Faculty of Medicine

University of Dhaka

'FACTORS INFLUENCING THERAPEUTIC OUTCOMES OF PATIENTS WITH ADHESIVE CAPSULITIS ATTENDING AT MUSCULO-SKELETAL UNIT CRP, SAVAR'

Priyanka Rani Padder

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

DU Roll No: 1108

Registration No: 8653

4th Year, Session: 2017-2018,

BHPI, CRP, Savar, Dhaka-1343

Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy
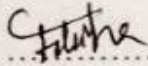
CRP, Savar, Dhaka-1343

Bangladesh.

September, 2023

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

'Factors Influencing Therapeutic Outcomes of Patients with Adhesive Capsulitis Attending at Musculo-skeletal Unit CRP, Savar'
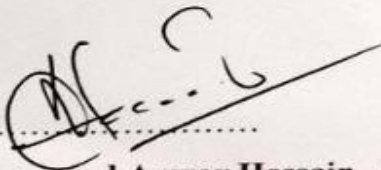
Submitted by **Priyanka Rani Padder**, for partial fulfilment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT)

....

Fabiha Alam
Assistant Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

....

Prof. Md. Obaidul Haque
Vice-Principal
BHPI, CRP, Savar, Dhaka

....

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

Approved Date: 18 /11/2023

Declaration

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

Name of the student: **Date:**

Priyanka Rani Padder

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

DU Roll No: 1108

Registration No: 8653

4th Year, Session: 2017-2018,

Bangladesh Health Professions Institute (BHPI), CRP, Savar, Dhaka-1343.

CONTENTS

Acknowledgement

Acronyms

BHPI   Bangladesh Health Profession Institute

BMRC   Bangladesh Medical Research Council

CRP   Centre for the Rehabilitation of the Paralysed

DM   Diabetic Mellitus

FS   Frozen Shoulder

IRB   Institutional Review Board

NSAID   Non-Steroid Anti-Inflammatory Drug

OSS   Oxford shoulder score

SPSS   Statistical Package for the Social Sciences

USA   United states of America

WHO   World Health Organization

List of Figures

List of Table

Abstract

Purpose: The purpose of the study was to find out the Factors Influencing Therapeutic Outcomes of Patients with Adhesive Capsulitis. Objectives: To identify possible factors influencing therapeutic outcomes of patients with adhesive capsulitis. Methodology: This study aimed to identify possible factors influencing therapeutic outcomes of patients with adhesive capsulitis. For this reason, a quantitative research model in the form of a cross sectional type survey design was used. Cross sectional studies (also called a prevalence survey) aim at describing and quantifying the distribution of certain variables in a study population at point of time. It provides a snapshot of the health experience of a population at a given time (Hannan et al. 2007). I used this method so that the aim and objectives of the study can be fulfilled. Ethical permission was obtained from Institutional Review Board (IRB) and written informed consent was obtained from all participants. A descriptive type of cross-sectional study of 72 participants was conducted. The study was conducted by using quantitative descriptive analysis through using SPSS software 22.0 version. Results: A total number of 72 participants were recruited in the study. In ratio, the male participants were about female 60% and male were about 40%. Female are more affected than male. Pain was severe among the participants and thats why most of the patients general health was fair and assistance was required for their daily activity. There was association of the past medical history with the duration of receiving treatment is (p=0.081) which is influenced the treatment. There was no correlation between age and functioning ability (p=0.454) which indicated that Adhesive Capsulitis might be main contributor for limiting physical functioning. Conclusion: This study has shown that patients with Adhesive Capsulitis have poor functioning ability pertaining to the physical health component as well as mental health component but physical function was more limited. So, treatments should be emphasized in physical function.

Key words: *Therapeutic Outcomes, Factors Influencing, Adhesive capsulitis.*

CHAPTER–I	INTRODUCTION

1.1 Background

Adhesive capsulitis (AC), also known as frozen shoulder, is a common shoulder disorder that is characterized by a progressive and painful restriction of range of motion (ROM), that results in functional disability (Hsu and Sheu 2016).

For many years, AC has been described as a self-limiting condition that progresses through a natural history of painful, frozen, and thawing phases, leading to full recovery without treatment. However, a recent systematic review assessed the quality of the evidence that describes the theory of AC phases and the theory of full recovery without treatment (Wong et al. 2017).

Adhesive capsulitis (AC) is a self-limiting condition. Patients typically present with an atraumatic history of progressive painful restriction in range of movement of the gleno-humeral joint. They exhibit a capsular pattern of restriction with external rotation being the most restricted followed by abduction in the plane of the scapula and then flexion (Arkkila and Gautier 2003).

Frozen shoulder usually affects patients aged 40-60, 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).

Adhesive capsulitis of the shoulder is a condition of sprain and stiffness with consequent functional impairment. The global range of passive and active mobility is gradually becoming more restricted, and there is a gradual start of diffuse shoulder pain. It can be subsequent to a recognized triggering event, such as upper limb trauma, or primary (idiopathic), in which case there are normal radiological results. According to conventional wisdom, adhesive capsulitis is a self-limiting condition that typically lasts between one and three years. Most patients heal even without medical intervention after that time. Three phases make up the natural history: a painful phase that is a result

of inflammation, a painful and frozen phase marked by stiffness, and followed by a thawing phase (Rill et al. 2011).

Adhesive shoulder capsulitis, or arthrofibrosis, describes a pathological process in which the body forms excessive scar tissue or adhesions across the gleno-humeral joint, leading to stiffness, pain and dysfunction (Neviaser and Neviaser 2011).

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 (Bhargav et al. 2011).

Painful stiffness of the shoulder can adversely affect activities of daily living and consequently impair quality of life. Simon-Emmanuel Duplay is widely recognized as the first physician to describe this pathology, which he called 'scapulohumeral "periarthritis". "Periarthritis" describes a painful shoulder syndrome that is distinct from arthritis with general radiographic preservation of the joint (D'Orsi et al. 2012).

Adhesive capsulitis (AC), also commonly known as frozen shoulder, is an inflammatory and fibrotic disorder predominantly of the coracohumeral ligament (CHL) and rotator interval. AC leads to considerable pain, restricted active and passive range of motion, with a protracted morbid state (Harris, Bou-Haidar and Harris 2013).

Adhesive capsulitis of the shoulder is characterized by a progressive painful loss of passive and active shoulder range of motion. The condition, which affects 2% to 5% of the general population, is due to chronic inflammation of the capsular sub-synovial layer leading to thickening, fibrosis contracture, and loss of the normal axillary recess ((Neviaser and Neviaser 2011).

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 (Yip et al. 2005).

Although frozen shoulder and adhesive capsulitis (AC) are frequently used as synonyms, AC is a distinct pathological entity, while frozen shoulder solely refers to any condition that restricts active or passive glenohumeral motion. Adhesive capsulitis an insidious and progressive loss of active and passive mobility of glenohumeral joint in order to the capsular contraction. Long duration diabetes is treated with insulin which is associated with shoulder calcification. Adhesive capsulitis appear to other shoulder conditions such as major trauma, rotator cuff tear, rotator cuff contusion, labral tear, bone contusion, subacromial bursitis, cervical or peripheral neuropathy, previous surgical procedure in early disease process and radiographs, it could be adhesive capsulitis if history of these other conditions is negative (Neviaser and Hannafin 2010).

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 (Ozkan et al. 2005).

The conditions such as subacromial bursitis and calcific tendonitis were previously termed as frozen shoulder as they could lead to a stiff and painful shoulder. Although these conditions cause a clear limitation of active range of motion, they lack capsular contracture and restriction in passive range of motion. Therefore, these conditions should not be labeled as AC. Adhesive capsulitis is characterized by painful, gradual loss of

active and passive shoulder motion resulting from fibrosis and contracture of the joint capsule. Shoulder motion occurs in multiple planes of movement, and loss of shoulder mobility can result in significant functional impairment. Primary adhesive capsulitis is defined as adhesive capsulitis that has no definite etiology, such as full- and partial-thickness rotator cuff tears, calcific tendinopathy, glenohumeral or acromioclavicular arthritis, and cervical radiculopathy. The overall objective of treating adhesive capsulitis is to relieve pain and restore motion. Treatment regimens for adhesive capsulitis begin with a trial of conservative therapy, including anti-inflammatory medications, injections, and physical therapy (Hsu et al. 2011).

