Faculty of Medicine

University of Dhaka

IMPACT OF FROZEN SHOULDER ON QUALITY OF LIFE OF PATIENTS ATTENDED AT CRP: A CROSS SECTIONAL STUDY

By

Shazal Kumar Das

Master of Science in Physiotherapy

Session: 2013-2014

Registration No: 3490

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Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science in Physiotherapy

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance of this thesis entitled, **"Impact of frozen shoulder on quality of life of patients attended at CRP: A cross sectional study",** submitted by Shazal Kumar Das, for the partial fulfillment of the requirements for the degree of Master of Science in Physiotherapy.

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Declaration Form

- This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidate for any degree
- This dissertation is being submitted in partial fulfillment of the requirements for the degree of M.Sc. in Physiotherapy.
- This dissertation is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references. A Bibliography is appended.
- I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority.
- I confirm that the electronic copy is identical to the bound copy of the Thesis.
- In case of dissemination the finding of this project for the future publication, research supervisor will highly concern and it will be duly acknowledged as post-graduate thesis.

Signature:……..

Name: Shazal Kumar Das……

Date:……...

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List of Abbreviations

BHPI	:	Bangladesh Health Professions Institute
CRP	:	Center for the Rehabilitation of the Paralysed
BMRC	:	Bangladesh Medical Research Council
WHO	:	World Health Organization
IRB	:	Institutional Review Board
SC	:	Shoulder Capsulitis
FS	:	Frozen Shoulder
PT	:	Physiotherapy
QoL	:	Quality of life

Abstract

Purpose: The purpose of the study was to determining impact of frozen shoulder on quality of life of patients attended at CRP. ***Objectives:*** To explore the impact of frozen shoulder on quality of life of patients attended at CRP, to find out the socio-demographic (age, gender, occupation, marital status and educational level) information, to find out the status of physical function affecting by frozen shoulder, to find out the association between pain and frozen shoulder patients. ***Methodology:*** A Quantitative study was conducted with close ended questionnaire to collect data from 100 participant age ranging from 30-59 years. Data were numerically coded and captured in Microsoft Excel using an SPSS 16.0 version. ***Results:*** A total number of 100 participants were recruited in the study. In ratio, the male participants were about 54% (n=54) and female were about 46% (n=46). Both physical and mental health status were poor and physical health status was showed more affected as compared to mental health status. Pain was severe among the participants and that's why most of the patient's general health was fair and assistance was required for their daily activity. Mental health was some time interfering due to their pain and social function was moderately interfering among the participants. There was no correlation between age and physical functioning (p=0.30) which indicated that frozen shoulder might be main contributor for limiting physical functioning. There have strong association of both overhead activity and hand behind neck activity (p=0.002) and also hand limitations to ages (p=0.025) among the patients with frozen shoulder. Most of patients 47% (n=48) were feeling difficulty to continue their social functioning along with carrying shopping bag (p=0.003).

Conclusion: This study has shown that patients with frozen shoulder have poor quality of life pertaining to the physical health component as well as mental health component but physical function was more limited than mental function. So, treatments should be emphasized in physical function.

Key words: **Quality of life, Frozen Shoulder**

CHAPTER-I INTRODUCTION

1.1 Background

Frozen shoulder, also known as, adhesive capsulitis is a condition characterized by pain and significant loss of both active range of motion (AROM) and passive range of motion (PROM) of the shoulder (Nath, 2015). Adhesive capsulitis is the most common disease among those musculoskeletal diseases (Yang, et al., 2007). This is a common but poorly understood syndrome of painful shoulder stiffness. Frozen shoulder syndrome was first described by Duplay in 1872. He used the term peri-arthritis scapulo-humeral and believed that manipulation under anesthesia had a role in its treatment.

In 2009, Captuli used the term frozen shoulder to describe this condition. Adhesive capsulitis a term is an orthopaedic condition that is commonly encountered in general practice. It is characterized by an insidious and progressive loss of active and passive mobility in the glenohumeral joint presumably due to capsular Contracture. He stated that most cases resolved in about two years without treatment. More recently, Zuckerman and Cuomo defined frozen shoulder or idiopathic adhesive capsulitis, as a condition of uncertain etiology characterized by substantial restriction of both active and passive shoulder motion that occurs in the absence of a known intrinsic shoulder disorder (Griggs, et al., 2010).

Adhesive capsulitis is a common cause of shoulder pain and disability. It is characterized by spontaneous onset of shoulder pain accompanied by progressive limitation of both active and passive glenohumeral movement (Carette, et al., 2005).Adhesive capsulitis (frozen shoulder) is an insidious painful condition with gradual restriction of all planes of movement in the shoulder. It is the main cause of

shoulder pain and stiffness. For this condition, the pain and stiffness can limit the ability to do simple everyday activities like getting dressed, brushing hair or reaching into a cabinet (Ludewig and Reynolds, 2009).

Frozen shoulder usually affects patients aged 40-70, with females affected more than males, and no predilection for race. In Bangladesh, Adhesive capsulitis is one of the common disabling diseases affecting both elderly male and female (Arshad, et al., 2015). In 6-17% of patients, the other shoulder becomes affected, usually within five years, and after the first has resolved (Nath, 2015). The occurrence of one side frozen shoulder has the chance to the risk of contralateral shoulder involvement by 5% to 34% and simultaneously bilateral shoulder involvement occurs often 14% of the time (Ludewig and Reynolds, 2009).

Adhesive capsulitis can be due to idiopathic or post-traumatic causes but the term adhesive capsulitis should be reserved for the idiopathic type of shoulder stiffness. Factors associated with adhesive capsulitis include female gender, age older than 40 years, trauma, immobilization, diabetes, thyroid disease, stroke, myocardial infarction, and the presence of autoimmune diseases, cervical spine disorders and reflex sympathetic dystrophy syndrome. Idiopathic (primary) adhesive capsulitis is characterized by fibrosis of the capsule resulting with progressive, painful loss of active and passive shoulder motion.

Frozen shoulder typically lasts 12 to 18 months with a cycle of 3 clinical stages. There are freezing, frozen and thawing stages: Stage I is mainly characterized by pain usually lasting 2–9 months. In Stage II (frozen stage): pain gradually subsides but stiffness is marked lasting 4–12 months. In Stage III (thawing phase): pain resolves and improvement in range of motion (ROM) appears (Guler and Kozanoglu, 2005).

Adhesive capsulitis of the shoulder is a common affliction, affecting 2–5% of the general adult population and up to 20% of patients with diabetes. An average general practice list of 6250 patients in England would expect to see 15 to 16 new cases each year (Shah and Lewis, 2007). Statistics by country Adhesive Capsulitis (2005) claimed that in Bangladesh 3 to 5% people were affected by Adhesive Capsulitis .The prevalence of Adhesive Capsulitis is rapidly increasing day by day.

In western countries approximately 7-2% of the population suffers from a painful or stiff shoulder. The annual incidence of the shoulder disorders in general practice is noted between 7-13% in 1000 patients per years and 30% of all patients with new episodes of shoulders pain in Dutch primary care are referred for physiotherapy (Lin, et al., 2009).

The most common in the co-morbid condition of diabetes mellitus with an incidence of 10-34% are estimated in the England (Griggs, et al., 2010). According to Center for the Disease Control and Prevention about 13.7 million people in the United States sought medical care in 2003 for shoulder problem (Thomas, et al., 2007). The period 1987-1995, the state of Washington (USA) each year accepted over 6000 work disability claims related to shoulder problems (Goyal, et al., 2013).

Adhesive capsulitis is a clinical diagnosis made from a history of the gradual onset of severe shoulder pain with the progressive limitation of active and passive glenohumeral movement. The most significant loss of movement is in the external rotation of the joint (Kisner and Colby, 2006).

The condition is widely reported as a disease of middle and is characterized by three phases. A painful phase, lasting between 3 and 8 months is followed by a phase of progressive stiffness or “adhesive phase", typically lasting 4–6 months. Final

resolution phase of gradual return of motion usually lasts 5–24 months (Shah and Lewis, 2007).

It is assumed that 3% of people in Europe develop the condition in their lifetime. There is no known racial preference; however, adhesive capsulitis is associated with certain conditions, particularly insulin-dependent diabetes. Some people with frozen shoulder may get better over a period of 18-24 months. In other cases, symptoms can persist for several years. Studies suggest that about 50% of people with frozen shoulder continue to experience symptoms up to seven years after the condition starts. However, with appropriate treatment it is possible to shorten the period of disability (Captuli, 2009).

Many treatments have been employed in the management of shoulder disorders; few have been proven to be effective in randomized controlled trials. 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. Physical therapy is often the first line of management for Frozen Shoulder (Griggs, et al., 2010).

As physiotherapy Intervention the traditional principles of treatment of adhesive capsulitis are to relieve pain, maintain range of motion, and ultimately to restore function. The treatment of adhesive capsulitis by means of physiotherapy all along consists of different modalities (e.g., exercises, electrotherapy or massage) which may be applied side by side. Relief of pain may be achieved by massage, deep heat, ice, ultrasound, TENS (transcutaneous electrical nerve stimulation), and LASER (light amplification by stimulated emission of radiations) as described in our standard text

books and other literature concerning the treatment of adhesive capsulitis. However, they probably offer little benefit. Mostly these applications are adjunct to other treatment modalities like mobilization techniques or home exercise program. Although adhesive capsulitis is generally considered to be a self-limiting condition that can be treated with physical therapy, to regain the normal extensibility of the shoulder capsule, passive stretching of the shoulder capsule in all planes of motion by means of mobilization techniques has been recommended.

Grades I and II of Maitland mobilization techniques are primarily used for treating joints limited by pain. Grades III and IV are primarily used as stretching maneuvers. Appropriate selection of mobilization technique for treatment can only take place after a thorough assessment and examination (Arslan and Celiker, 2011).There are many research reports advocating good effects of mobilization with movement techniques. The most reported effect is immediate reduction in pain and improved shoulder function (Arshad, et al., 2015).Exercise protocol of rotator cuff and scapular retractors believe to restore the normal kinematics of gleno-humeral and scapulo-thoracic motion that plays an important role on Adhesive capsulitis or such conditions limiting normal shoulder kinesiology (Michener, et al., 2008).

Chronic diseases such as diabetes, cardiovascular diseases, injuries and trauma not only responsible for mortality but lead to various morbidity. Shoulder capsulitis is one of the consequences of chronic diseases (Kelly, et al., 2013). The exclusive anatomical structure with an extraordinary range of motion (ROM) is shoulder joint that allows us to interact with our environment. A loss of mobility of this joint will cause significant morbidity. Shoulder capsulitis a poorly understood musculoskeletal condition that can be disabling (Manske and Prohaska, 2010). The shoulder is a unique anatomical structure with an extraordinary range of motion (ROM) that allows

us to interact with our environment. A loss of mobility of this joint will cause significant morbidity (Neviaser and Hannafin, 2010).

This disorder is one of the most common musculoskeletal problems seen in orthopedics with an incidence of 3–5% in the general population and up to 20% in those with diabetes. The prevalence of frozen shoulder is 2% to 3% worldwide and usually starts between 40-70 years of age (Lennand, 2007). Approximately 2-3% of adults aged between 40 and 70 years develop shoulder capsulitis with a greater occurrence in women and non-dominant hand is more frequently affected (Levine, et al., 2007). The relationship between shoulder capsulitis and diabetes mellitus is well documented, with the incidence of shoulder capsulitis being two to four times higher in diabetics than in the general population (Neviaser and Hannafin, 2010). Frozen shoulder affects about 20% of people with diabetes and has been described as the most disabling of the common musculoskeletal manifestations of diabetes mellitus (Kordella, 2002).

Other co-morbid conditions include hyperthyroidism, hypothyroidism, Parkinson's disease, cardiac disease, pulmonary disease, stroke and surgical procedures like cardiac surgery, cardiac catheterization etc. (Boyle-Walker, et al., 1997). Earlier study was conducted on shoulder capsulitis as a postoperative complication of aneurysm surgery and the incidence of shoulder capsulitis was 70% among the early, delayed and elective surgery group in which the highest incidence of shoulder capsulitis was found to occur in early surgery group due to immobility of their upper extremity during post-operative treatment (Tanishima, et al., 1997).

There is no relative study concerning about the health related quality of life of frozen shoulder in Bangladesh. However a study was conducted to find out the prevalence of shoulder capsulitis among the patients undergoing Cardiothoracic Surgery. The study

found that the prevalence of frozen shoulder among the respondents was approximately 35%. The patients with age 60 years or more tend to be associated with the frozen shoulder significantly more than those with age <60 years. Females were particularly prone to develop frozen shoulder (53.3%). The prevalence of frozen shoulder was considerably higher among the diabetics than that among the non-diabetics (Uddin, et al., 2011).

1.2 Justification of the study:

Frozen Shoulder is a well-defined condition with its phases of severe pain, increasing stiffness and the gradual recovery of full movement of the shoulder. Approximately 2-3% of adults aged between 40 and 70 years develop shoulder capsulitis with a greater occurrence in women. Despite many studies, the frozen shoulder phenomenon is nowadays still regarded as an enigma. The disorder has a mysterious and intriguing appeal, with an apparently spontaneous onset and resolution, inflicting a great deal of suffering on patients over a prolonged period of time. No other joint seems to become affected in a similar way.

Frozen Shoulder is one of the most common musculoskeletal disorders which affect the quality of life of an individual. In CRP, many patients attend to receive treatment of shoulder capsulitis but treatment is not always successful and not makes them satisfied because of their limitation in functional activity at office and household activities. So my concentration is to evaluate the impact of frozen shoulder on quality of life among elderly patients. After completion of my study physiotherapist will get an idea about the impact of frozen shoulder on quality of life among elderly patients. This idea helps us to design a treatment plan according to patient's requirement. Also

we can provide better treatment and advice for the patient. As a health care professional it will improve our knowledge upon which we can give information to the patient about their life style modifications and which are responsible for their physical health problem and mental health status.

