the rehabilitation of the paralyzed) Bangladesh."

Section-1: Patient's Identification	
1.1 Code Number:	
1.2 Date of Interview:	
1.3 Name of respondents:	
1.4 Address: House number /vill: P.O: P.S: Dist:	
1.5 Contact number:	
1.6 Place of data collection:	
1.7Consent Taken: Yes No	

Code no:

Section 2: Socio Demographic information

"Comparison between anterior posterior glide along with conventional physiotherapy and caudal glide along with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP (Centre for the rehabilitation of the paralyzed) Bangladesh."

QN	Questions and filters	Responses
2.1	May I know your age please?	|__|__| yrs
2.2	Sex:	1 =Female 2= Male
2.3	Address and conduct number:	
2.4	What is your education?	1=Never attended school 2=Some primary education 3=Completed primary education 4=Some secondary education 5=Completed secondary education 6=Higher secondary 7=Bachelor or above 8= Other (Specify)…….
2.5	What is your profession (occupation)?	1=Service holder 2=Businessman 3=Housewife 4=Teacher 5=Labor (agriculture)

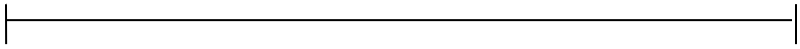
		6=Labor (non-agriculture) 7=Other (Specify)…….
2.6	Your residential or living area?	1= Urban 2= Rural 3= Semirural
2.7	Health Status	1=Good 2=Fair 3=Poor

Section 3: Adhesive capsulitis related information

Comparison between anterior posterior glide along with conventional physiotherapy and caudal glide along with conventional physiotherapy for the treatment of shoulder capsulitis patient at musculoskeletal unit in CRP (Centre for the rehabilitation of the paralyzed) Bangladesh."

This questionnaire is designed for Adhesive Capsulitis patients. There are some questions (QN 3. 1- QN 3. 5) 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. The Answer of questions (QN 3.6- QN 3. 8) will be enlisted by examiner by using some measurement tools. The answer of other question (QN 3. 9- QN 3.16) will show the disability you have.

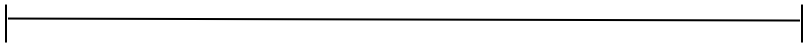
3.1 How severe your pain is at resting position?



0 10 cm

(A Zero (0) means no pain and Ten (10) means extreme pain)

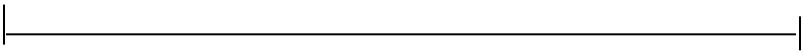
3.2 How severe is your pain during rising arm sideways (Abduction)?



0 10 cm

(A Zero (0) means no pain and Ten (10) means extreme pain)

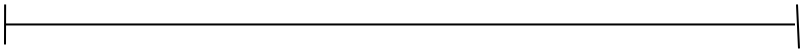
3.3 How severe is your pain during combing hair (Lateral Rotation)?



0 10 cm

(A Zero (0) means no pain and Ten (10) means extreme pain)

3.4 How severe is your pain during Scratching Lower back (Medial rotation)?



0 10 cm

(A Zero (0) means no pain and Ten (10) means extreme pain)

3.5 How severe is your pain during lying in affected side?

0 10 cm

(A Zero (0) means no pain and Ten (10) means extreme pain)

3.6 Passive ROM of Abduction of Affected Shoulder (Measured by examiner)

…….. Degrees

3.7 Passive ROM of Lateral Rotation of Affected Shoulder (Measured by examiner)

…….. Degrees

3.7 Passive ROM of medial rotation of Affected Shoulder (Measured by examiner)

…….. Degrees

Statistical Probability Table

	t	d*f*	Sig. (2-tailed)
Pain at rest	2.103	12	.057
Pain at abduction	4.798	12	.000
Pain at lateral rotation	2.986	12	.011
Pain at medial rotation	3.684	12	.003
Pain at lying	3.232	12	.007

	t	d*f*	Sig. (2-tailed)
ROM in abduction	1.080	12	.301
ROM in lateral rotation	1.949	12	.075
ROM medial rotation	3.020	12	.011 .

Experimental Group B		*t*	d*f*	Sig. (2-tailed)
Pair 1	Pain at rest	16.573	6	.000
Pair 2	Pain at abduction	31.814	6	.000
Pair 3	Pain at lateral rotation	39.080	6	.000
Pair 4	Pain at medial rotation	47.878	6	.000
Pair 5	Pain at lying	31.658	6	.000
Pair 6	ROM of abduction	-25.562	6	.000
Pair 7	ROM of lateral rotation	-15.884	6	.000
Pair 8	ROM of medial rotation	-7.937	6	.000

Experimental Group A		*t*	d*f*	Sig. (2-tailed)
Pair 1	Pain at rest	12.182	6	.000
Pair 2	Pain at abduction	16.812	6	.000
Pair 3	Pain at lateral rotation	29.005	6	.000
Pair 4	Pain at medial rotation	26.350	6	.000
Pair 5	Pain at lying	12.840	6	.000
Pair 6	ROM of abduction	12.394	6	.000
Pair 7	ROM of lateral rotation	2.728	6	.000
Pair 8	ROM of medial rotation	15.00	6	.000