AC was recently defined as range of motion (ROM) loss of greater than 25 % in at least two movement planes, together with at least 50 % loss of passive external rotation in comparison to the uninvolved shoulder (Kelley et al. 2013).

AC is of uncertain aetio-pathogenesis but characterised by significantly reduced active and passive movement in the absence of intrinsic shoulder disease (Fields et al. 2019).

Frozen shoulder or adhesive capsulitis is a musculoskeletal condition that is commonly encountered in physical therapy practice. The exact incidence and prevalence of frozen shoulder is unknown, but is often quoted to affect approximately 2% to 5% of the general population and mainly individuals 40–65 years of age, with a female predominance (Aydeniz, Gursoy and Guney 2008).

It is characterized by a spontaneous onset of pain with gradual, progressive loss of glenohumeral joint motion which can lead to gross loss of shoulder function. The conditions usually starts with one shoulder and commonly affects the contralateral side years after the onset of symptoms in the first shoulder but it does not affect the same shoulder twice (Kelley, McClure and Leggin 2009).

Patients with frozen shoulder typically demonstrate a characteristic history, clinical presentation, and recovery. It is believed to be a self-limiting condition, lasting 18–24 months with no long-term sequelae. Although majority of patients show complete resolution of the disease, many others report long term pain and residual motion restriction (Hand et al. 2007).

The treatment and evaluation of a stiff and painful shoulder, characteristic of adhesive capsulitis, or ''frozen'' shoulder, is a dilemma for orthopaedic rehabilitation specialists. Treatment options including benign neglect, home-based and supervised physical therapy, oral and intraarticular corticosteroid injections, closed manipulation, and arthroscopic capsular release (Hannafin and Chiaia 2000).

The traditional treatment approach to restore shoulder mobility emphasizes mobilization of the shoulder overhead. Forced elevation in a stiff and painful shoulder can be painful and potentially destructive to the glenohumeral joint (Donatelli et al. 2014).

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 (Ozkan et al. 2005).

The occurrence of one side frozen shoulder have the chance to the risk of contralateral shoulder involvement by 5% to 34% and simultaneously bilateral shoulder involvement occurs often 14% of the time. The relationship between shoulder capsulitis and diabetes mellitus is most common, with the incidence of shoulder capsulitis being two to four times higher in diabetes than in the general population. Shoulder capsulitis with diabetes has been described as the most disabling of the musculoskeletal manifestations of diabetes mellitus (Neviaser and Hannafin 2010).

Various studies have proved that shoulder pain is a benign and self-limiting problem. Only about 50% of all new episodes of shoulder pain presented in primary care show complete recovery within 6 months and after one year, this proportion is increase to only 60%. In the period 1987-1995, the state of Washington (USA) each year accepted over 6000 work disability claims related to shoulder problems (Rill et al. 2011).

1.2 Rationale

Shoulder capsulitis 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 60 years develop shoulder capsulitis with a greater occurrence in women.

Now a days the rate of adhesive capsulitis patients are increasing day by day. For this reason of adhesive capsulitis patients who has pain on shoulder and cannot move and perform any work properly. It will assist to make current physiotherapy practice more holistic and effective for the adhesive capsulitis patient with musculoskeletal problem in Bangladesh. This study might give a clear reflection of musculoskeletal problem arises among the patient with adhesive capsulitis. Physiotherapy plays a vital role in the management of adhesive capsulitis patient. So it will also be helpful for physiotherapist in working in this area for delivering treatment service. This study will also be helpful for different organizations working in this area for including physiotherapy service in their program for delivering a comprehensive treatment service. As a result, patients would be more benefited.

Most common cause of adhesive capsulitis is the muscle wasting, immobility etc. Also the causes of activity limitation thus decrease the quality of life. If the characteristics of shoulder capsulitis is find out that means the vulnerable age group of shoulder capsulitis, the group of people are affected by frozen shoulder, predisposing factors of shoulder capsulitis, clinical representation of shoulder, as a physiotherapist it will help to diagnose shoulder capsulitis easily and it will give details information to the patient about shoulder capsulitis. Adhesive capsulitis of the shoulder or frozen shoulder is the most common and disabling of diabetes mellitus is associated with several musculoskeletal disorders.

Risk factors for adhesive capsulitis include female sex, age over 40 years, preceding trauma, HLA-B27 positivity and prolonged immobilization of the glenohumeral joint. It is estimated that 70% of patients with adhesive shoulder capsulitis are women. Additionally, men do not respond to treatments as well as women. Recent history of traumatic shoulder injury, prior surgery to affected shoulder, diabetes mellitus, thyroid

disease, and previous history of adhesive capsulitis are all risk factors for developing adhesive capsulitis. Mainstay of treatment is physical therapy and observation.

The purpose of the study to find out the factors influencing therapeutic outcomes of patients with Adhesive Capsulitis. It affects a large number of individual who became a border for themselves and make a devastating effect on their family and society as well as in whole country. However, research helps to improve the knowledge of health professionals, as well as develops the profession.

1.3 Research question

What are the factors influencing therapeutic outcomes of patients with adhesive capsulitis?

1.4 Objectives

General objectives

To identify possible factors influencing therapeutic outcomes of patients with adhesive capsulitis.

Specific objectives

i. To explore socio-demographic characteristics of patients with Adhesive capsulitis.
ii. To find out the past medical history among the patients affected by adhesive capsulitis.
iii. To find out the association of the past medical history with the duration of receiving treatment among the patients affected by adhesive capsulitis.
iv. To explore the association of activity of daily living along with the pain of patients suffering with Adhesive capsulitis.
v. To explore the association of duration of treatment along with the severity of pain.

1.5 List of variables

Independent   Variables

Socio demographic factor

for example: Age , Sex , Occupation etc.

⟶

Past medical injury: Diabetes mellitus, Hypertension , Thyroid disease ,Cardiovascular.

⟶

Activity of daily living.

⟶

Pain, Range of motion, Joint mobility.

Others: Fracture , Immobilization , Surgery , Positive family history, History of