This research was based on practical data collection according to my question from the patient who was coming to take treatment at CRP. I was trying to build up the relationship between patients information about impact of frozen shoulder on quality of life and elderly patients that could be used in future in Bangladesh. This kind of research had not been done before in Bangladesh. So it will be one of the most important source for physiotherapist and other medical professions to know about which factors have impact on quality of life of shoulder capsulitis patient and how can easily overcome those factors by advancing our treatment protocol and enhance their health related quality of life.

There is growing evidence that impact of frozen shoulder on quality of life of patient with frozen shoulder is much limited which is essential to explore. So this study will explore how much impact of frozen shoulder on quality of life is limited for frozen shoulder patient. Also it gives details information about frozen shoulder. So patient can modify their life style and maintain a good health related quality of life. As a health care professional, it improves our knowledge about frozen shoulder patient and make the profession strongest and this study will be used as preventative measure for altering impact of frozen shoulder on quality of life in elderly patients with frozen shoulder. So there is no alternative option to do research as a professional to develop our profession.

1.3 Research Question:

What are the impacts of frozen shoulder on quality of life of patients attended at CRP?

1.4 Study Objectives:

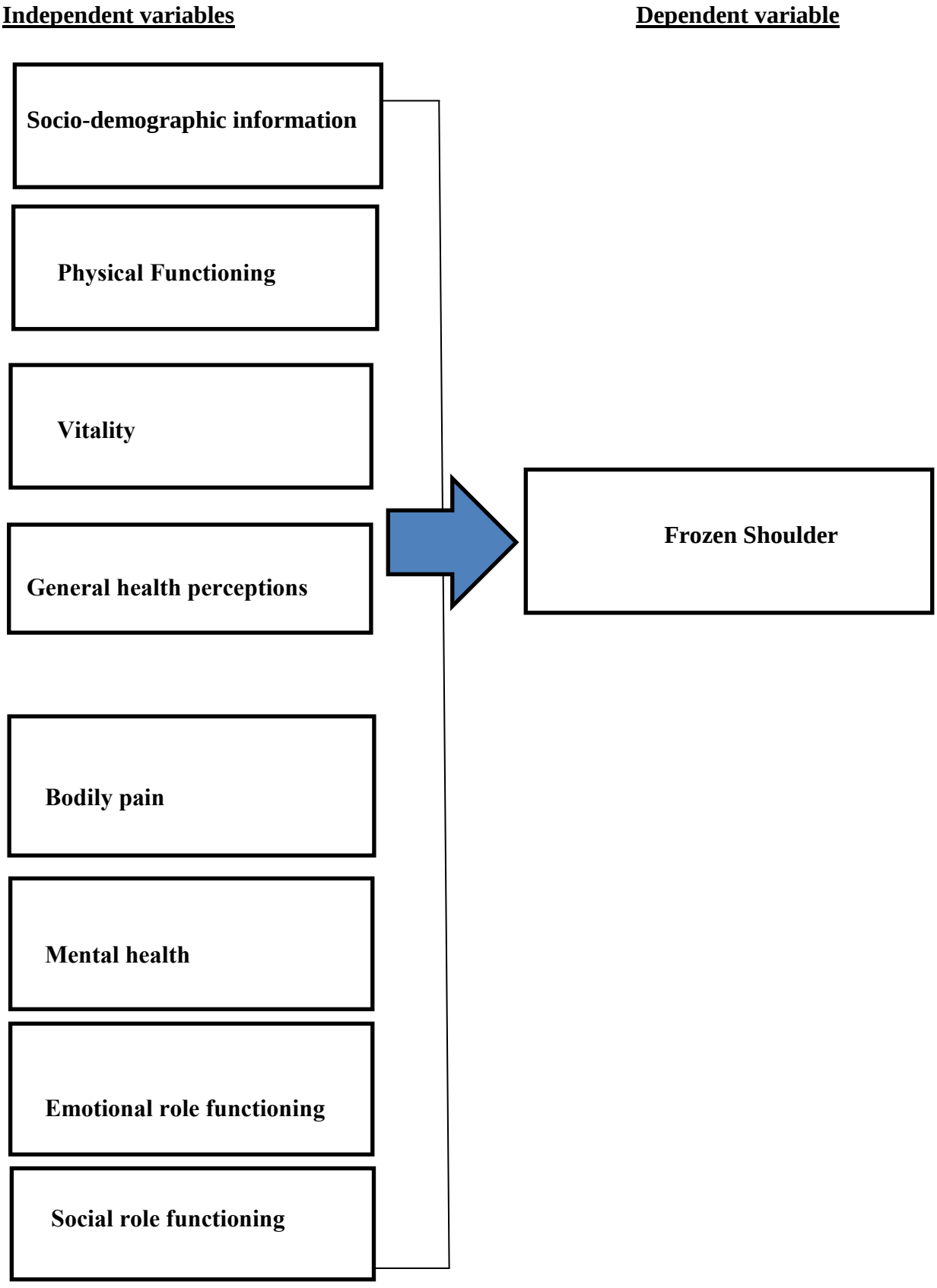
General objective

To find out the impact of frozen shoulder on quality of life of patients attended at CRP.

Specific objectives

- To explore the socio-demographic (age, gender, occupation, educational status) information of the participants.
- To find out an association between shoulder pain and physical functioning.
- To identify the level of physical status.
- To identify the level of mental status.
- To find out how frozen shoulder persuading repetitive work activity.
- To determine how frozen shoulder influencing overhead activity.
- To find out how frozen shoulder affects weight bearing or lifting any object.
- To find out an association between shoulder pain and working activity.
- To explore level of limitation of finishing official work owing to this shoulder pain.
- To find out an association between shoulder pain and social functioning.

1.5 Conceptual Framework



1.6 Operational Definition

Frozen Shoulder

Frozen shoulder, also known as shoulder capsulitis, is a common condition involving scapula humeral pain and loss of motion. It results from contraction of the glenohumeral joint capsule and adherence to the humeral head (Ewald, 2011).

Quality of life

The general well-being of individuals and societies.

Health

The state of being free from disease and illness.

Physical health

Physical health means a good body health which is a healthy because of regular physical activity, good nutrition and adequate rest.

Mental function

Mental function is terms often used interchangeably for the entire thing that individuals can do with their minds.

Vitality

Vitality is exuberant physical strength or mental vigor or capacity for survival for the continuation of a meaningful or purposeful existence.

Bodily pain

A person with generalized aches and pains has discomfort in multiple areas of the body.

Social function

Any public gathering, like a party or the opening of a new art gallery, or school graduation.

CHAPTER-II : LITERATURE REVIEW

Frozen shoulder is a condition of uncertain etiology characterized by a progressive loss of both active and passive shoulder motion (Yang, et al., 2007). Adhesive capsulitis is characterized by pain, stiffness, and limited function of the gleno-humeral joint, which adversely affects the entire upper extremity. Patients typically describe onset of shoulder pain followed by a loss of motion. The most common limitations in range of motion are flexion, abduction, and external rotation. Approximately 70% of frozen shoulder patients are women; however, males with frozen shoulder are at greater risk for longer recovery and greater disability (Kirkley, et al., 2005).The aetiology of frozen shoulder remains unclear. The disease process particularly affects the antero-superior joint capsule and the coracohumeral ligament. Arthroscopy shows a small joint with loss of the axillary fold and tight anterior capsule, mild or moderate synovitis, and no adhesions. Evidence shows a synovial inflammation with subsequent reactive capsular fibrosis.A dense matrix of type I and type III collagen is laid down by fibroblasts and myofibroblasts in the joint capsule. Subsequently, this tissue contracts (Dias, et al., 2005). 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., 2005).

Adhesive capsulitis may appear on the secondary to other diseases such as diabetes and hypothyroidism. It occurs distinctly in three phases: hyperalgesia, freezing and defreezing. However, its resolution can range from two to seven years. By presenting a chronic course and unwieldy treatment, this condition affects both shoulder function for daily living activities, compromising the quality of life (QOL) of patients(Fernandes, 2015). Adhesive capsulitis is a common in type I and type II diabetic patients. Non-insulin dependent diabetics also have an increased incidence of frozen shoulder, but not as high as insulin users (Gupta, et al., 2008).

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., 2005). 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 and Hanning, 2010). Frozen shoulder is also a common complication following stroke, occurring in 25% of patients within 6 months in USA (Riley, et al., 2006).

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 (Wirth, et al., 2011).

Laslett, et al. (2007) conducted a cross sectional study to investigate shoulder pain and disability and quality of life for over 12 months duration in patients with diabetes and non-diabetic patient in control group. This study showed that shoulder complaints are typically chronic in nature, with 41-50% patients has reported shoulder symptoms 1-3 years later. The prevalence of current shoulder symptoms was 35% in diabetics and 17% in controls as calculated by Shoulder Pain and Disability Index (SPADI). The prevalence of adhesive capsulitis was 7% and the prevalence of rotator cuff

pathology was 35.6%. Shoulder symptoms are common affecting 1 in every 3 diabetic patients and 1 in every 6 control patients and are associated with poor physical and mental Quality of Life in addition to shoulder pain and disability, and are worse in patients with diabetes, even in a population with relatively moderate shoulder pain and disability. He chose not to match for age or gender in order to investigate the effect of age on shoulder pain and disability or quality of life.

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 (Morrison, et al., 2005).

Muscle spasm and capsular contracture are two potential pathologies of limited shoulder ROM in patients with adhesive capsulitis. The movement restriction occurs primarily in shoulder external and internal rotation in patients with adhesive capsulitis. Therefore, the priority for muscle strength test would be shoulder rotators. For these patients, muscle spasm is frequently observed and defined as involuntary hyperactivity of a muscle, and thus may result in increased co-contraction of the agonist and antagonist. Through electromyographic examination, muscle spasm may be evaluated by detecting the level of myoelectric activities in resting status and also the muscle co-activity (Lin, 2009).

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. Nevasier was among the first to report thickening and contraction of the shoulder capsule as well as inflammatory changes through histologic analysis (Ludewig and 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).

There are few specific laboratory tests or radiological markers for frozen shoulder, and the diagnosis is essentially clinical. Immunological studies (such as human leucocyte antigen B27), C reactive protein, and erythrocyte sedimentation rate are all normal and would be measured only to exclude other conditions. Most orthopaedic surgeons would not investigate a frozen shoulder beyond a plain x ray. When plain radiographs of the frozen shoulder are taken they may well be reported as normal, although they may show periarticular osteopenia as a result of disuse (Dias, 2005).

Rehabilitation programs consisting of exercise, massage, and modalities have been shown to improve shoulder ROM in all planes except external and internal rotation (Johnson, 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 (Roubal, et al., 2012). 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 and Anthony, 2005).

The rationale for using modalities in patients with adhesive 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., 2006). Because adhesive capsulitis involves fibrotic changes to the capsuloligamentous structures, continuous passive motion or dynamic splinting are thought to help elongate collagen fibers. Continuous passive motion (CPM) was recently compared with conventional physiotherapy 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, 2011). 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., 2006). Traditionally, physical therapists have used an anterior glide of the humeral head on the glenoid technique to improve external rotation ROM and used a posteriorly directed glide manipulation to restore external as well as internal rotation ROM (Johnson, et al., 2007).

Chang (2008), randomly assigned 20 consecutive adhesive capsulitis patients to physical therapy interventions includes 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 (Sattar and Luqman, 2007).

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., 2005).

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).

Recently, instrument-assisted soft tissue mobilization (IASTM) as used in such interventions as Graston Technique, ASTYM, or guasha has become increasingly popular in physical therapy practice. IASTM reportedly provides strong afferent stimulation and reorganization of collagen, as well as in increase in microcirculation. The inferior glenohumeral capsule and pectoral fascia are often restricted, as well as the insertion of the latissimusdorsi and subscapularis. IASTM may help improve fibroblast proliferation and promote normal collagen alignment, although no studies have evaluated outcomes of the use of IASTM on patients with adhesive capsulitis (Bulgen, et al., 2006).

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.

Nevasier was among the first to report thickening and contraction of the shoulder capsule as well as inflammatory changes through histologic analysis (Ludewigand 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).

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, 2009).

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 and Braman, 2011).

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 (Jobe and Jobe, 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 (Andersen, et al., 2005).

Although no studies have been published on the efficacy of taping (such as rigid strapping tape or kinesiological taping [KT] with patients who have adhesive capsulitis, taping may be helpful in reducing pain and providing tactile cues through proprioceptive and afferent mechanisms. The mechanisms and efficacy of taping applications remain unclear. Because adhesive capsulitis patients often exhibit poor posture and scapular mechanics, KT may provide postural cues and assist with promoting proper scapular motion (Hazleman, 2009).

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, 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 (Jobe and Jobe, 2012).

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., 2014).

Walker-Bone, et al. (2004) conducted a 2 stage cross-sectional study to determine the prevalence, interrelation, and impact of musculoskeletal disorders of the upper limb in

the general population. A total of 9,696 randomly selected adults of working age were surveyed in a 2-stage cross-sectional study involving a screening questionnaire and a standardized physical examination in symptomatic subjects. Age- and sex-specific prevalence rates were estimated for several musculoskeletal disorders and for nonspecific pain in the upper limbs. The overlap and impact on daily activities and healthcare utilization were explored. Among 6,038 first-stage responders, 3,152 reported upper limb symptoms and 1,960 were subsequently examined. Of subjects with pain, 44.8% had 1 or more specific soft-tissue disorders. Site-specific prevalence rates were as follows: shoulder tendinitis 4.5% among men and 6.1% among women; adhesive capsulitis 8.2% among men and 10.1% among women; lateral epicondylitis 1.3% among men and 1.1% among women; de Quervain's disease 0.5% among men and 1.3% among women; other tenosynovitis of the hand or wrist, 1.1% among men and 2.2% among women. He stated that upper limb pain is common in the general population and is often associated with physical signs suggestive of specific upper-limb disorders. These disorders have a substantial impact on physical function and use of health care.

Ardic, et al. (2003) performed a cross-sectional study to investigate early diabetic musculoskeletal complications on the basis of a collaborative multidisciplinary study design. For this purpose 78 patients (mean age 57.8 ± 11.9 years, 55 women and 23 men) who had type II DM for 15 years maximally and 37 non-diabetic controls (mean age: 55.7 ± 11.5, 27 women and 10 men) were randomly selected for inclusion in the study. All patients were evaluated by the Rheumatology, Orthopedic Rehabilitation and Hand Rehabilitation Divisions. Dupuytren's disease was present in 17 (21.8%) of 78 diabetic subjects as the most frequent and statistically significant complication of

the musculoskeletal system. In correlation and logistic regression analysis, only retinopathy was significantly associated with duration of diabetes and diabetic foot.

Larkin, et al. (2014) conducted a cross-sectional study to explore the Musculoskeletal Complications in Type 1 Diabetes Mellitus patients. This cross-sectional analysis was performed in 1,217 participants. The study population had an average age of 52 years, and mean duration of type 1 diabetes was 31 years. Cheiroarthropathy, defined as any one of the following abnormalities: adhesive capsulitis, carpal tunnel syndrome, tenosynovitis, Dupuytren's contracture, or a positive prayer sign, was present in 807 of the subjects (66%). The most common type of cheiroarthropathy was adhesive capsulitis, found in 372 of the subjects (31%), followed by carpal tunnel syndrome (n = 362; 30%), flexor tenosynovitis (n = 340; 28%), positive prayer sign (n = 251; 22%), and Dupuytren's contracture (n = 105; 9%). Of the participants, 400 (33%) had one type of cheiroarthropathy by report or had a positive prayer sign based on examination; 241 participants (20%) had two types of cheiroarthropathy, 124 (10%) had three, and 42 (3%) had four or five. Among those with two types of cheiroarthropathy, the most common combinations were carpal tunnel syndrome and flexor tenosynovitis (31%) followed by the combination of carpal tunnel syndrome and adhesive capsulitis (17%).

Morrato, et al. (2003) did a survey with 23,283 adults who responded when asked about whether they were physically active and information on socio-demographic characteristics and health conditions were self-reported. A total of 39% of adults with diabetes were physically active versus 58% of adults without diabetes. The proportion of active adults without diabetes declined as the number of risk factors increased until dropping to similar rates as people with diabetes. After adjustment for socio-demographic and clinical factors, the strongest correlates of being physically active

were income level, limitations in physical function, depression, and severe obesity (BMI ≥40 kg/m2). The majority of patients with diabetes or at highest risk for developing type 2 diabetes do not engage in regular physical activity.

According to Zyluk and Puchalski, (2015) the prevalence of limited joint mobility in diabetes is variable, ranging from 8% to 50%; it occurs significantly more frequently in juvenile, insulin-dependent, long-lasting and poorly-controlled diabetes. Carpal tunnel syndrome is the commonest peripheral neuropathy, affecting about 6% women population aged over 40. The prevalence of CTS in diabetes has been reported as between 11 and 25% and it is estimated that CTS occurs three times fold more frequently among diabetics than in general population (3-6%). Conversely, 5-8% CTS patients may have diabetes. The prevalence of Dupuytren's disease in diabetics ranges from 3-32%, comparing to 1-7% in general European population and to 13% in non-diabetics. The prevalence of trigger finger in diabetes has been reported as between 10 and 20%, comparing to 1-2% in general population. Conversely, about 25% patients with trigger digits suffer from diabetes. Multiply finger and bilateral involvement is significantly more frequent in diabetics as well as coexistence with carpal tunnel syndrome.

A population-based case-control study with detailed assessment of diabetes and functional status was undertaken by Sinclair et al. (2008). 403 case subjects and 403 matched control subjects were studied (median age 75 years, 51% female). Subjects with diabetes had more comorbidities than control subjects (mean 2.5 vs. 1.9, $P < 0.0001$) and were more likely to have severe functional impairment (4 vs. 1%, Barthel score <5, $P < 0.001$). Health status pertaining to physical function was reduced in case subjects. In a multivariate model controlling for age, hypertension, cerebrovascular disease, chronic obstructive pulmonary disease, cancer, osteoarthritis, and dementia,

diabetes remained significantly associated with mobility limitation. Older people with diabetes have considerable functional impairment associated with reduced health status.

Korff, et al. (2005) conducted a cohort study of 1,642 diabetic individuals. In the study population, 19% had significant work disability: 12% were unemployed, 7% of employed subjects had missed ≥5 days from work in the prior month, and 4% of employed subjects reported having had severe difficulty with work tasks. Depressive illness, chronic disease comorbidity, and diabetes symptoms were associated with all three types of work disability. Diabetes complications predicted unemployment and overall work disability status, whereas obesity and sedentary lifestyle did not predict work disability. Among subjects experiencing both major depression and three or more diabetes complications, >50% were unemployed; of those with significant work disability. Depressive illness was strongly associated with unemployment and problems with work performance.

Hoftun,et al. (2011) did a study with 7373 adolescents aged 13–18 years to determine the prevalence of self-reported chronic idiopathic pain among adolescents and to explore how pain interferes with daily activities. Chronic pain was reported by 44.4% of the participants, and 25.5% reported pain in at least 2 locations. Chronic idiopathic musculoskeletal pain was most prevalent (33.4%), and the neck/shoulder was most commonly affected. Musculoskeletal pain in 3 or more locations was reported by 8.5%. Pain almost daily was reported by 10.2%. More girls than boys reported pain. In girls, the prevalence of pain increased with age. A high number of pain-associated disabilities were reported, and 58.5% described difficulties doing daily activities in leisure time. Subjective disabilities were higher in girls, and increased with the frequency of pain and the number of pain locations, as shown by high disability in

adolescents with musculoskeletal pain in 3 or more locations. Chronic idiopathic pain, especially multisite pain, is common among adolescents, and those suffering from it report a major impact on several areas of daily living.

Tate, et al. (2011) conducted a cross-sectional study to determine whether physical characteristics, exposure, or training variables differ between swimmers with and without shoulder pain or disability. A total of 236 competitive female swimmers aged 8 to 77 years were participated. Nine (21.4%) swimmers aged 8 to 11 years, 8 (18.6%) swimmers aged 12 to 14 years, 19 (22.6%) high school swimmers, and 13 (19.4%) masters' swimmers had shoulder pain and disability. Differences that were found in 2 or more age groups between athletes with and without shoulder pain and disability included greater swimming exposure, a higher incidence of previous traumatic injury and patient-rated shoulder instability, and reduced participation in another sport in the symptomatic groups ($P < .05$). Reduced shoulder flexion motion, weakness of the middle trapezius and internal rotation, shorter pectoralis minor and latissimus, participation in water polo, and decreased core endurance were found in symptomatic females in single varying age groups ($P < .05$).

Laslett, et al., (2007) showed that, a Cross-sectional studies show that a number of factors are associated with shoulder pain and shoulder symptoms in patients with diabetes. These include advancing age, diabetes duration and diabetes complications including retinopathy, albuminuria and autonomic neuropathy, but not peripheral neuropathy. Therefore, the relevant question for the treating clinician is which factor(s) determine persistence or worsening of pain and disability over time. The link between shoulder pain or disability and diabetes is postulated to be excessive glycosylation of connective tissue, particularly collagen. Patients who have had long-term intensive treatment of their diabetes have been shown to have lower levels of

skin collagen glycosylation, glycoxidation and cross-linking (Salmela, et al., 2003), and slower rates of accumulation of advanced glycosylation end-points (AGEs), than patients treated under conventional regimes. Elevations of AGEs have been associated with early stages of clinically evident nephropathy and retinopathy (Beisswenger, et al., 2005).

Abate, et al. (2013) stated that, Several rheumatologic manifestations are more pronounced in subjects with diabetes, ie, frozen shoulder, rotator cuff tears, Dupuytren's contracture, trigger finger, cheiroarthropathy in the upper limb, and Achilles tendinopathy and plantar fasciitis in the lower limb. These conditions can limit the range of motion of the affected joint, thereby impairing function and ability to perform activities of daily living. This review provides a short description of diabetes-related joint diseases, the specific pathogenetic mechanisms involved, and the role of inflammation, overuse, and genetics, each of which activates a complex sequence of biochemical alterations. Diabetes is a causative factor in tendon diseases and amplifies the damage induced by other agents as well. According to an accepted hypothesis, damaged joint tissue in diabetes is caused by an excess of advanced glycation end products, which forms covalent cross-links within collagen fibers and alters their structure and function. Moreover, they interact with a variety of cell surface receptors, activating a number of effects, including pro-oxidant and proinflammatory events. Adiposity and advanced age, commonly associated with type 2 diabetes mellitus, are further pathogenetic factors. Prevention and strict control of this metabolic disorder is essential, because it has been demonstrated that limited joint motion is related to duration of the disease and hyperglycemia. Several treatments are used in clinical practice, but their mechanisms of action are not completely understood, and their efficacy is also debated.

Whiting, et al. (2011) stated that, Diabetes mellitus (DM) is one of the most debilitating common chronic diseases across the globe known by increased blood glucose, resulting from defects in insulin secretion, insulin action, or both. Its burden continues to increase with the changing lifestyles of human beings, characterized by reduced physical activity, and increased obesity. Based on the global estimate by the International Federation of Diabetes (IDF), DM prevalence in 2011 was 366 million people; and this is expected to rise to 552 million by 2030. The projected growth of DM in sub-Saharan Africa is high at 91%, with those affected increasing from 14.7 million in 2011 to 28 million in 2030. According to the extrapolated data, the prevalence of DM in Ethiopia was 3.4% in 2011 and estimated to rise to 3.7% by 2030.

Another study showed that, several abnormalities of the shoulder and the hand have been described in diabetic patients. DM affects connective tissues in many ways and causes different alterations in periarticular and skeletal systems (Arkkila, et al., 2006). There is more prevalence of musculoskeletal (MSK) disorders of the shoulder and the hand in DM patients compared with the general population (Cagliero, et al., 2002). The increasing prevalence of DM and longer life expectancy of the diabetic patient have contributed to an increased frequency of clinically important alterations in the MSK system, the exact pathophysiology of most of these MSK disorders remains obscure. However, connective tissue disorders, neuropathy, vasculopathy or combinations of these problems, may underlie the increased incidence of MSK disorders in DM. The most commonly recognized and studied shoulder and hand MSK complications are frozen shoulder, limited joint mobility, trigger finger, Dupuytren's contracture, and carpal tunnel syndrome (Kim, et al., 2001). Frozen shoulder has been reported as a common complication in DM patients with a

prevalence ranging from 11% to 30%, and its occurrence is associated with the duration of diabetes and age (Ardic, et al., 2003).

The prevalence of limited joint mobility of the hand in DM patient has been found to be quite variable, ranging from 8% to 50%, and its prevalence increased significantly with the duration of diabetes. Diabetic patients with a frozen shoulder are more likely to have limited joint mobility of the hand than DM patients without a frozen shoulder (Kim, et al., 2001). Dupuytren's contracture is a complication of the hand that has been reported in 16–42% of DM patients. Its prevalence increases with disease duration (Ardic, et al., 2003). Carpal tunnel syndrome is seen in up to 20% of diabetic patients and its prevalence generally increases with duration of diabetes (Ramchurn, et al., 2009). Trigger finger, also called stenosing flexor tenosynovitis, is another frequent diabetic complication with a prevalence ranging from 11 - 28% in diabetic patients associated with the duration of diabetes and age (Ramchurn, et al., 2009). Complications of DM are numerous and can affect different body systems. Involvement of the MSK system is common and can result in disability (Arkkila, et al., 2006). However, it is usually overlooked in clinical and research practices. Higher levels of complications result when the control of DM is poor. Poor glycaemic control can lead to worsening of certain MSK conditions (Smith, et al., 2003). Sex, age, duration of DM, type of DM, microvascular complications and poor glycaemic control were the identified factors associated with the presence of MSK complications in DM patients (Mathew, et al., 2011). Though various studies revealed a significantly higher rate of shoulder and hand complication in DM patients, there is limited evidence from East Africa, particularly in Ethiopia. To the author's knowledge, no study has been conducted to assess the prevalence and associated factors of MSK complications among DM patients in Ethiopia. Hence, this study will provide

valuable information for decision makers, health care planners, evaluators and medical practitioners for promoting better health, quality of life, and the prevention of disability. Therefore, the objective of the study is to determine the prevalence and associated factors of shoulder and hand musculoskeletal complications among diabetic patients in Northwest Ethiopia (Mathew, et al., 2011).

Smith, et al. (2003) stated that, adhesive capsulitis, or frozen shoulder, has been reported round about 20% of diabetic patients. This term refers to a stiffened shoulder joint usually caused by thickening and contraction of the capsule which results in a substantial decrease in capsular volume capacity. Patients complain shoulder stiffness with decreased ROM and pain though the pain of this conditions in diabetic patient is usually less than that of the general population. Adhesive capsulitis, frozen shoulder, shoulder periarthritis, or alliterative bursitis is the most disabling of the common musculoskeletal problems. There is gradual limitation of shoulder movement, especially lateral rotation and abduction. The thickened joint capsule is closely applied and adherent to the humerus head, due to which there is too much limitation in range of motion of shoulder joint. The exact origins of adhesive capsulitis are not determined but still it has been related with several other conditions, such as trauma to shoulder, other conditions such as respiratory and cerebral. Usually adhesive capsulitis have three distinct phases: painful, adhesive, and resolution phases. Adhesive capsulitis appears at a younger age in patients with diabetes and is usually less painful, although it responds less well to treatment and lasts longer.