⟶

11
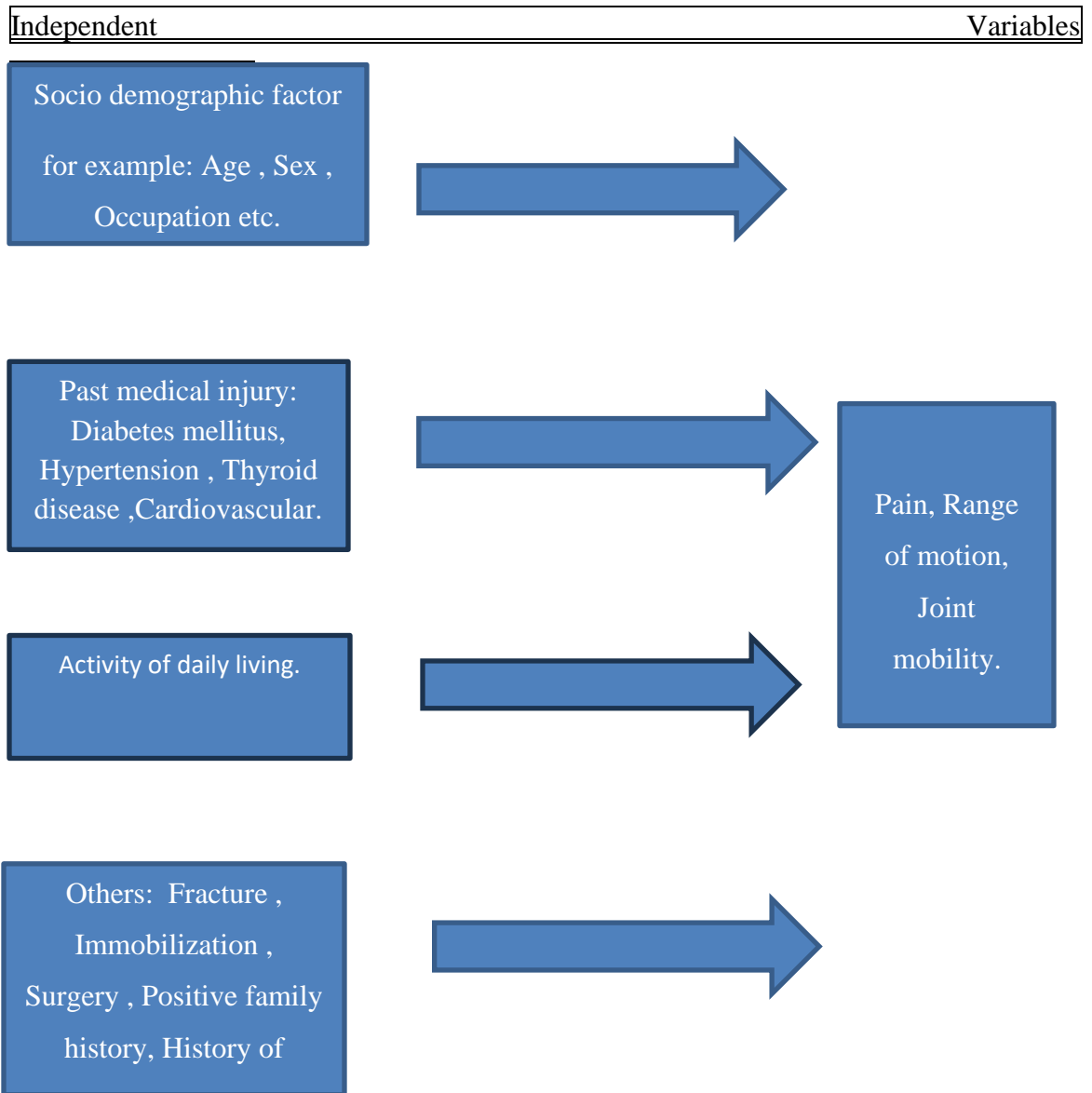
1.6 Operational Definition

Adhesive capsulitis:

Adhesive capsulitis is a condition that limits the range of motion in the shoulder joint and causes discomfort when it does so. Adhesive capsulitis is a common, painful condition of the shoulder that is associated with loss of range of motion in the gleno-humeral joint. It results from contraction of the gleno-humeral joint capsule and adherence to the humeral head. The term 'frozen shoulder' commonly used to describe adhesive capsulitis and other conditions associated with loss of range of motion at the joint. Although adhesive capsulitis is often self-limited, it can persist for years and may never fully resolve.

Diabetes Mellitus:

Diabetes Mellitus is a chronic disease, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces. The leads to an increased concentration of glucose in the blood (Hyperglycemia).

Thyroid disease:

Thyroid disease is a general term for a medical condition that keeps our thyroid from making the right amount of hormones. Our thyroid typically makes hormones that keep our body functioning normally. When the thyroid makes too much thyroid hormone, your body uses energy too quickly.

Therapeutic outcomes:

The effects of Physiotherapy intervention, for instance reduction of pain, increase joint range of motion, improve functional activities and consequently, Quality of Life.

| CHAPTER– II | LITERATURE REVIEW |

Adhesive capsulitis (AC) commonly known as frozen shoulder is a common inflammatory disorder of the shoulder joint seen in 2–3% of the population, commonly affecting females. AC often presents as painful shoulder, a presentation which is far from specific and mimics several other painful shoulder disorders like rotator cuff tears, calcific tendonitis, early glenohumeral arthritis, subacromial impingement, calcific tendinitis, etc. Shoulder capsulitis, also known as frozen shoulder, is a common condition involving scapulohumeral pain and loss of motion. This condition was termed ''peri-arthritis scapula-humerale'' by Duplay in 1896. Codman, in 1934, characterized the diagnosis of ''frozen shoulder'' as a condition characterized by pain and reduced range of motion in the affected shoulder. It results from contraction of the glenohumeral joint capsule and adherence to the humeral head. Although shoulder capsulitis is often self-limited, it can persist for years and may never fully resolve (Ewald 2011).

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).

AC is more common in women with a peak age of onset of 56 years. It can have a variable duration but usually lasting between 1-3 years without intervention, and can impact on patients activities of daily living and reduce quality of life. Resolution may range from complete to varying degrees of limitation in shoulder movement (Dias, Cutts and Massoud 2005).

AC is purported to progress through three stages which are probably best described as a painful inflammatory stage without capsular restriction, followed by a freezing, frozen and thawing stages. Adhesive capsulitis has been divided into three stages, each of which lasts for approximately six months. The insidious onset of discomfort occurs during the

first stage, which is the freezing period. The shoulder's range of motion is restricted at the end of this time. The second stage is called the "frozen stage," during which the discomfort may lessen but the range of motion (ROM) is still constrained. The ROM improves during the third stage, known as the thawing stage, but it might take anywhere between 12 and 42 months to do so. The majority of patients regain full range of motion, while 10% to 15% of patients experience ongoing pain and restricted range of motion (Walmsley, Osmotherly and Rivett 2014).

Using a visual analog scale (VAS) with a score range of 0-100 mm, the most extreme ROM-related discomfort in the afflicted shoulder over the past few days was recorded. The same method was used to record shoulder pain when at rest. All patients were divided into four categories based on the length of their symptoms: stage 1 (3 months), stage 2 (3–9 months), stage 3 (9–15 months), and stage 4 (>15 months). Symptom duration was determined from the time that ACS symptoms first appeared (Neviaser and Hannafin 2010).

Adhesive capsulitis can be primary or secondary. Primary (or idiopathic) adhesive capsulitis can occur spontaneously without any specific trauma or inciting event. Secondary adhesive capsulitis is often observed after periarticular fracture dislocation of the gleno-humeral joint or other severe articular trauma. Primary adhesive capsulitis patients typically experience a very gradual beginning and progression of symptoms with no apparent inciting event. The patient may not even seek medical assistance until ROM and discomfort severely restrict their regular activities because to the sluggish progression of these symptoms. It happens frequently for patients to complain basically of shoulder pain and fail to notice any loss of motion. Conversely to those who have secondary adhesive capsulitis, whose ROM does not appear to recover properly after the pain from the triggering event should no longer limit ROM, these individuals typically become aware of their symptoms quickly after a fall or other trauma (McAlister and Sems 2016).

Primary or idiopathic AC has no clear underlying cause, and secondary AC is associated with a known systematic cause such as diabetes. The pathophysiology of primary AC is poorly understood but could occur as a result of inflammatory or fibrosing processes (Seth 2014).

Risk factors for adhesive capsulitis include female sex, age over 40 years, preceding trauma, HLA-B27 positivity and prolonged immobilization of the gleno-humeral joint. It is estimated that 70% of patients with adhesive shoulder capsulitis are women (Sheridan and Hannafin 2006).

It is rarely seen before age 40, and apparently it is referred to as fifty years old shoulder in Japan and China (Guyver, Bruce and Rees 2014).

Adhesive capsulitis most commonly affects women between the ages of 40 and 60 (Hand et al. 2008).

The condition, which affects 2% to 5% of the general population, is due to chronic inflammation of the capsular sub-synovial layer leading to thickening, fibrosis contracture, and loss of the normal axillary recess (Neviaser and Neviaser 2011).

The prevalence of adhesive capsulitis in India 11% (in DM) (Kidwai et al. 2013).