The estimated prevalence is 11–30% in diabetic patients and 2–10% in nondiabetics. Adhesive capsulitis is associated with the duration of diabetes and age. Huang, et al., (2010) showed that, a higher prevalence of frozen shoulder (20–29%) has been reported in diabetes mellitus (DM) patients. However, the outcome of these patients

has only been studied previously in Western countries. None have been documented in Asia. Adhesive capsulitis of the shoulder (frozen shoulder) is characterized by a gradual increase in pain and stiffness. This condition has three stages lasting up to one to three years and does not recur in the same shoulder. The etiology of frozen shoulder is yet to be discovered and excellent results of manipulation under anesthesia (MUA) have been reported by many authors but few have focused on patients with DM. Hence, in this study, we compared the objective improvement in range of motion and the subjective improvement in function after MUA in patients with and without non-insulin dependent DM.

The estimated prevalence of adhesive capsulitis (AC) is 11%–30% in diabetes; they are considerably greater than those have no diabetes. AC has been associated with the duration of diabetes and age with diabetics experiencing significantly greater pain and dysfunction. DM is considered as an epidemic in the modern world and much of its morbidity and mortality is related to micro and macro vascular problems or disorder. It is also linked with other disorders of the hand and shoulder that can be very incapacitating and significantly compromise their quality of life. Musculoskeletal (MSK) complications of DM are the most common endocrine disorder. These have been usually poorly recognized and poorly treated compared with other conditions, such as neuropathy, retinopathy, and nephropathy. These are, some of the etiology of disability, involve not only the joints, but also the bones and other tissues. An Interview Survey was done in 2004 by national health survey and they determined that 58% of diabetic patients would have functional disability. The percentage of diabetic patients with functional disability will increase as diabetic patients ‘number increases, and therefore makes a great burden on common health problem. Current studies show that the prevalence of MSK manifestations in the hands and shoulders in

patients with type-1 or type-2 diabetes is 30%. These manifestations are closely linked to age prolonged disease duration and vascular complications in the form of retinopathy (Atta, et al., 2012).

The decreased ROM is worst in abduction and lateral rotation. Medial rotation is affected least. It seems to be twice as common in diabetic patients. Therapy is largely conservative and minimizing progress of the adhesions mobilization of the shoulder which include gentle stretching and range of motion exercises, and the use of analgesics and/ or intra-particular injections (Ramchurn, et al., 2009). The relation between DM and AC has been shown in previous few studies. Bridgman reviewed the medical records of 800 diabetic subjects and found evidence of per arthritis in 10.8%, compared with 2.3% in a control group of 600 non-diabetic subjects (Atta, et al., 2012). In a study of 824 type II diabetic and 320 control subjects shoulder capsulitis was observed in 31.8% and 10.3% of subjects, respectively. Bilateral involvement of shoulder capsulitis was more common in diabetic (10%) than in the control subjects (3%). Diabetic shoulder capsulitis seems to appear at a younger age, may be less painful, responds less well to treatment, and lasts longer than non-diabetic shoulder capsulitis. A high frequency of other hand syndromes, such as limited joint mobility, has been found among diabetic patients with shoulder capsulitis. The association between limited joint mobility and micro vascular complications of diabetes has been well documented, but there are also two studies showing an association between shoulder capsulitis and retinopathy. However, no association between shoulder capsulitis and diabetic neuropathy has been found. The purpose of this study was to investigate the prevalence of shoulder capsulitis and its association to the diabetic complications in diabetic subjects. Qidwai and Ashfaq, (2010) stated that, Adhesive capsulitis has an incidence of 3–5% in the general population and up to 20% in those

with DM. This is one of the most common MSK disorder seen in orthopedics. Though some practitioners' suggest AC as a self-limiting disorder that resolves in 1–3 years, other studies report ranges of between 20 and 50% of patients with adhesive capsulitis which suffer long-term ROM deficits that may last up to 10 years. The typical patient that develops adhesive capsulitis is a female in her 5th to 7th decade of life. There is generally no preference for handedness and adhesive capsulitis rarely occurs simultaneously bilaterally however, others have reported that it can occur sequentially bilaterally in up to 40–50% of patients. Adhesive capsulitis is commonly associated with other systemic and non-systemic conditions. By far the most common is the co-morbid condition of diabetes mellitus, with an incidence of 10–36 % (Kidwai, et al., 2012).

Adhesive capsulitis is a disease that affects the shoulder joint on the clinical and functional aspect; however it is unknown whether it can affect the whole quality of life of patients. Self-administered questionnaires are, therefore, needed as required outcomes to assess the effect of impairment in physical, social and psychological life of these individuals (Freitas-Silva, et al., 2010).

Patients' perception of the impact of the disease in their health is gaining more and more emphasis on scientific literature which justifies this research due to the interest in the study of the variable quality of life. The wide individual variation in DASH scores from 16 to 100, with an average of 61.6, translates to the health professional that there are cases with little disability and other with high functional disability of the affected shoulder, while the average of 45.3 in the physical domain of the WHOQOL-BREF instrument points out that patients with this disease also have low QoL (Gabel, et al., 2009). Fernandes (2015) stated that in his study that the impact of adhesive capsulitis in QoL is worse in the physical domain. The novelty about this study is that

it was understand the impact of adhesive capsulitis in the affected individual's QoL from the patient's perspective. The results emphasize that who refers the highest shoulder disability is associated with a lower QoL, which ultimately requires a special attention by the health professional that assists both his rehabilitation and also social reintegration (Fernandes, 2015).

Quality of life is an important indicator of disabilities prevailing in musculoskeletal disorders. Quality of life comprises all areas of life as health status, environmental, financial conditions, and human rights (Yilmaz, et al., 2008). However, in this study, no objective findings from a physical examination were used, nor were interactions between shoulder disability and other domains of quality of life studied. It seems likely that shoulder complaints will influence health-related quality of life (HRQOL) (Stuiver, et al., 2008).

CHAPTER-III METHODOLOGY

3.1 Study Design:

This study was conducted using cross sectional prospective survey under a quantitative study design. Cross sectional study design was chosen to meet the study aim as an effective way to collect data.

3.2 Study area:

Data was collected from the outdoor and indoor musculoskeletal physiotherapy unit of the Centre for the rehabilitation of the paralyzed in Savar and Mirpur.

3.3 Study Population:

The study population was patient with frozen shoulder who attended in CRP for treatment.

3.4 Sample size:

Sample a group of subjects will be selected from population, who are used in a piece of research (Hicks 1999, p. 287). A sample is a smaller group taken from the population. Sometimes the sample size may be big and sometimes it may be small, depending on the population and the characteristics of the study (Bailey 1997, p. 121). The equation of sample size calculation are given below

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

Here,

Z (1- $\frac{\alpha}{2}$) = 1.96

P= 0.166 (here, p = prevalence and p=16.6%) (Fasika, et al., 2013)

q = 1-P

= 1- 0.166

= 0.834

d= 0.05

The actual sample size for this study was calculated as 212, but as the study performed as a part of academic research project and there were some limitation, so that 100 frozen shoulder patients was taken as the sample of this study from musculoskeletal unit of CRP at Savar.

3.5 Sampling procedure:

Findings the appropriate number and type of people take part in the study is called "sampling" (Hicks 1999, p. 24). The study will be conducted by using the purposive sampling methods due to the time limitation and as it will be the one of the easiest, cheapest and quicker method of sample selection. The researcher will use this procedure, because getting of those samples whose criteria will be concerned with the study purpose.

3.6 Inclusion criteria:

- Both male and female was included
- Medically diagnosed frozen shoulder patient
- Patient who had willingness to participate.

3.7 Exclusion criteria:

- Traumatic injury around the shoulder joint
- Other orthopaedic condition like ankylosing spondylitis, septic arthritis
- Patient who were medically unstable.
- Mental disorder patients

3.8 Data Collection

3.8.1 Data collection instrument

A structured questionnaire and demographic information chart was used as a data collection instrument. In that time some other necessary materials were used like pen,

pencil, and white paper and clip board. The English questionnaire was converted into Bengali to ask the participants during interviews. Researcher had taken permission from each volunteer participant by using a written consent form in Bengali & English.

3.8.2 Procedure of data collection

At very beginning researcher clarified that the participant had the right to refuse the answer of any question during completing questionnaire. They can withdraw from the study at any time. Researcher also clarified to all participants about the aim of the study. Participants were ensured that any personal information would not be published anywhere. Researcher took permission from each volunteer participant by using a written consent form. After getting consent from the participants, standard questionnaire was used to identify the complaint and collect demographic information. Questions were asked according to the Bengali format.

For conducting the interview, the researcher conducted a face to face interview and asked questions. Physical environment was considered strictly. Stimuli that can distract interviewee were removed to ensure adequate attention of interview. Interviewee was ask questions alone as much as possible with consent as sometimes close relatives can guide answer for them. The researcher built rapport and clarified questions during the interview. Face to face interviews were the most effective way to get full cooperation of the participant in a survey (Fraenkel and Wallen, 2000). Face to face interviews were also effective to describe characteristics of a population. Face to face interview was used to find specific data which describes the population descriptively during discussion. According to the participants' understanding level, sometimes the questions were described in the native language so that the patients can understand the questions perfectly and answer accurately. All the data were collected by the researcher own to avoid the errors.

3.9 Data analysis

Descriptive statistics was used to analyze data. Descriptive statistics refers methods of describing a set of results in terms of their most interesting characteristics (Hicks 1999, p. 284). Data was analyzed with the software named Statistical Package for the Social Science (SPSS) version 16.0. The variables were labeled in a list and the researcher established a computer based data definition record file that consist of a list of variables in order. The researcher put the name of the variables in the variable view of SPSS and defined the types, values, decimal, label alignment and measurement level of data. The next step was cleaning new data files to check the inputted data set to ensure that all data has been accurately transcribed from the questionnaire sheet to the SPSS data view. Then the raw data was ready for analysis in SPSS. Data was analyzed by descriptive statistics and calculated as percentages and presented by using table, bar graph, pie charts etc. Microsoft office Excel 2007 was used to decorating the bar graph and pie charts. The result of this study was consisted of quantitative data. By this study a lot of information was collected.

3.10 Ethical Consideration

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology was presented to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI). Permission from in charge of Physiotherapy department of CRP was taken to conduct the study. Verbal consent was taken from the participant informing them about the purpose of the study, anonymity, their rights to refuse answering any question, withdrawn from the study at any point of time and other

issues was mentioned in the form before starting the interviews. For any kind of use of the study there was no identification of any participants only the data was used. The data were kept in a secure place where only the researcher had the access.

CHAPTER-IV RESULTS

In this study cross sectional type of quantitative study design was used to explore the impact of quality of life of patients with frozen shoulder attended at CRP. Total number of participants was hundred for quantitative study.

Results of the quantitative study:

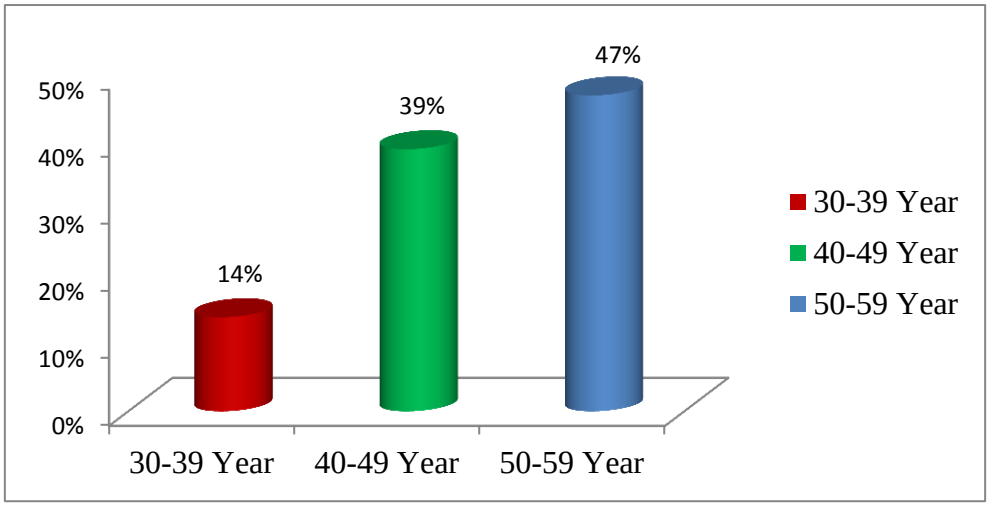
4.1. Distribution of the respondent by their age:

The mean age of the respondents was 48 years with a standard deviation of 08 (table 1). Majority of the respondents 47% (n=47) were 50 to 59 years old followed by 40 to 49 years old 39% (n=39). Only 14% (n=14) of the respondents were 30-39 years old.

Table 1: Characteristic of the Respondents

Characteristics	Total (N=50)
Age (mean ± SD)	48 ±08
30-39 years	14(14%)
40-49 years	39(39%)
50-59 years	47(47%)

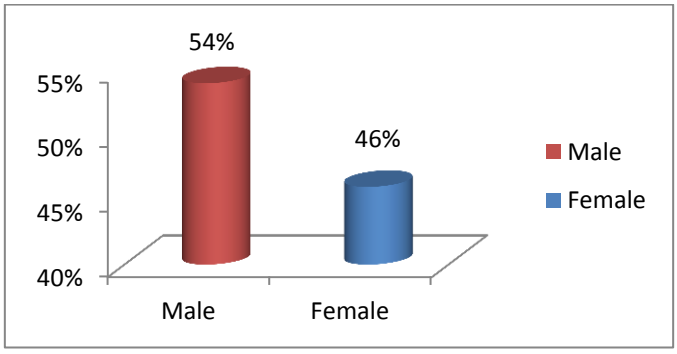
Figure 4.1: Age group of the participants



4.2 Distribution of the respondent by their gender:

This figure showed that among the participants male were about 54% (n=54) and rest of the participant were female that was about 46% (n=46).