The prevalence of adhesive capsulitis in London, UK 40% (Withrington et al. 1985).

The prevalence of adhesive capsulitis in USA 38.6% (Tighe and Oakley 2008).

The prevalence of adhesive capsulitis in Australia 20% (Wang et al. 2013).

The prevalence incidence of frozen shoulder is estimated to be 2% in the overall populace, however diabetics are believed to have an 11% prevalence rate. 40% of people with type I diabetes will get frozen shoulder at some point in their lives. Up to 16% of patients with frozen shoulder may experience joint pain in both shoulders, but relapses are rare. Patients with hyperthyroidism and hypertriglyceridemia have been found to have a higher incidence of frozen shoulders. Adhesive capsulitis is more prevalent in the fifth

and sixth decades of life, and patients under the age of 40 should be checked for other health issues (Redler and Dennis 2019).

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).

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 (Capitulo and K.L 2009).

The most common in the co-morbid condition of diabetes mellitus with an incidence of 10-34% are estimated in the England. 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. Adhesive capsulitis an insidious and progressive loss of active and passive mobility of glenohumeral joint in order tothe capsular contraction. The estimated prevalence is of 11-30% in diabetic patients more than in non-diabetics. Long duration diabetes is treated with insulin which is associated with shoulder calcification. Adhesive capsulitis appear to other shoulder conditions such as major trauma, rotator cuff tear, rotator cuff contusion,

labral tear, bone contusion, subacromial bursitis, cervical or peripheral neuropathy, previous surgical procedure in early disease process and radiographs, it could be adhesive capsulitis if history of these other conditions is negative (Goyal et al. 2013).

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).

Other co-morbid conditions include hyperthyroidism, hypothyroidism, Parkinson"s disease, cardiac disease, pulmonary disease, stroke and surgical procedures like cardiac surgery, cardiac catheterization etc. 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 (Whiting et al. 2011).

The diagnosis of AC should be mainly based on anamnesis and clinical examination with limited dependence on specific radiological of laboratory findings (Laubscher and Rosch 2009).

The diagnosis of adhesive capsulitis is based primarily on the history and physical examination. Patients frequently describe shoulder pain that progressively gets worse and only becomes accompanied by stiffness after a considerable amount of time. This historical trait is helpful for differentiating frozen shoulder from other shoulder pain and stiffness sources (Hanchard et al. 2012).

Diabetes mellitus, type 1 or type 2, is the most frequent comorbid ailment, and adhesive capsulitis is more common the longer the patient has had diabetes. Additionally, treating adhesive capsulitis in diabetic people is more challenging. Other co-morbidities include stroke, Parkinson's disease, cardiac disease, pulmonary disease, hyperthyroidism,

hypothyroidism, cardiac surgery, cardiac catheterization, neurosurgery, and radical neck dissection, among others (Fernandes 2014).

(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.

(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.

Additionally, there is a significant correlation between adhesive capsulitis and rotator cuff disease. Although some people have reported that adhesive capsulitis is a self-

limiting condition that goes away after 1-3 years. A female in her fifth to seventh decade of life is the usual patient who develops adhesive capsulitis (Beltran and Beltran 2014).

There is still much to learn about the exact cause of AC, which is frequently idiopathic. The primary pathophysiology is believed to be an inflammatory contracture of the shoulder capsule, which is accompanied by the recruitment of B-lymphocytes, T-lymphocytes, and macrophages as well as inflammatory cytokines such transforming growth factor beta (TGF-b), tumor necrosis factor alpha (TNF-a), and interleukins (Cinar et al. 2010).

Adhesive capsulitis pain may limit motion or even selectively immobilize the afflicted shoulder. Numerous harmful pathophysiologic findings have been linked to prolonged immobilization of joints, including decreased collagen length, fibro-fatty infiltration into the capsular recess, decreased stress absorption due to ligament atrophy, collagen band bridging across recesses, erratic collagen production, and altered sarcomere number in muscle tissue (Fields et al. 2019).

On examination, the patient will usually have tenderness at the deltoid insertion and over the anterior capsule and posterior capsule with deep palpation. The physical examination is marked by the loss of both passive and active range of motion. This motion may also be painful as the capsule reaches its stretching point. Most critical in the physical examination of the patient is the evaluation of passive range of motion. Forward flexion, abduction, and internal and external rotation should be assessed with control of scapulothoracic motion. Limitation of Lateral Rotation, abduction and Medial Rotation (LAM) test will be obvious for confirmatory findings. Because shoulder capsulitis does not affect the dynamic stabilizers of the shoulder (i.e., rotator cuff, biceps tendon, and deltoid muscle), strength should theoretically be preserved in all planes. However, patients with shoulder capsulitis may not have enough range of motion to perform strength testing. Resisted strength testing can result in pain-related weakness that mimics true weakness. Patients with advanced shoulder capsulitis may also have muscular atrophy that can cause weakness. Shoulder pain with Frozen Shoulder is progressive which is felt mostly at night the shoulder movement occurs to the end of its range of motion (ROM). It can be caused by certain combined movements of the shoulder such as

abduction and external rotation (e.g. grooming hair, reaching for a seatbelt overhead) or extension and internal rotation (e.g. reaching for a back pocket). The pain gradually increase and at last becomes constant pain at rest also which is felt by all movements of the shoulder and worsened by repetitive movements involved upper extremity, psychological stress, exposure to cold or vibration and changes in the weather. Before subsiding or abolishing, the pain usually lasts 1-2 years in 90% patients approximately (Ewald 2011).

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).

Patients with AC typically have normal radiographs. In individuals with AC, MRI frequently identifies synovial hypertrophy, the development of scar tissue at the rotator interval, capsular and CHL thickening, inadequate capsular distension, and extracapsular contrast leaking.There is no relative study concerning about the risk factors of Adhesive capsulitis in Bangladesh. However a study was conducted to find out the prevalence of Adhesive capsulitis among the patients undergoing Cardiothoracic Surgery (Zappia et al. 2016).

Non-surgical Management:

Patients with newly diagnosed AC or those who want to postpone surgery have a wide range of choices for reducing pain, enhancing range of motion, and increasing functional scores. The focus of treatment should be on the AC phase. Oral anti-inflammatories, such as non-steroidal anti-inflammatory drugs (NSAIDs) or a brief tapering course of corticosteroids, can be useful in lowering the distress of patients to the point where physical therapy (PT) is manageable. This is especially true for individuals with

extremely severe pain. Other nonsurgical treatment options include calcitonin medication, ultrasonography-guided hydro-dissection, and injections of hyaluronic acid (HA), in addition to the basics of nonsurgical management including physical therapy, oral anti-inflammatories, and cortisone injections (Stella et al. 2013).

Physiotherapy treatment is the first option for Frozen Shoulder. Reviewed studies suggest that many patients treated with physical therapy benefited from reduced symptoms, increased mobility, and/or functional improvement It's crucial to let the patient know that adhesive capsulitis is a chronic ailment that gets better on its own over time in order to reduce frustration and boost treatment compliance. Particularly during stage 1, pain should be utilized as a guide to determine whether an activity is appropriate. The use of gentle workouts in the ROM appears to be preferable to more vigorous methods (Nakandala et al. 2021).

Since patients with stage 1 adhesive capsulitis sometimes find their discomfort to be too intense to tolerate stretching, physical therapy, or other rehabilitation exercises, physical therapy is most beneficial for those with at least stage 2 adhesive capsulitis. Exercise and Stretching exercises for frozen shoulder serves two functions. First, is to increase the motion in the joint, second, to minimize the loss of muscle on the affected arm (muscle atrophy). Electrotherapy Physical therapists can incorporate ultrasound, ice, heat and other modalities into rehabilitation for frozen shoulder. Ice therapy or heat packs can be effective to help pain relief. Applications of moist heat to the shoulder can help to loosen the joint and provide relief of pain. Patients can apply most het to the shoulder and then perform their stretching exercise (Jason et al. 2015).