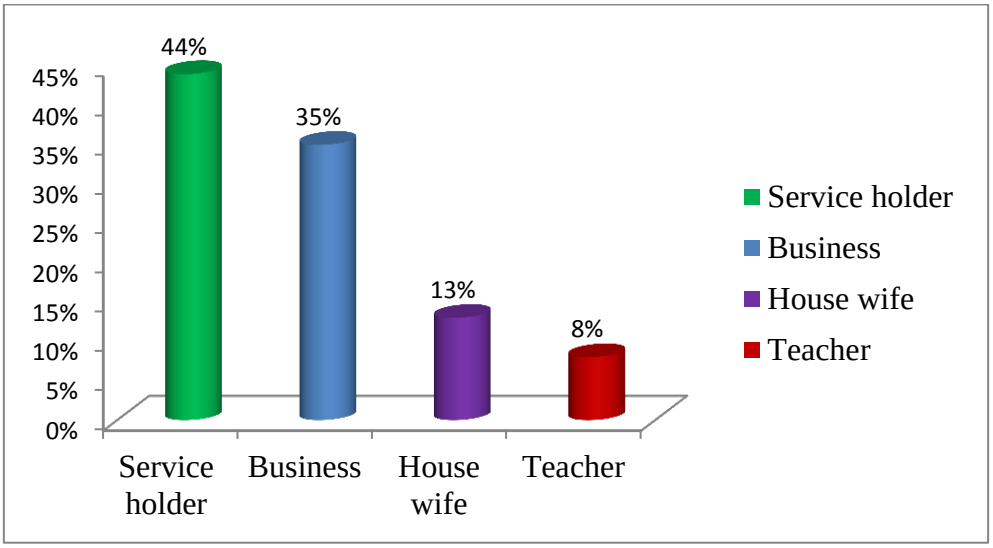
Figure 4.2: Gender of the participants



4.3 Occupations

This figure showed that among the participants Service holder were the highest rate that was about 44% (n=44). Business participants were second highest rate that was 35% (n=35). House wife participants were 13% (n= 13) and teacher participants were 8% (n=8).

Figure 4.3: Occupation of the participants



4.4: Educational status

This figure showed that bachelor degree passed participants were highest rate that was 54% (n=54). Primary passed participant were second highest rate that was 28% (n=6). SSC passed, HSC passed and Masters passed Participants were according to 8%, 6%, and 4%.

Table-2: Educational status

Completed Education	Percentages
Primary	28%
SSC	8%
HSC	6%
Bachelor	54%
Masters	4%

4.5. Repetitive work of shoulder:

In total 70% of the respondent had performed repeated movement of their affected shoulder where 30% did not repeated movement of affected shoulder.The repeated flexion movement of affected shoulder was performed by 53% of patients whereas 38% performed repeated abduction of affected shoulder and the rest 9% only performed repeated extension movement.

Table 3: Repeated movement of the respondents

Flexion	53%
Abduction	38%
Extension	9%

Association of repetitive work and frozen shoulder:

In the association test using chi-square, the value was 2.04 which indicates among variables was not significant because p-was 0.153($p > 0.05$).

4.6 Repeated overhead activity

In total 78% of the respondent performed overhead activity of their affected shoulder in which 24% of them were female and the rest of 54% were male. In 22% respondent performed no overhead activity of their affected shoulder and its number for female was 10% and male was12%.

Table-4: Repeated overhead activity

	Overhead activity	No overhead activity
Male	54%	12%
Female	24%	10%

Association between overhead activity and shoulder pain:

In the association test using chi-square, the value was 7.677 which indicates among variables was significant because p-was 0.002 ($p < 0.05$).

4.7 Distribution of the respondent by their limitation during weight bearing any object:

Figure shows in total 72% of the respondents were feeling difficulties during lifting or weight bearing any objects whereas rest of 28% didn't feel any difficulty during use affected hand for their daily livings activity.

Table 5: Limitation during weight bearing any object

Weight bearing any object	Limitation
Limited a lot	72%
Limited a little	28%

Association between weight bearing or lifting any object and different ages:

In the association test using chi-square, the value was 1.529 which indicates among variables was not significant because p-was 0.570 ($p < 0.05$).

4.8 Distribution of the respondent by their limitation during hand behind neck:

Figure shows in total 78% of the respondents were feeling difficulties of their affected hand to reach out behind neck whereas rest of 22% didn't feel any difficulty during use of affected hand for this type of activity.

Table 6: limitation during hand behind neck

During hand behind neck	Limitation
Limited a lot	78%
Limited a little	22%

Association between hand behind neck activity and shoulder pain:

In the association test using chi-square, the value was 13.450 which indicates among variables was significant because p-was 0.001 ($p < 0.05$).

4.9 Distribution of the respondent by their limitation during hand behind back:

Figure shows in total 65% of the respondents were feeling difficulties of their affected hand to reach out behind back whereas rest of 35% didn't feel any difficulty during use of affected hand for this type of activity.

Table 7: Limitation during hand behind back

During hand behind back	Limitation
Limited a lot	65%
Limited a little	35%

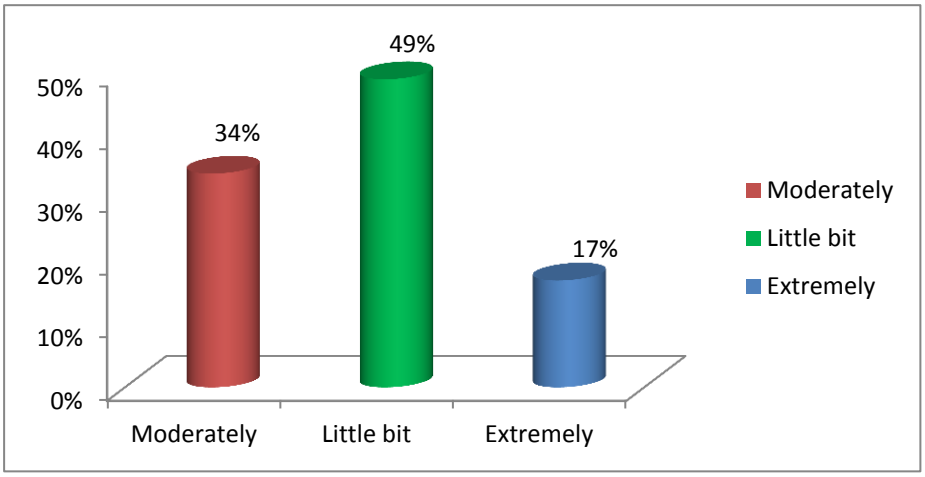
Association between hands behind back activity with different ages:

In the association test using chi-square, (x^2) the value was 1.960 which indicates among variables was not significant because p-was 0.375 ($p > 0.05$).

4.10 Impact in physical or mental health problem due to pain in last 4 weeks:

Study focused that 49% patients were feeling little bit physical problem whereas 34% patients were feeling moderately physical problem and rest of 17% patients were feeling extremely physical or mental problem in last 4 weeks due to this pain.

Figure 4.4: Impact in physical or mental health problem



4.11 Impact in carrying shopping bag due to shoulder pain in last 4 weeks

Study focused that 65% patients were feeling maximum period of time limitation in carry shopping bag whereas 35% patients were feeling minimum period of time limitation while carry shopping bag in last 4 weeks due to this pain.

Table 8: Limitation during hand behind back

Limitation in carrying shopping bag	Percentages
Maximum period of time	65%
Minimum period of time	35%

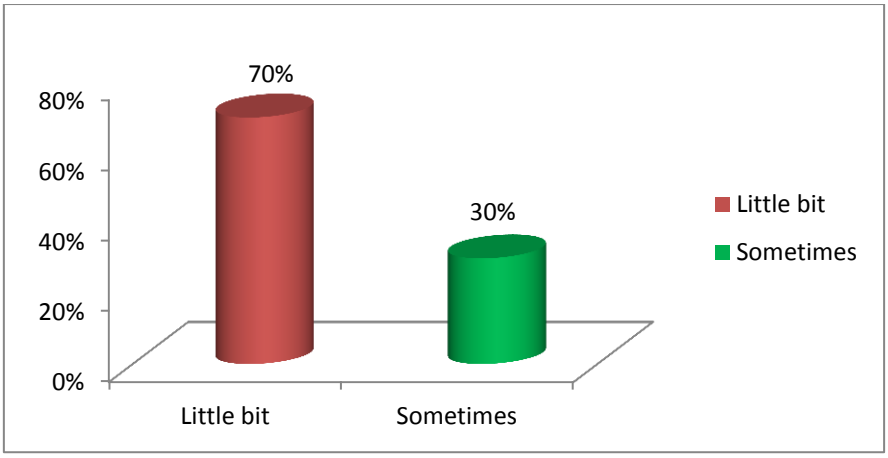
Association between carrying shopping bag with shoulder pain:

In the association test using chi-square (x2) the value was 11.826 which indicates among variables was significant because p-was 0.003 ($p < 0.05$).

4.12 Impact of carefully completed the work as previously

Study focused that 70% patients were feeling little bit less carefully completed the work whereas 30% patients were feeling sometimes less carefully done the assigned work than previously.

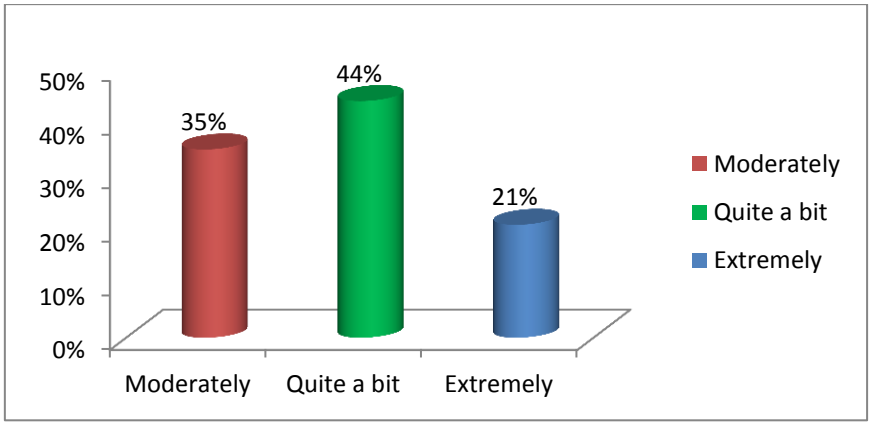
Figure 4.5: Impact of carefully completed the work as previously



4.13 Last 4 weeks shoulder pain

Study revealed that 44% patients were feeling little bit shoulder pain in last 4 weeks whereas 35% patients were feeling moderately shoulder pain and rest of 21% patients were feeling extreme shoulder pain in last 4 weeks.

Figure 4.6: Last 4 weeks shoulder pain



4.14 Impact in work for last 4 weeks

Study showed that 34% patients were feeling moderate level negative impact on their assigned work for this pain while 49% patients were feeling little bit problem in work and rest of 17% patients were feeling extreme problem due to this pain and they had taken leave.

Figure 4.7 Impact in work for last 4 weeks

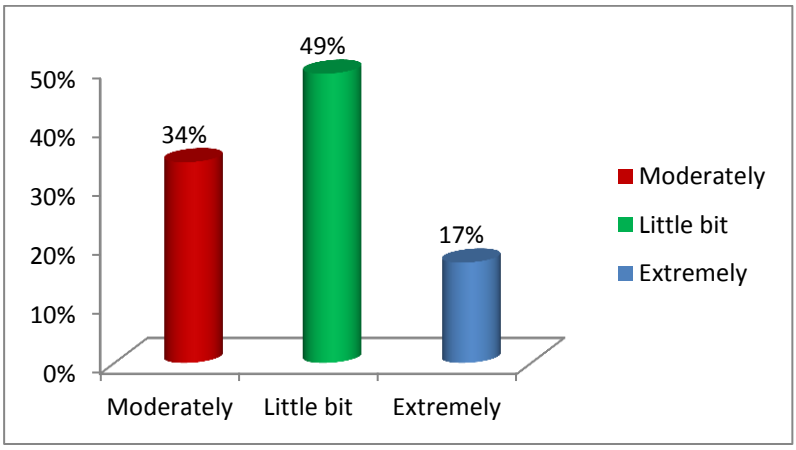
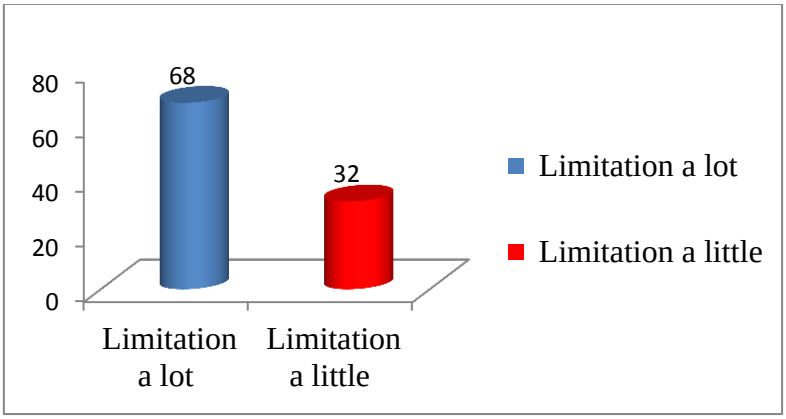


Figure shows that in total 68% of the respondents were feeling difficulties of their affected hand to do bathing or wearing a shirt and rest of 32% didn't feel any difficulty during use of affected hand for this type of activity.

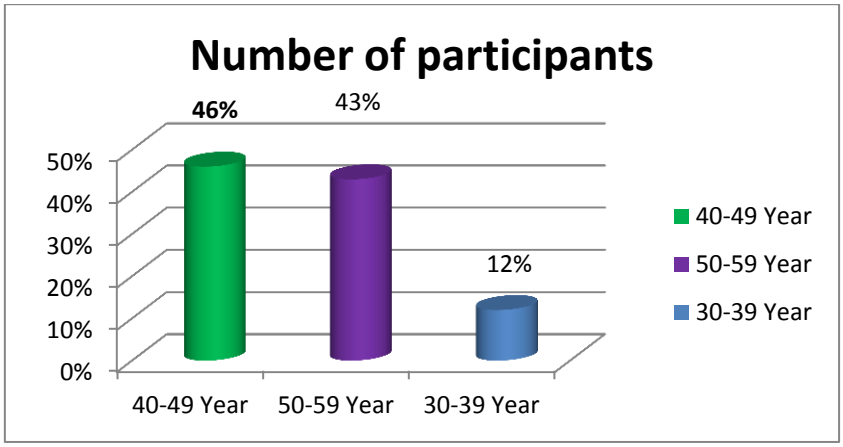
Figure 4.8 Limitation of bathing or wearing cloth



Among 100% participants 46% (n=46) patients were feeling limitation a lot during bathing or wearing shirt and their age range was 40-49 years, whereas 43% (n=43)

patients were feeling sometimes limitation of these activity and their age range was 50-59 years and 30-39 years of patients feeling minimum limitation during these activities and their number was 12% (n=12).

Figure 4.9: Limitation of bathing or wearing shirt with different ages



Association between bathing or wearing shirt with different ages:

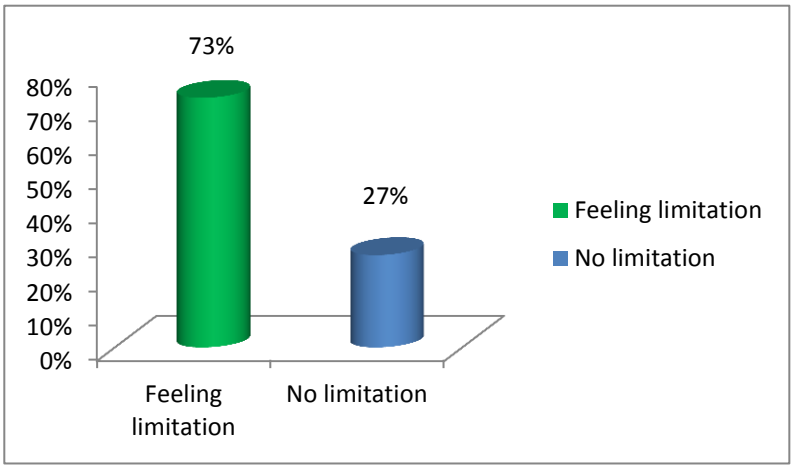
But in the association test using chi-square (x2) the value was 3.980 which indicates among variables was not significant because p-was 0.137 ($p > 0.05$).

Association between hand limitations during play with different ages:

In total 100% of participants 73% replied about feeling difficulty during playing with this shoulder pain whereas 27% answered that they didn't feel any difficulty.

In the association test using chi-square,(x2) the value was 5.020 which indicates among variables was significant because p-was 0.025 ($p < 0.05$).

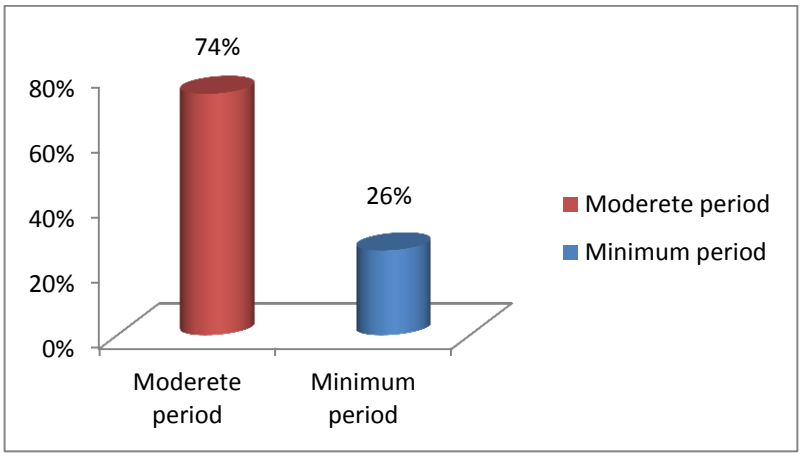
Figure 4.10: Hand limitation during play with different ages



4.11. Shoulder pain affects nervousness

Among the participants 74% (n=74) patients were feeling nervousness in moderate period of time due to this pain whereas 26% (n=26) patients were feeling minimum period of time nervousness for this pain.

Figure4.11: Shoulder pain affects nervousness



Association between feeling nervous with different ages:

In the association test using chi-square,(x2) the value was 2.294 which indicates among variables was not significant because p-was 0.000 ($p > 0.05$).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.294	2	.318

4.16 Shoulder pain affects depression

Of the participants 43% (n=43) patients were feeling minimum period of time depression for this shoulder pain whereas 57% (n=57) patients were feeling maximum period of time depression for this pain.

Table 9: Shoulder pain affects depression

Depression level	Percentages
Maximum period of time	57%
Minimum period of time	43%

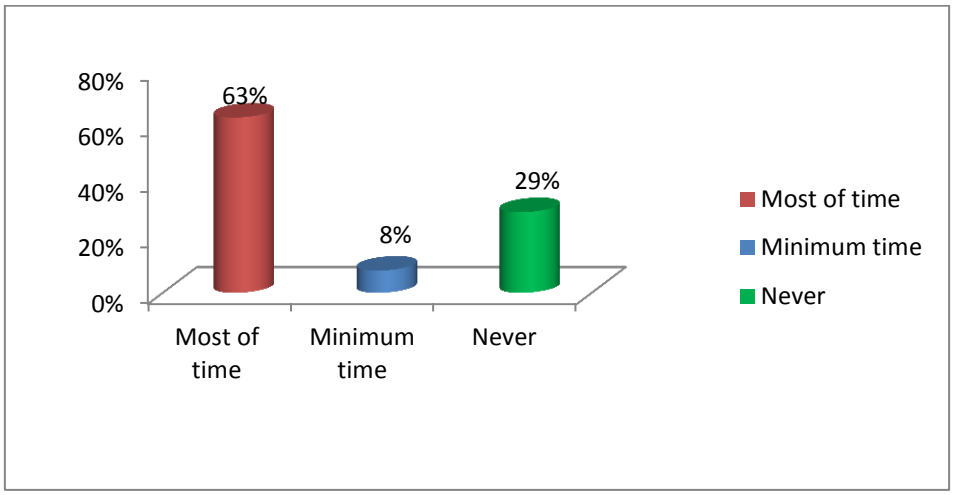
Association between depressions with different ages:

In the association test using chi-square,(x2) the value was 2.294 which indicates among variables was not significant because p-was 0.318 ($p > 0.05$).

4.17 Shoulder pain affects limitation in working activity

About 63% patients were feeling most of the time limitation in work whereas 8% patients were feeling minimum time limitation and 29% patient never feel limitation in work for this pain.

Figure 4.12: Shoulder pain affects limitation in working activity



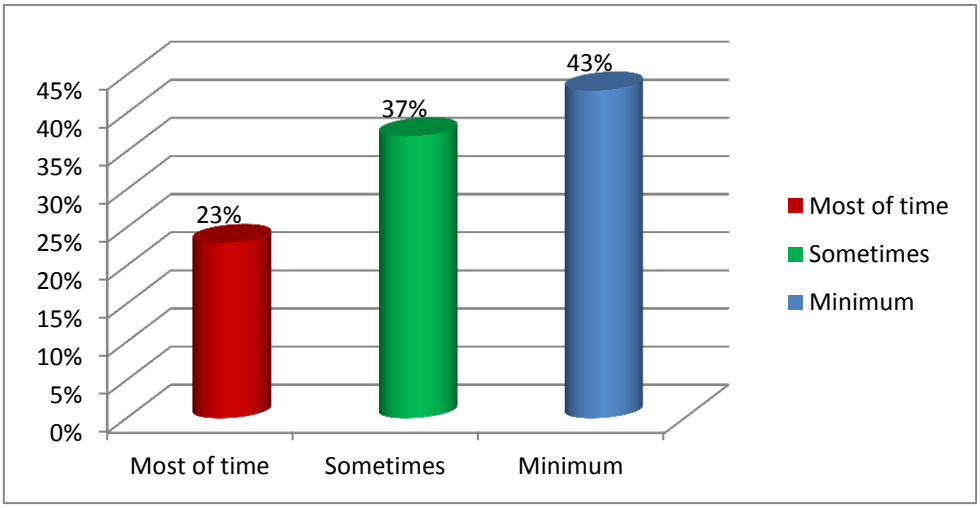
Association between limitations in working activity with different ages:

In the association test using chi-square, (x^2) the value was 4.47 which indicates among variables was not significant because p-was 0.345 ($p > 0.05$).

4.18 Maximum need time to complete the official work:

Among the participants 23% patients replied that most of the time they need extra time to complete the official work whereas 37% patients need sometimes extra time to complete the official work and minimum time required for 43% patient.

Figure 4.13: Maximum need time to complete the official work:



Association between limitations in official work with different ages:

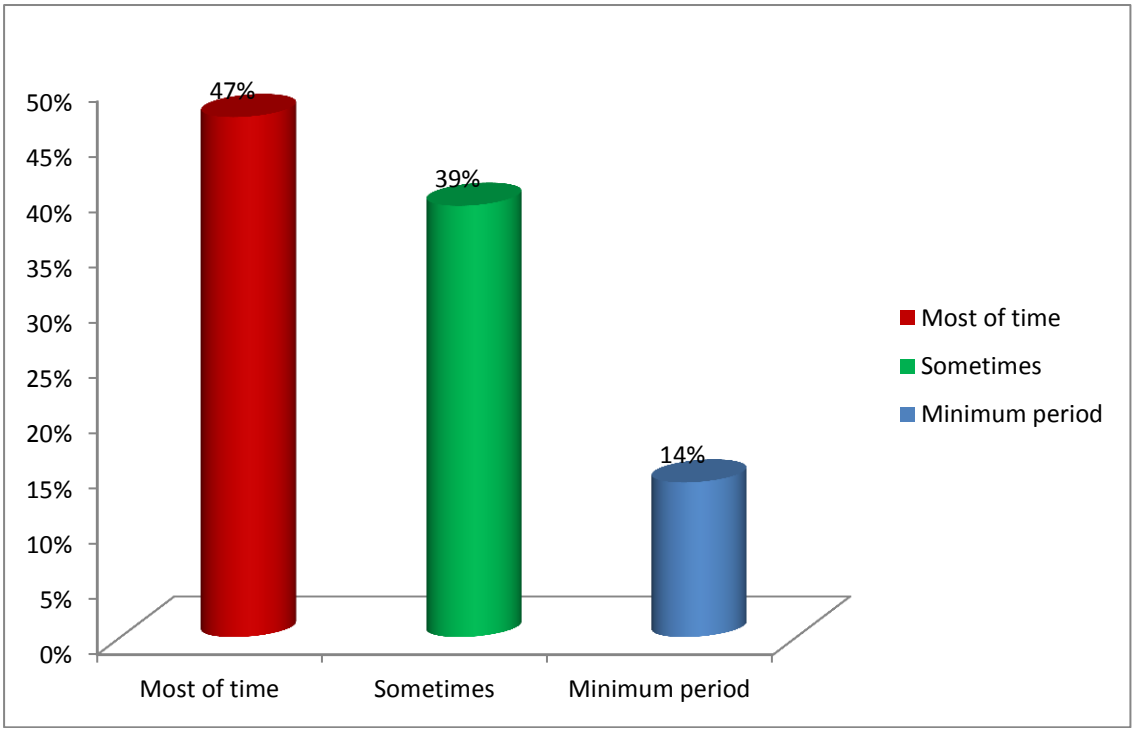
In the association test using chi-square, (x^2) the value was 29.560 which indicates among variables was significant because p-was 0.00 ($p < 0.05$).

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.477[a]	4	.345

4.19 Social functioning

For shoulder pain most of the time 47% (n=50) patients were feeling difficulty to perform their social functioning, whereas 39% (n=35) patients were feeling sometimes difficulty of performing social function and rest of 14 %(n=15) patients were feeling minimum time difficulty in performing social activity.

Figure 4.14: Social functioning of the participant



Association between social functioning with different ages:

In the association test using chi-square, (x^2) the value was 25.537 which indicates, there is a strong relation in between social functioning with different ages ($p < 0.05$) and the rate is high among the age group 50-59 years.

Table 10: Pain affecting the social life

		Age of participants			Total
		30-39 Year	40-49 Year	50-59year	
Social life affect the pain	Most of the time	0	1	13	14
	Sometime	3	19	25	47
	Little bit time	11	19	9	39
Total		14	39	47	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.537	4	.000

CHAPTER-V DISCUSSION

The aim of the study is to explore the impact of quality of life of patients with frozen shoulder attended at CRP. The study based on data gathered from frozen shoulder patients who came to CRP for receive treatment. This was prospective type of survey on 100 participants who were complained of frozen shoulder. The study found that mean age of the participant was 49.83(± 7.58) years and most of the participants were above 45 years. The youngest participants in this study were 40 years old and oldest participants were 60 years old. In a Malaysian study performed by (Zakaria, et al., 2009) found that the mean age was 65.6 ± 10.8 years of frozen shoulder. Another result has been reported by Chacon, et al. (2004) who concluded that the mean age was 64±9 and their age range was 41-86 years. So above two studies, mean age was not similar to this study. So, this indicated that frozen shoulder had affected the participants in this study earlier than others study. In this study, female participants were 54% and male participants were 46%. Frozen shoulder usually affects patients aged 30-70, with females affected more than males, and no predilection for race (Arshad, et al., 2015). In this study 44% (n=44) participants were service holder, 35% (n=35) participants were businessman, House wife participants were 13% (n= 13) and teacher participants were 8% (n=8). By this study it was ensured that service holder were more vulnerable for frozen shoulder. In this study, 76% (n=76) participants were married and 24% (n=24) participants were unmarried and bachelor degree passed participants were highest rate that was about 54% (n=54), Primary passed participants were second highest rate that was 28% (n=6), SSC passed, HSC passed, Masters passed participants frequency were 8%, 6%, and 4%. Study showed 70% of the respondent had performed repeated movement of their affected shoulder in their

respective occupation previously in which repeated flexion movement of affected shoulder was performed by 53% of patients whereas 38% was performed repeated abduction of affected shoulder and the rest of 9% were only performed repeated extension movement. But rest of 30% didn't do any repeated movement of affected shoulder. In this study, 78% of the respondent performed overhead activity of their affected shoulder in their job in which 54% were male and the rest of 24% of them were female. In 22% respondent performed no overhead activity of their affected shoulder and its number for female was 10% and male was12%. In the association test using chi-square, the value was 9.47 which indicates among variables was significant because p-was 0.002 ($p < 0.05$). Study showed that 72% of the respondents were feeling difficulties during lifting or weight bearing any objects whereas rest of 28% didn't feel any difficulty during use affected hand for their daily livings activity. In the association test using chi-square, the value was 1.529 which indicates among variables was not significant because p-was 0.570 ($p > 0.05$). In total 78% of the respondents were feeling difficulties of their affected hand to reach out behind neck whereas rest of 22% didn't feel any difficulty during use of affected hand for this type of activity. In the association test using chi-square, the value was 12.603 which indicates different age group of patients with frozen shoulder were feeling difficulties of functional activity and it was significant because p-was 0.002 ($p < 0.05$). Study showed that 65% of the respondents were feeling difficulties of their affected hand to reach out behind back whereas rest of 35% didn't feel any difficulty during use of affected hand for this type of activity. But association test using chi-square, the value was 1.960 which indicates among patients with frozen shoulder this activity was not significant because p-was 0.375 ($p > 0.05$).