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 (Favejee et al. 2011).

Manipulation under anesthesia Manipulation under anesthesia as a means of treatment has been advocated. This method allows return of ROM in the operating room. Immediate postoperative physical therapy can be initiated with this form of treatment (Sathe et al. 2020).

Surgical Intervention:

When nonsurgical treatment, such as NSAIDs, physical therapy, and injections, has not relieved symptoms after 9 to 12 months, surgical intervention is necessary. The treatment of shoulder capsulitis should lead to the operating room only after a concerted effort at conservative management has failed. There is not a discrete timeline to head to surgery. As a general rule patients should have participated in some form of therapy for at least 2 months, and shown no progress. Patients should feel they are not making progress and have significant pain and limitations of occupation, recreation, or sleep to proceed with surgical intervention (Song, Song and Li 2021).

Fractures, glenoid and labral injuries, neurapraxia, and rotator cuff pathology are just a few of the complications associated with MUA. While arthroscopic capsular release improves outcomes in the treatment of AC, it also adds a special set of possible side effects, such as axillary nerve damage and, very infrequently, the emergence of complicated regional pain syndrome. In a prospective study, arthroscopic evaluation following MUA identified a number of potential iatrogenic consequences, including

superior labral tears, partial subscapularis tears, anterior labral detachments, and middle glenohumeral ligament tears (Ramirez 2019).

Patient's perspective, in orthopaedics, was extremely limited. Devised with patients, the OSS was primarily developed for the assessment of outcomes of shoulder surgery (excluding shoulder stabilisation, for which there is a separate, specific patient-reported measure—the Oxford Shoulder Instability Score in and was designed to be completed by the patient, in order to minimise potential reporting bias (e.g. bias unwittingly introduced by surgeons assessing their own patients' outcomes). The OSS was devised as a joint specific instrument so as to minimise the influence of other co-morbidity and under went rigorous assessment of reliability, validity and responsiveness within prospective studies. Over the years its uptake has steadily increased and it has now been used in a number of countries (including the UK, Israel, Finland). Details of a study to formally translate and validate the OSS in German have also been published (Dawson et al. 2009).

The Oxford Shoulder Score (OSS) is a patient-based questionnaire used to assess shoulder pain. It is a condition specific questionnaire, completed unaided by the patient. It contains a mixture of pain and function questions, derived from over 200 initial question models based on in-depth patient and clinician interviews. It has been validated against clinician-based and general health status measures (Angst et al. 2011).

CHAPTER- III:	METHODOLOGY

3.1 Study design

A cross sectional study design was used. A cross sectional study was chosen as appropriate to find out the objectives. This design involved identifying group of people and then collecting the information that requires when they use the particular service. All the measurements on each person were made at one point in time. The data were collected all at the same time or within a short time frame. A cross-sectional design provided a snapshot of the variables included in the study, at one particular point in time. Target of this study to find out the factors influencing therapeutic outcomes of patients with adhesive capsulitis. A cross sectional study was conducted as appropriate to achieve the aims. A cross sectional study is a descriptive study in which disease and exposure status is measured simultaneously in a given population. For this reason, here chooses a cross sectional survey study because that was the best way to determine correlation (Larson et al. 2007).

3.2 Study area

Data was collected from the Musculoskeletal Physiotherapy unit of Centre for the Rehabilitation of the Paralysed (CRP), Savar. Patients with adhesive capsulitis usually come to CRP from all over the Bangladesh from all economic groups for comprehensive rehabilitation, so it reflects the entire population.

3.3 Study population

A population refers to the entire group of people or items that meet the criteria set by the researcher. The populations of this study were chronic Adhesive Capsulitis patients.

3.4 Study sample

For this study, the researcher was selected the participants who were suffering with adhesive capsulitis. Sample selection depends on the research question or hypothesis and the researcher's choice of location and characteristics. The sample was collected from the centre for the rehabilitation of the paralyzed at from Adhesive Capsulitis according to the inclusion and exclusion criteria.

3.5 Sample size

72 participants (who have adhesive capsulitis) were selected as sample in this study.

Sampling procedure for cross sectional study done by following equation:

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

Here,

$$z\left(1 - \frac{a}{2}\right) = 1.96$$

P= 0.05 (Here P=Prevalence and P=5%)   (Larson et al. 2007)

q=(1-p)=1-0.05

   =0.95

d= 0.05

 Here,

$$n = \left(\frac{1.96}{0.05}\right)^2 \times 0.05 \times 0.95$$

n=72.9904

According to this equation the sample should be 72.

The study was conducted with 72 patients attending at CRP.

3.6 Sampling technique

The study was conducted by using the convenience sampling methods because it is the easiest, cheapest and quicker method of sample selection. It was be easy to get those subjects according to the criteria concerned with the study purpose through the convenience sampling procedure.

3.7 Inclusion criteria

- Age between 40 to 60 years.
- Both male and female both are included.
- Confirmed cases (by positive LAM test) of shoulder capsulitis were considered as case.
- Included those who showed willingness to participate.

3.8 Exclusion criteria

- Other condition involving shoulder such as rheumatoid arthritis, osteoarthritis, osteoporosis or malignancy.
- Other disability with musculoskeletal complain.
- Patients who were suffering with other musculo-skeletal conditions but not with Frozen shoulder
- Respondents who had cognitive difficulties to understand or response to the questions.

3.9 Data collection tools

Oxford shoulder score (OSS)- The Oxford Shoulder Score (OSS) is a 12-item patient-reported PRO specifically designed and developed for assessing outcomes of shoulder surgery e.g. for assessing the impact on patients' quality of life of degenerative conditions such as arthritis and rotator cuff problems. It is a patient reported questionnaire including 12 descriptors of pain and disability for shoulder ailments. Item rating ranges from 1 to 5 and the total score is from the summation of all 12 rated items from 12 (the best) to 60 (the worst). The OSS questionnaire contains twelve items, each with five potential

answers. Originally, patients were asked to rate their symptoms between 1 (minimal symptoms) and 5 (severe symptoms). The combined total gives a minimum score of twelve and a maximum score of sixty. Outcome measures that we use in clinical practice are divided into four categories:

- Self-report measures.
- Performance-based measures.
- Observer-reported measures.
- Clinician-reported measures.

Visual Analogue Scale- a Visual Analogue Scale (VAS) is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured. For example, the amount of pain that a patient feels ranges across a continuum from none to an extreme amount of pain. From the patient's perspective this spectrum appears continuous their pain does not take discrete jumps, as a categorization of none, mild, moderate and severe would suggest. The visual analog scale (VAS) is a tool widely used to measure pain. A patient is asked to indicate her perceived pain intensity (most commonly) along a 100 mm horizontal line. Anchored by word descriptors at each end, the patient marks on the line the point that they feel represents their perception of their current state. The VAS score is determined by measuring in millimeters from the left-hand end of the line to the point that the patient marks.

Session related questionnaire- The purpose of a questionnaire is to gather data from a target audience. Using a questionnaire to gain evaluative feedback tat the end of the session is a very common practice.

The tools that needed for the study were-

consent paper, questionnaire, pencil, pen, file, calculator, computer, printer.

3.10 Data collection methods

Data was collected through the face-to-face interview with participants. Researcher used an established questionnaire which is Oxford Shoulder Score Questionnaire (OSSQ) that includes structured questions including both open ended and close ended questions. Structured questions are always closed questions and most frequently used in survey research design.

3.11 Data analysis

Data was analyzed with the software which named Statistical Package for Social Science (SPSS) version 20.0 and Microsoft Excel 2016. Every questionnaire was rechecked for missing information or unclear information. At first put the name of variables in the variable view of SPSS and the types, values, decimal, label alignment and measurement level of data. The next step was to input data view of SPSS. After input all data researcher checked the inputted data to ensure that all data had been accurately transcribed from the questionnaire sheet to SPSS data view. Then the raw data was ready for analysis in SPSS.

3.12 Ethical consideration

A research was submitted for approval to the department of physiotherapy of health profession institute (BHPI) and proposal was approved by the faculty members. After the proposal was approved to carry on with the study researcher had moved the study. The researcher took permission from the participants before that every participants were informed about the aim and objective of the study. Researcher had ensured the confidentiality of all participants like, it was ensured that, the actual name of the participant was hidden from others. It was being explained to the entire participant that their personal identity will be kept confidential.

3.13 Inform consent

The aims and objectives of this study should be informed to the subjects verbally. Before conducting research with the respondents, it is necessary to gain consent from the subjects. A consent form was given to the subject and explained them. The subjects had the rights to withdraw themselves from the research at any times. It should be assured the participant that her name or address would not be used. The information of the subjects might be published in any normal presentation or seminar or writing but they would not be identified. The participant will also be informed or given notice that the research result would not be harmful for them. It would be kept confidential. Every participant has the right to discuss about her problem with senior authorities.

4.1 Age Group

The bar graph shown, among 72 participants the number participants, in the age range of 40-45 years, 26.4% participants were in the aged between 46-50 years, 26.4% participants were in the age between 51-55 years 25.0% and 56-60years 22.2% were found in the age range between 54-65 years.
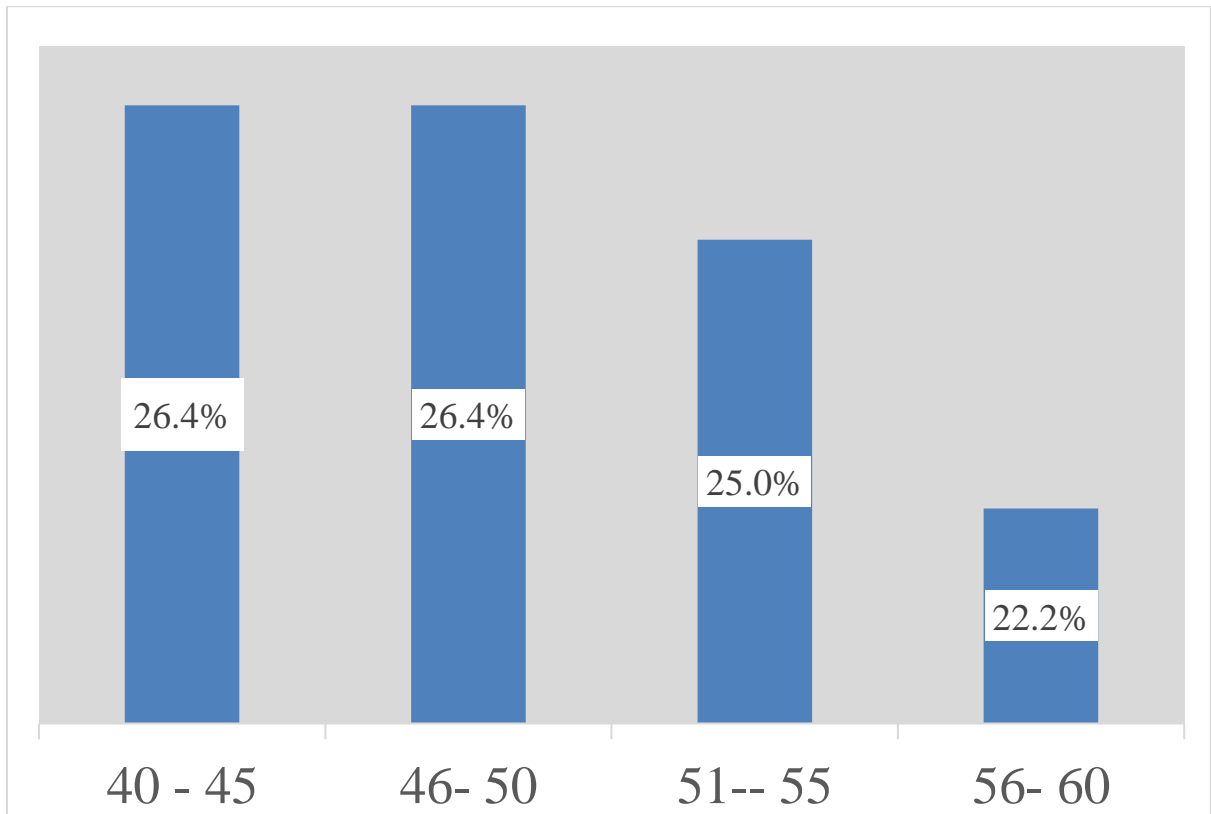
Figure-1: Age group of the participants

4.2 Gender of the participants

The study was conducted on 72 participants of adhesive capsulitis patients. Out of 72 participants 60% (n=43) were female and 40%(n=29) were male. Here the result of this study is female were predominantly higher than male. The study shows the sex distribution among the participants.
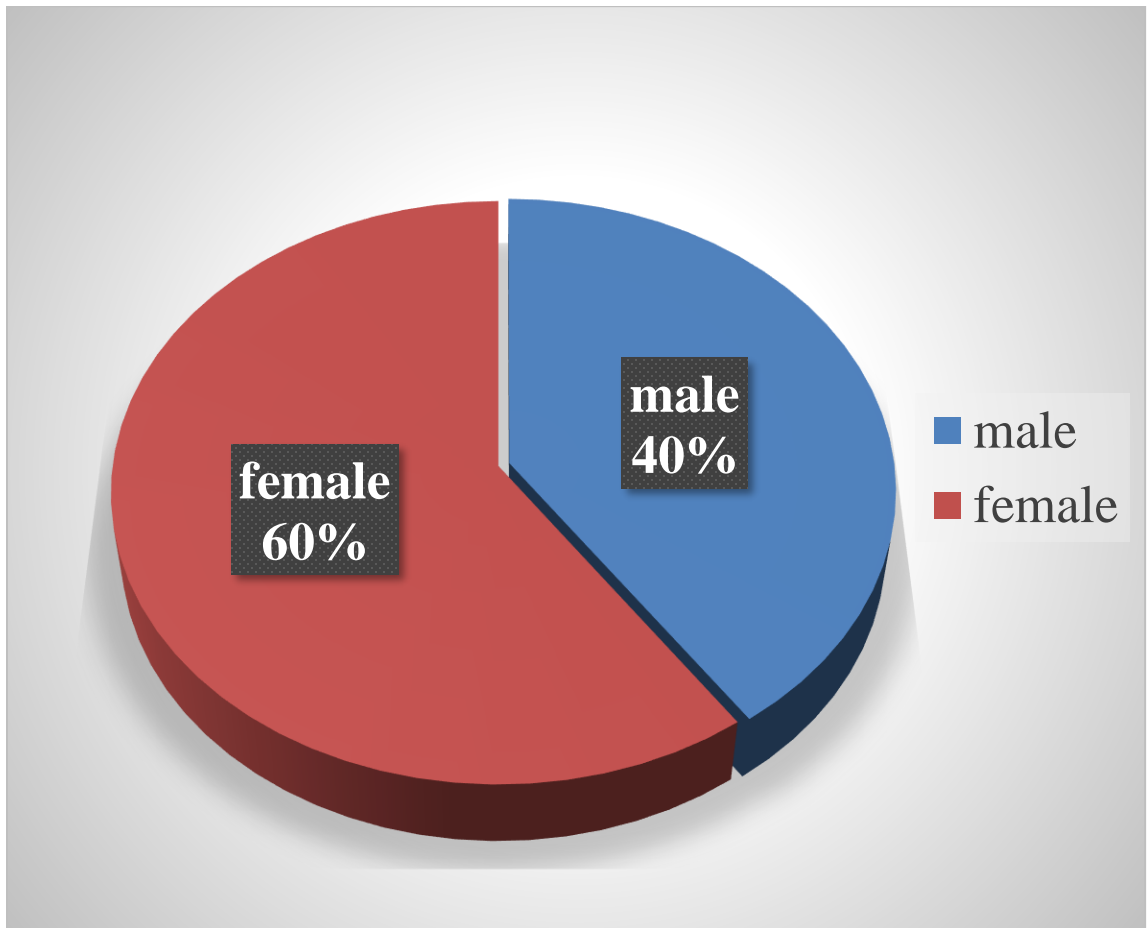
Figure-2: Gender of the participants.