Study revealed that in total 68% of the respondents were feeling difficulties of their affected hand to do bathing or wearing cloth and rest of 32% didn't feel any difficulty during use of affected hand for this type of activity. In the association test using chi-square, the value was 3.980 which indicate among patients with frozen shoulder this activity was not significant because variables were not significant because p-was 0.137 ($p > 0.05$).

Study showed that there have strong association between overhead activity and different ages of frozen shoulder patient (chi-9.47; $p<0.05$) and also strong association between hand behind neck activity and frozen shoulder because chi-12.603 ($p<0.05$).

Study revealed among participants 46% (n=46) patients were feeling severe limitation of bathing or wearing shirt and their age range was 40-49 years, whereas 43% (n=43) patients were feeling sometimes limitation of these activity.

Study demonstrated that 73% patients were feeling difficulty during playing card, chess, karum, badminton playing with this shoulder pain whereas 27% answered that they didn't feel any difficulty.

Study focused among participants 43%(n=43) patients were feeling depression for this shoulder pain whereas 57% (n=57) patients were feeling minimum period of time depression for this shoulder pain.Study stated maximum participants occupations were service worker and business andmost of patients 63% were feeling limitation in work whereas 8% patients were feeling minimum time of limitation and 29% patients never feel limitation in work for this pain.

Study focused that most of the time 23% patients need extra time to complete the official work whereas 37% patients need sometimes extra time to complete the official work and minimum time required for 43% patient.Maximum participants were feeling difficulties to continue their social activity and its percentage was 47 %

(n=47) due to their shoulder pain. In this study among the participants 17% patients had taken leave for their job place due to this pain. Study found that among participants 54 patients with frozen shoulder felt unhealthy due to shoulder pain where the percentage for men was 28% (n=15) and female was 72% (n=39). In compare one study findings was that more women tended to be unhealthy for frozen shoulder whereas men were found within average healthy category (Gupta, et al., 2008).

Limitations

There were a number of limitations and barriers in this research project which had affected the accuracy of the study, these are as follow:

The first limitation of this study was time of the study was very short which had a great deal of impact on the study. If enough time was available knowledge on this thesis could be extended.

The second limitation of this study was its small sample size and collected only from CRP musculoskeletal unit which may not represent the wide population and acts as a barrier to generalize the result for wider population of frozen shoulder.

There is no literature about quality of life of frozen shoulder patients in the perspective of Bangladesh so it is difficult to compare the study with the other research.

With regard to the questionnaires used, ethical considerations and lengthy questionnaire led to researcher using a single items measurement procedure that placed limitation on this finding. The questionnaires took approximately 10 minutes to complete.

CHAPTER-VI CONCLUSION AND RECOMMENDATION

6.1Conclusion

From this study it was concluded that female were more affected than male with frozen shoulder. Overhead activity and repetitive activity were aggravating factors for developing frozen shoulder and service holders were more affected among all occupation. Frozen shoulder was mostly responsible for impairment of physical function, physical role limitation. Frozen shoulder affects the general health of the participants so, maximum participants have fair health. Frozen shoulder only affects the physical health but it also affects the mental health of the participants. Pain is also high in all of the participants.

This study showed that patients with Frozen shoulder were attended at CRP have relatively poor quality of life pertaining to the physical health components but there was relatively less impact on mental health than physical health. Male and older ages were main two contributors for poor quality of life of frozen shoulder patients. The results emphasized that who refers the highest shoulder disability was associated with a lower QoL, which ultimately requires a special attention by the health professional that assists both their rehabilitation and social reintegration.

This study showed that CRP should try to improve the physical health of the patients with frozen shoulder and particular care should be given to older and male patients and to help to relieve the pain in patients with frozen shoulder.

6.2 Recommendation

The following recommendations could increase the validity and improve the results of this study:

A larger study involving increased number of participants may increase the significance of results.

More specific criteria in the inclusion of frozen shoulder would ensure consistency of participants. Collection of further data on mechanics of injury, level of chronicity and specific grade of injury is needed. The narrowing of variables such as age, gender, race in order to increase validity is also recommended.

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APPENDIX

1. Informed Consent (English)
2. Questionnaire (English)
3. Informed Consent (Bangla)
4. Questionnaire (Bangla)
5. Permission Letter

Informed Consent

Health care center: Center for the Rehabilitation of the Paralyzed (CRP)

Assalamualaikum/ Namasker, my name is Shazal Kumar Das; I am a student of Master of Science in physiotherapy in Bangladesh Health Professional Institute (BHPI). With the Supervision of Associate professor of physiotherapy, CRP, I am conducting a research project which is a part of my course curriculum. This study is entitled as "**impact of Quality of life of patients with Frozen Shoulder attended at CRP."**

The aim of the study is to assess the health related quality of life of patients with Frozen Shoulder attended at CRP. Through this project I will explore the effects of socio- demographic characteristics on Quality of life of patients with Frozen Shoulder and to find out the factors that have negative impact on QoL of Frozen Shoulder patients and the relation between pain and QoL of Frozen shoulder patient. To implement this project, I need to collect data from Frozen shoulder patients in saver CRP.

The study design is a Cross sectional type of research and data will be collected by structured and unstructured questioners from the patients who are selected by the selection criteria. If you agree to participate I will ask you some question that would take maximum 30 minutes in your time.

The participants have the right to withdrawal consent and discontinue participation at any time. Information for this study will be collected and never be shared with others without the participant's permission. Information will be kept safely and confidentiality will be maintained. The participants do not get direct benefit from the study but we hope to learn more about QoL of Frozen Shoulder patient and we do not anticipate any risk to study participants. You will be asked some question and if any may be difficult to answer or some question may be making you feels uncomfortable or sad. Of you want to skip a question just tell me and we will go on. You could say next question to let me know you want to skip the next question. You will be no paid for completion my study.

If you have any question about the research please asks me now or if you have questions at a later time you may contact me at phone.

I agree to participate in the research project without any force.

Identification number:	**Date of Interview**
Start time:	**End time:**
Name of the Respondents:	
Consent Taken : Yes No	
Name of the Physiotherapist:	
Diagnosis:	

Signature of the Patient: _____ Date: _____

Questionnaire

Appendix 1: Impact of Quality of life of pateints with frozen shoulder attended at CRP (English).

(Please give tick (√) mark in the box that is best suited for the child)

Section 1: Socioeconomic and Demographic

QN	Questions	Responses	Code
1.	Age (in year)?	|__|__| yrs	
2.	Sex?	Female	00
		Male	01
3.	Marital status?	Married	00
		Unmarried	01
		Separated	02
		Divorced	03
		Widow	04
		Widower	05
4.	Family Size	Large family	00
		Small family	01
5.	What is your religion?	Islam	00
		Hinduism	01
		Christian	02
		Buddhist	03
		Other (Specify): _____	99
6.	What is your education?	Illiterate	00
		Literate	01
		Primary education	02
		Secondary education	03
		SSC passed	04
		HSC passed	05
		Bachelor or above	06
		Other (Specify): _____	99

7.	What is the average monthly income of your household?		_____*Taka*	
8.	What is your profession (occupation)?	Rickshaw puller		00
		Farmer		01
		Service Holder		02
		Factory/garments worker		03
		Driver		04
		Businessman		05
		Day laborer		06
		Unemployed		07
		Housewife		08
		Teacher		09
		Other(Specify): _____		99
9.	Does it involve repetitive activity of shoulder?		No	00
			Yes	01
10.	If yes Please specify which movement		No	Yes
	a.	Flexion	00	01
	b.	Extension	00	01
	c.	Abduction	00	01
	d.	Adduction	00	01
	e.	Internal Rotation	00	01
	f.	External Rotation	00	01
	g.	Circumduction	00	01
11.	Does your occupation involves overhead activity?		No	00
			Yes	01
12.	Which is your dominant side?		Right	00
			Left	01
			Both	02
13.	Do you have any hobby that involves repetitive activity of shoulder?		No	00
			Yes	01
14.	If yes Please specify which movement		No	Yes
	a.	Flexion	00	01
	b.	Extension	00	01
	c.	Abduction	00	01
	d.	Adduction	00	01
	e.	Internal Rotation	00	01
	f.	External Rotation	00	01
	g.	Circumduction	00	01

Section 2: Does your health now limit you in these activities?

15.	In general, would you say your health is:	Excellent	00
		Very Good	01
		Good	02

		Fair	03
		Poor	04
16.	Compared to one year ago, how would you rate your health in general now?	Much better	00
		Somewhat better	01
		About the same	02
		Somewhat worse	03
		Much worse	04
17.	Vigorous activities, such as running, lifting heavy object, participating in strenuous sports.	Limited a lot	00
		Limited a little	01
		Not limited at all	02
18.	Moderate activates, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?	Limited a lot	00
		Limited a little	01
19.	Lifting or carrying groceries	Limited a lot	00
		Limited a little	01
20.	take hand behind the neck	Limited a lot	00
		Limited a little	01
21.	Foreword Bending, writing	Limited a lot	00
		Limited a little	01
		Not limited at all	02
22.	Take hand behind the waist	Limited a lot	00
		Limited a little	01
		Not limited at all	02
23.	Bathing or dressing yourself	Limited a lot	00
		Limited a little	01
24	Up word activity by involve hand	Limited a lot	00
		Limited a little	01

Section 3: During the past 4 weeks, have you had any of the following problems with your work or other regular daily activates as a result of a physical health?

25.	Cut down your physical health?	All the time	00
		Most of the time	01

		Sometime	02
		Little bit of time	03
		never	04
26.	Accomplished less than you would like?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
27.	Were limited in the kind of work or other activities?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
28.	Had difficulty performing the work or other activities (for example, it took extra time)	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
29.	Cut down the amount of time you spent on work or other activities?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
30.	Accomplished less than you would like?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
31.	Didn't do work or other activities as carefully as usual	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
32.	During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors or groups?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
33.	How much bodily pain have you had during the past 4 week?	Not at all	00
		Slightly	01
		Moderately	02
		Quite a bit	03
		Extremely	04
34.	During the past 4 weeks, how much did pain interfere with your normal	Not at all	00
		Slightly	01

	work (including both work outside the home and housework)?	Moderately	02
		Quite a bit	03
		Extremely	04
35.	Did you fell full of pep?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
36.	Have you been a very nervous person?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
37.	Have you felts so down in the dumps nothing could cheer you up?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
38.	Have you felt calm and peaceful?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
39.	Did you have a lot of energy?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
40.	Have you felt downhearted and blue?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
41.	Did you feel worn out?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
42.	Did you feel tired?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03

		never	04
43.	During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activates (like visiting friends, relative , etc)?	All the time	00
		Most of the time	01
		Sometime	02
		Little bit of time	03
		never	04
44.	I seem to get sick a little easier than other people	Definitely true	00
		Mostly true	01
		Don't know	02
		Mostly false	03
		Definitely false	04
45.	I am as healthy as anybody I know	Definitely true	00
		Mostly true	01
		Don't know	02
		Mostly false	03
		Definitely false	04
46.	I expect my health to get worse	Definitely true	00
		Mostly true	01
		Don't know	02
		Mostly false	03
		Definitely false	04
47.	My health is excellent	Definitely true	00
		Mostly true	01
		Don't know	02
		Mostly false	03
		Definitely false	04

সম্মতিপত্র

আসসালামুয়ালাইকুম / নমস্কার, আমি সজল কুমার দাস,ঢাকা বিশ্ববিদ্যালয়ের চিকিৎসা অনুষদের অধিভুক্ত বাংলাদেশ হেলথ প্রফেশনস্ ইনস্টিটিউট এর এম.এস.সি ইন ফিজিওথেরাপিকোর্সের চূড়ান্ত 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 হল "ফ্রোজেন শোল্ডার আক্রান্ত রোগীদের জীবনযাত্রার মান।''এই পরীক্ষামূলক গবেষণার মাধ্যমে আমি একটি অনুমান পরীক্ষা করব যে, ফ্রোজেন শোল্ডার আক্রান্ত রোগীদের জীবনযাত্রার মান কেমন। আমি যদি আমার গবেষণাটি সার্থকভাবে সম্পূর্ণ করতে পারি তবে যেসব রোগীরা ফ্রোজেন শোল্ডার 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 অনুরোধ 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 ব্যক্তিগত তথ্য অন্য কোথাও প্রকাশ করা হবে না।

যদি আপনার গবেষণা সম্পর্কে কোনো জিজ্ঞসা থাকে তবে আপনি অনুগ্রহপুবক যোগাযোগ করতে পারেন গবেষক , সজল কুমার দাস,ফিজিওথেরাপি বিভাগ,সিআরপি, সাভার, ঢাকা-১৩৪৩

গবেষণা শুরু করার আগে আপনার কি কোন প্রশ্ন আছে ?