4.3 Marital Status of the participants

The study was conducted on 72 participants of adhesive capsulitis patients. Out of 72 participants 95 % of patients were married, 4% patients were window and 1% patients were unmarried.
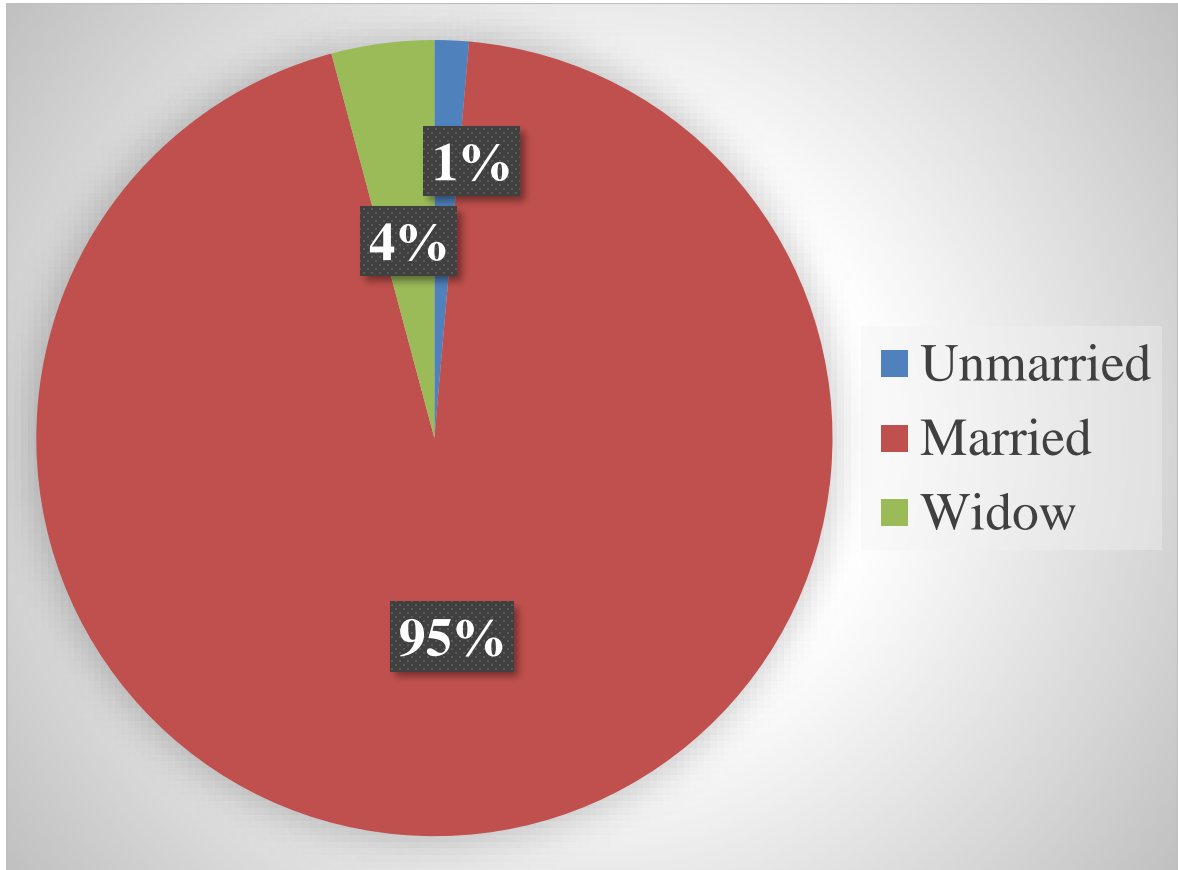
Figure-3: Marital Status of the participants

4.4 Education of the participants

The bar graph shows that the number of participants number of participants 23.6% is in the completed secondary education, number of participants 20.8% were completed the higher secondary education, 19.4% were completed the bachelor, 18.1% is in the completed primary education, 9.7% is in the never attended school, number of participants and 8.3% were completed the masters or above.

	Illiterate	Primary	S.S.C	H.S.C	Honours	Masters and above
■ Series1	9.7	18.1	23.6	20.8	19.4	8.3
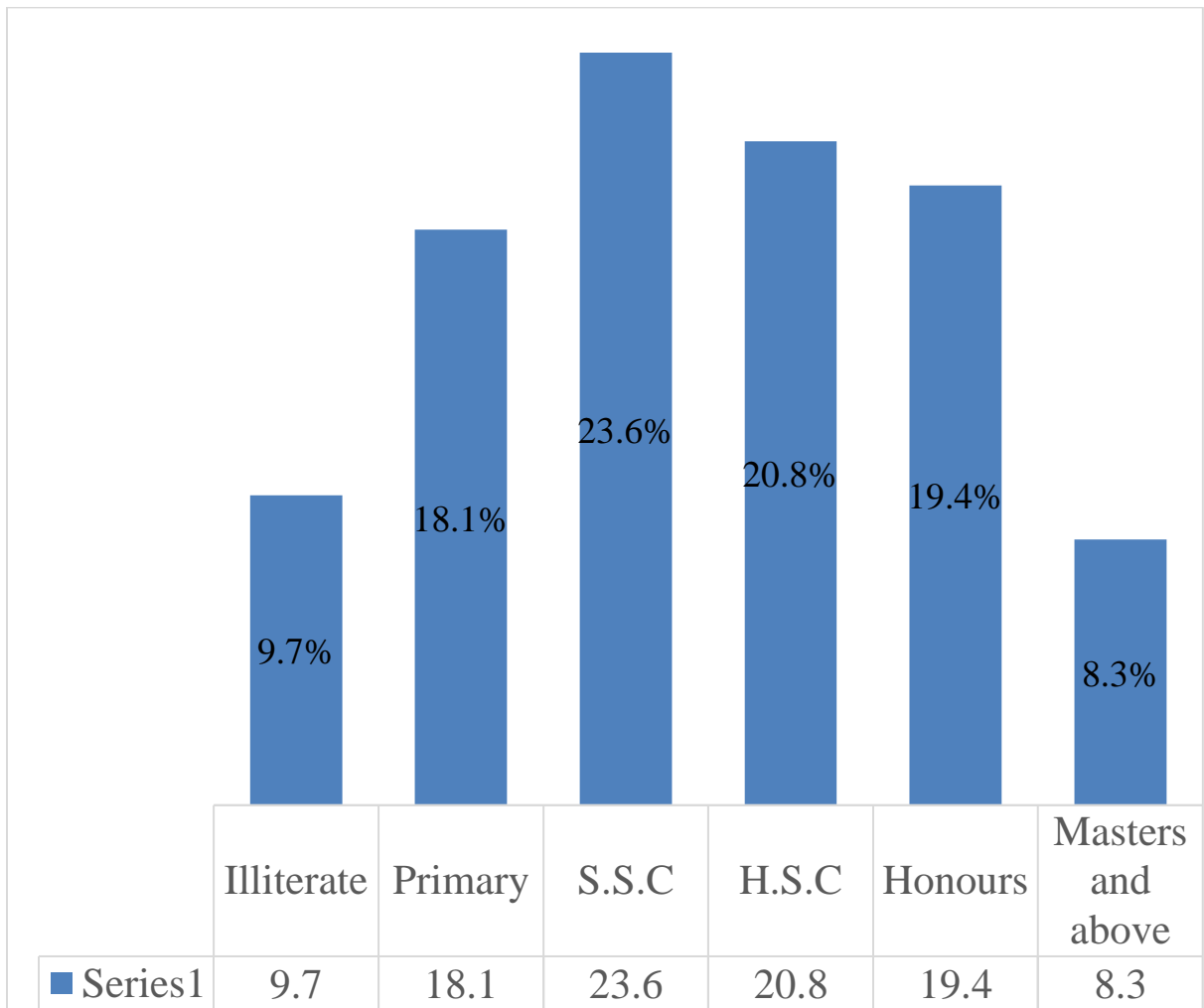
Figure-4: Educational status of the participants.