আমি কি শুরু করতে পারি ?

☐ হ্যাঁ ☐ না

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ .....

গবেষকের স্বাক্ষর ও তারিখ .....

স্বাক্ষীর স্বাক্ষর ও তারিখ .....

রুগির আই ডীঃ	**সাক্ষাতেরতারিখঃ**
শুরুরসময়ঃ	**শেষেরসময়ঃ**
নামঃ	
সম্মতিগ্রহণ : **হাঁ/ নাহ্যাঁনা**	
ফিজিওথেরাপিস্টেরনাম:	
রোগনির্ণয়:	
রোগ	

গবেষণা-প্রশ্নাবলী

ফ্রোজেন শোল্ডার আক্রান্ত রোগীদের জীবন যাত্রার মান।(বাংলা)

১মবিভাগঃ আর্থসামাজিক এবং জনতাত্ত্বিক।

নং	**প্রশ্ন**	**উত্তর**	**কোড**
১।	বয়স	বছর	
২।	লিংগ	মহিলা	০০
		পুরুষ	০১
৩।	বৈবাহিক অবস্থা	বিবাহিত	০০
		অবিবাহিত	০১
		আলাদা	০২
		ডিভোর্স	০৩
		বিধবা	০৪
		বিপত্নীক	০৫
৪।	পরিবার	বড় পরিবার	০০
		ছোট পরিবার	০১

৫।	আপনার ধর্ম	ইসলাম	০০
		হিন্দু	০১
		খ্রীস্টান	০২
		বৌদ্ধ	০৩
		অন্য (উল্লেখ করুন): _____	
৬।	শিক্ষাগত যোগ্যতা	অশিক্ষিত	০০
		স্বাক্ষর জ্ঞান	০১
		প্রাথমিক শিক্ষা	০২
		মাধ্যমিক শিক্ষা	০৩
		এসএসসি পাস	০৪
		এইচএসসি পাস	০৫
		সম্মান বা তদুর্ধ	০৬
		অন্য(উল্লেখকরুন): _____	
৭।	আপনার মাসিক আয় কত?	_____*টাকা*	
৮।	আপনার পেশা কি?	রিকশাচালক	০০
		কৃষক	০১
		চাকুরে	০২
		গার্মেন্টসকর্মী	০৩
		ড্রাইভার	০৪
		ব্যবসায়ী	০৫
		দিনমজুর	০৬
		বেকার	০৭
		গৃহিণী	০৮
		শিক্ষক	০৯
		অন্য (উল্লেখকরুন): _____	
৯।	আপনার প্রতিদিনের কাজে কি কাঁধের পুনরাবৃত্তিমূলক কাজ করতে হয়?	না	00
		হ্যাঁ	01
১০।	যদি হ্যাঁ হয় তাহলে কি ধরনের মুভমেন্ট-	না	হ্যাঁ

	ক	ফ্লেক্সন	০০	০১
	খ	এক্সটেনসন	০০	০১
	গ	এবডাকশন	০০	০১
	ঘ	এডাকশন	০০	০১
	ঙ	ইন্টার্নালরোটেশন	০০	০১
	চ	এক্সটার্নালরোটেশন	০০	০১
	ছ	সারকামডাকশন	০০	০১
১১।	আপনার পেশাকি মাথার উপরে কার্যকলাপে পূর্ণ?		না	০০
			হ্যাঁ	০১
১২।	আপনি কোন হাত বেশি ব্যবহার করেন?		ডান	০০
			বাম	০১
			উভয়	০২
১৩।	আপনার কি কোন শখ আছে যাতে কাঁধের পুনরাবৃত্তিমূলক কাজ করতে হয়? যদি হা হয় ১৪ এর প্রশ্ন পড়ুন-		না	০০
			হ্যাঁ	০১
১৪।	যদি হ্যাঁ হয় তাহলে কি ধরনের মুভমেন্ট-		না	হ্যাঁ
	ক	ফ্লেক্সন	০০	০১
	খ	এক্সটেনসন	০০	০১
	গ	এবডাকশন	০০	০১
	ঘ	এডাকশন	০০	০১
	ঙ	ইন্টার্নালরোটেশন	০০	০১
	চ	এক্সটার্নালরোটেশন	০০	০১
	ছ	সারকামডাকশন	০০	০১

বিভাগ ২: আপনার স্বাস্থ্য এখন কোন কোন ক্ষেত্রে সীমাবদ্ধতা এনেছে?

১৫।	সাধারণত, আপনার স্বাস্থ্যঃ	দারুন	০০
		খুবভাল	০১
		ভাল	০২
		মোটামোটি	০৩

		খারাপ	০৪
১৬।	গত বছরের তুলনায় এখন আপনার স্বাস্থ্য কেমন?	অনেকভাল	০০
		কিছুটাভাল	০১
		একই	০২
		কিছুটাখারাপ	০৩
		অনেকখারাপ	০৪
১৭।	শ্রমসাধ্য কাজ যেমন ভারউত্তোলন, চলমান ক্রীড়ার ক্ষেত্রে-	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১
		সীমাবদ্ধনয়	০২
১৮।	খেলার ক্ষেত্রে আপনি কেমন সীমাবদ্ধতা বোধ করেন?	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১
১৯।	বাজারের ব্যাগ অথবা ভারী ওজন বহনের ক্ষেত্রে কেমন সীমাবদ্ধথাবোধ করেন?	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১
২০।	বেথার জন্য হাত ঘাড়ের পেছনে নিতে পারেন কি-	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১
২১।	সামনেঝুঁকলে, হাঁত দিয়ে লেখা লেখি করলে-	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১
		সীমাবদ্ধনয়	০২
২২।	হাত কোমরের পেছনে নিতে পারেন?	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১
২৩।	গোসলকরতেবাজামাপরতেগেলে-	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১
২৪।	আক্রান্ত হাত দিয়ে মাথার উপরে কাজ করতে গেলে-	অনেকসীমাবদ্ধ	০০
		কিছুটাসীমাবদ্ধ	০১

বিভাগ৩: গত ৪ সপ্তাহে আপনার শারীরিক স্বাস্থ্যের জন্য দৈনন্দিন কর্মকান্ডে কি নিম্নলিখিত কোন সমস্যা দেখা দিয়েছে?

২৫।	শারীরিক স্বাস্থ্যের অবনতি হয়েছে?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২

		খুবকমসময়	০৩
		কখনোনা	০৪
২৬।	আপনি প্রয়োজনের চেয়ে কম কাজ করেছেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
২৭।	কাজের মাঝে সীমাবদ্ধতা ছিল কি?	সবসময়	০০
		বেশির ভাগ সময়	০১
		মাঝেমাঝে	০২
		খুব কম সময়	০৩
		কখনো না	৪
২৮।	কোন কাজ করতে সমস্যা হয়েছে যেমন, সম্পন্ন হতে বেশি সময় লেগেছে?	সবসময়	০০
		বেশির ভাগ সময়	০১
		মাঝে মাঝে	০২
		খুব কম সময়	০৩
		কখনো না	০৪
২৯।	কোনকাজ করার জন্য আপনার নির্দিষ্ট সময়ের চেয়ে কি বেশি সময় নিচ্ছেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৩০।	আপনার চাহিদার চেয়ে কম কাজ করছেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৩১।	আপনার কাজগুলো পূর্বের মত যত্ন সহকারে করতে	সবসময়	০০

	পারছেন কি?	বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৩২।	গত ৪ সপ্তাহে আপনার পরিবার, বন্ধু বা দলের সাথে কর্মকান্ডে আপনার শারীরিক স্বাস্থ্য বা মানসিক সমস্যার কতটুকু হস্তক্ষেপ রয়েছে?	সবসময়	০০
		বেশির ভাগ সময়	০১
		মাঝে মাঝে	০২
		খুব কমসময়	০৩
		কখনোনা	০৪
৩৩।	গত ৪ সপ্তাহে আপনার কতটা শারীরিক ব্যাথা হয়েছে?	মোটেওনা	০০
		অল্প	০১
		মাঝারি	০২
		একটুবেশি	০৩
		অনেকবেশি	০৪
৩৪।	গত ৪ সপ্তাহে ব্যাথার জন্য আপনার কাজের (ঘরেরভিতরওবাইরে) উপর কতটুকু প্রভাব ফেলেছে?	মোটেওনা	০০
		অল্প	০১
		মাঝারি	০২
		একটুবেশি	০৩
		অনেকবেশি	০৪
৩৫।	আপনার কি নিস্তেজ মনে হয়েছে?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৩৬।	আপনি কি স্নায়বিক উত্তেজনায় ছিলেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪

৩৭।	ব্যাথার জন্য কি আপনি হতাশ ছিলেন যেকোন কিছুই আপনাকে উতসাহিত করতে পারেনি?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৩৮।	ব্যাথার জন্য কি আপনি কি শান্ত ছিলেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৩৯।	ব্যাথা নিয়ে আপনি কি যথেষ্ট শক্তিশালী ছিলেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৪০।	আপনি কি হতাশ এবং শূণ্য অনুভব করেছেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৪১।	আপনি ব্যাথার জন্য নিজেকে কি জরাজীর্ণ মনে করছেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৪২।	আপনি কি ক্লান্তি বোধ করেছেন?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩

		কখনোনা	০৪
৪৩।	গত ৪ সপ্তাহে আপনার সামাজিক কর্মকান্ডে শারীরিক স্বাস্থ্য কতটুকু প্রভাব রেখেছে?	সবসময়	০০
		বেশিরভাগসময়	০১
		মাঝেমাঝে	০২
		খুবকমসময়	০৩
		কখনোনা	০৪
৪৪।	আপনিকি মনে করেন যে অন্যদের তুলনায় তাড়াতাড়ি রোগাক্রান্ত হন?	সত্য	০০
		আংশিকসত্য	০১
		জানিনা	০২
		আংশিকমিথ্যা	০৩
		মিথ্যা	০৪
৪৫।	আপনি কি আপনাকে অন্যদের ন্যায় সুস্থ মনে করেন?	সত্য	০০
		আংশিকসত্য	০১
		জানিনা	০২
		আংশিকমিথ্যা	০৩
		মিথ্যা	০৪
৪৬।	আমার স্বাস্থ্য খারাপ হবার সম্ভাবনা বোধ করি।	সত্য	০০
		আংশিকসত্য	০১
		জানিনা	০২
		আংশিকমিথ্যা	০৩
		মিথ্যা	০৪
৪৭।	আমার স্বাস্থ্য ঠিক আছে।	সত্য	০০
		আংশিকসত্য	০১
		জানিনা	০২
		আংশিকমিথ্যা	০৩
		মিথ্যা	০৪

Permission letter

Permission Letter

February 17, 2016
Head of Physiotherapy Department
Center for the Rehabilitation of the Paralysed (CRP)
Savar, Dhaka-1343.
Subject: Regarding permission to collect data from musculoskeletal unit to conduct a research project.
Through: Course Coordinator, MSc in Physiotherapy Program.
Sir,

Greetings from Bangladesh Health Professions Institute (BHPI).

It is your kind attention that Bangladesh Health Professions Institute (BHPI)- an academic institute of CRP, has been conducting M.Sc. in Physiotherapy under Faculty of Medicine of University of Dhaka (DU) since 2014. My thesis entitled "Health related quality of life of patients with frozen shoulder (Shoulder capsulitis) attended at CRP" under honourable supervisor, Dr. Md. Asadullah Ripon, Associate professor, Department of Orthopaedic & rheumatology, Enam Medical College & Hospital. The purpose of study is to identify possible health related quality of life of patients with frozen shoulder (Shoulder capsulitis). It is a cross sectional research study. Data collection will require the patients and a small space of your reputed musculoskeletal unit and will occur for six weeks from 20th February, 2016. Data collectors will receive informed consents from all participants. Any data collected will be kept confidential. Ethical approval is received from the Institutional Review Board (IRB) of Bangladesh Health Professions Institute. I have chosen musculoskeletal Unit to collect required data. Now I am looking for your kind approval to start my data collection. I would like to assure that anything of my research project will not harmful for the participant.

Therefore I look forward to your cooperation by giving me permission for data collection at paediatric unit, CRP, Savar.

Yours faithfully

(Shazal Kumar Das)
Part-2, M. Sc. in physiotherapy Program
Session: 2013-14
BHPI, CRP, Savar, Dhaka-1343

Approved
20/2/16
Mohammad Anwar Hossain
Associate Professor &
Head of Physiotherapy Dept.
CRP, Chapain, Savar, Dhaka-1343

Permitted
20/2/16
DR. MD. ASADULLAH (RIPON)
MBBS, D-Ortho
Associate Professore (Ortho)
Enam Medical College & Hospital
Savar, Dhaka.

20/02/16
Firoz Ahmed Mamin
Assistant Professor
Department of Physiotherapy
BHPI, CRP Savar, Dhaka

BANGLADESH HEALTH PROFESSIONS INSTITUTE

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

Ref. CRP-BHPI/IRB/02/16/028 *Date:* 27.02.2016

To,
Shazal Kumar Das
Part – II, M.Sc. in Physiotherapy
Session: 2013-2014, DU Reg. No.: 3490
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.

Subject: Approval of the thesis proposal – **"Impact of frozen shoulder on quality of life of patients attended at CRP"** by IRB of BHPI.

Dear Shazal Kumar Das,
Congratulation!
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on January 21, 2016 to conduct the above mentioned thesis, with yourself, as the Principal investigator. The Following documents have been reviewed and approved:

SL#	Name of the Documents
1	Thesis Proposal
2	Questionnaire
3	Information sheet & consent form.

Since the study involves questionnaire have no likelihood of any harm to the participants and have possibility of benefit patients by measuring the impact of frozen shoulder on quality of life patients attended at CRP, the members of the Ethics committee has approved the study to be conducted in the presented form at the meeting held at 08:30 AM on February 25, 2016 at BHPI. The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information 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,

S M Ferdous Alam
Assistant Professor
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