4.5 living area of the participants

Out of 72 participants, 45% participants came from urban area and 40% participants came from suburb area, 15% participants came from rural area.
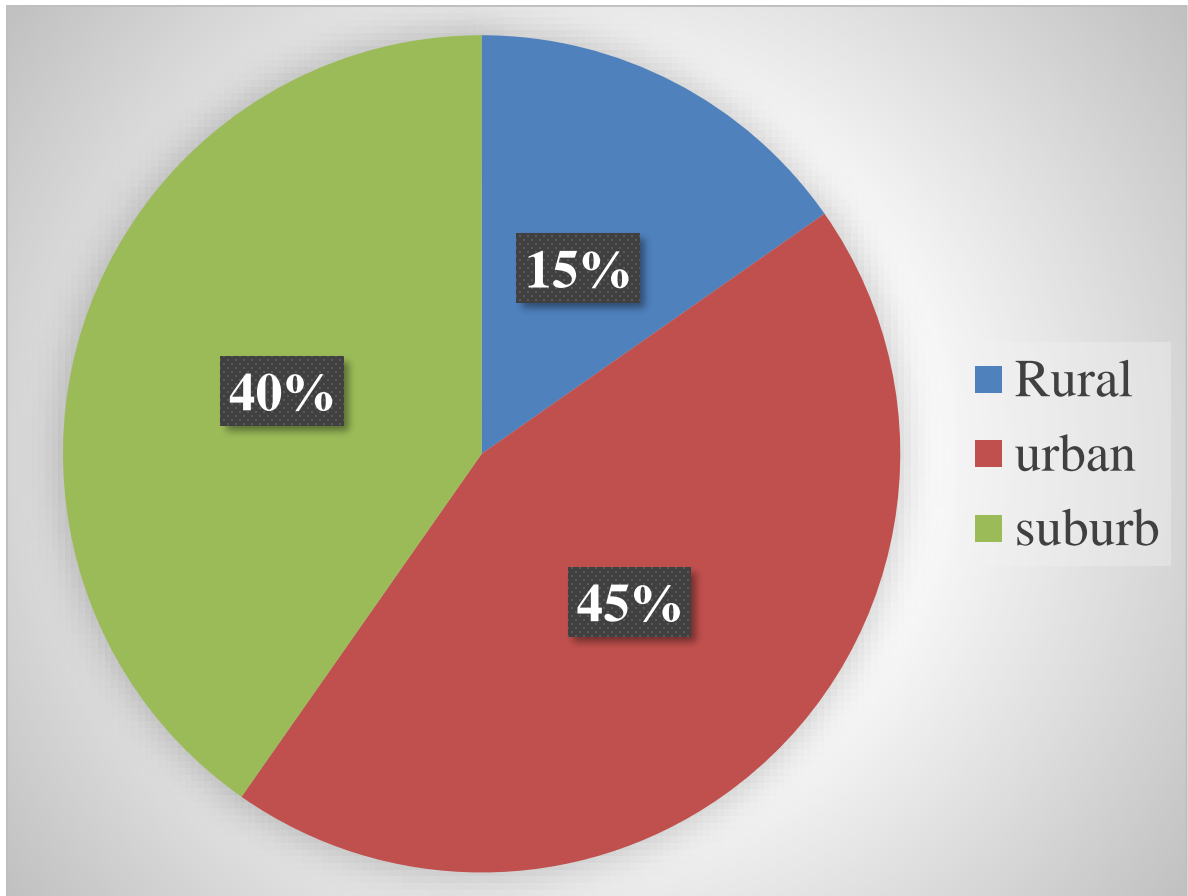
Figure-5: living area of the participants.

4.6 Family type of the participants

Among the 72 participants it was found that 89% were lived in nuclear family and 11% were lived in extended family.
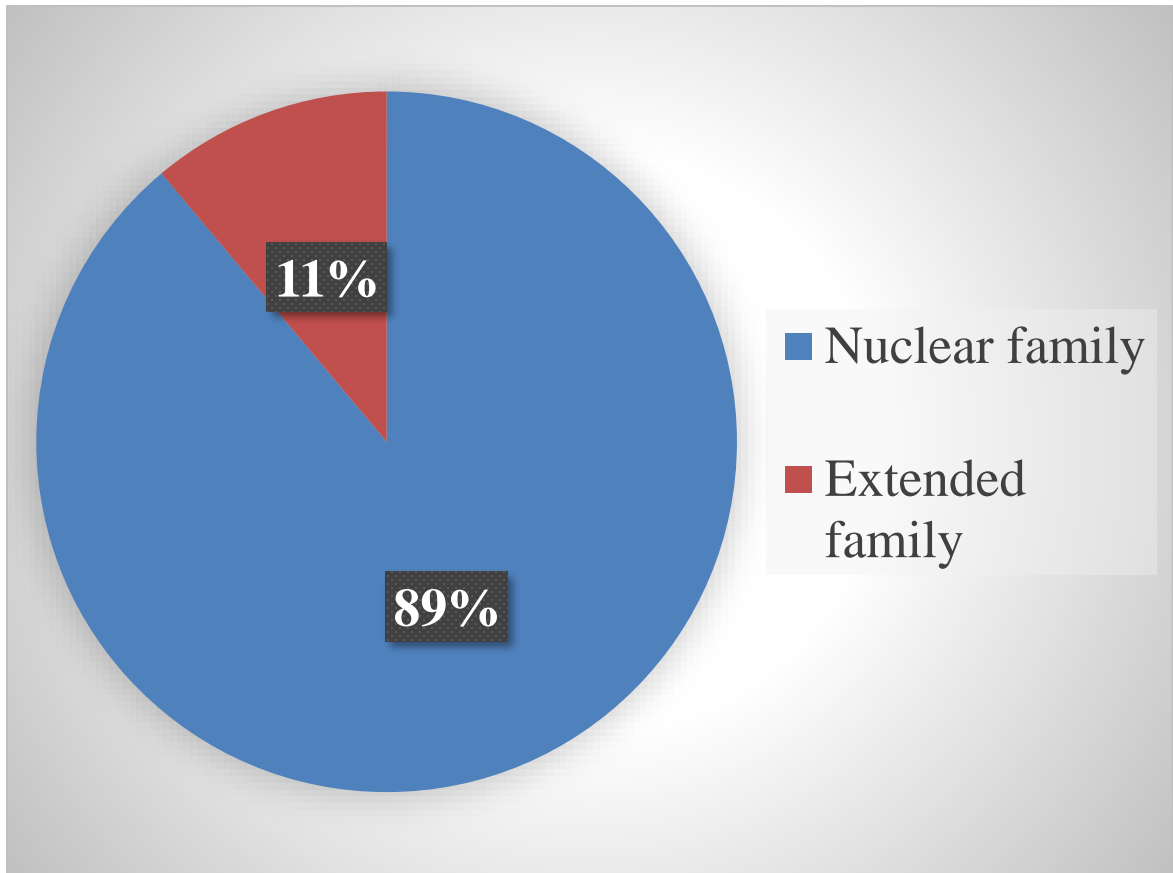
Figure-6: Family type of the participants

4.7 Occupation of the participants

Among the participants a highest number respondents 51.4% found those are housewife, 18.1% participants occupation are office worker, 16.7% participants are retired 6.9% participants were labor, 5.6% participants occupation are driver and 1.4% respondents are businessman.
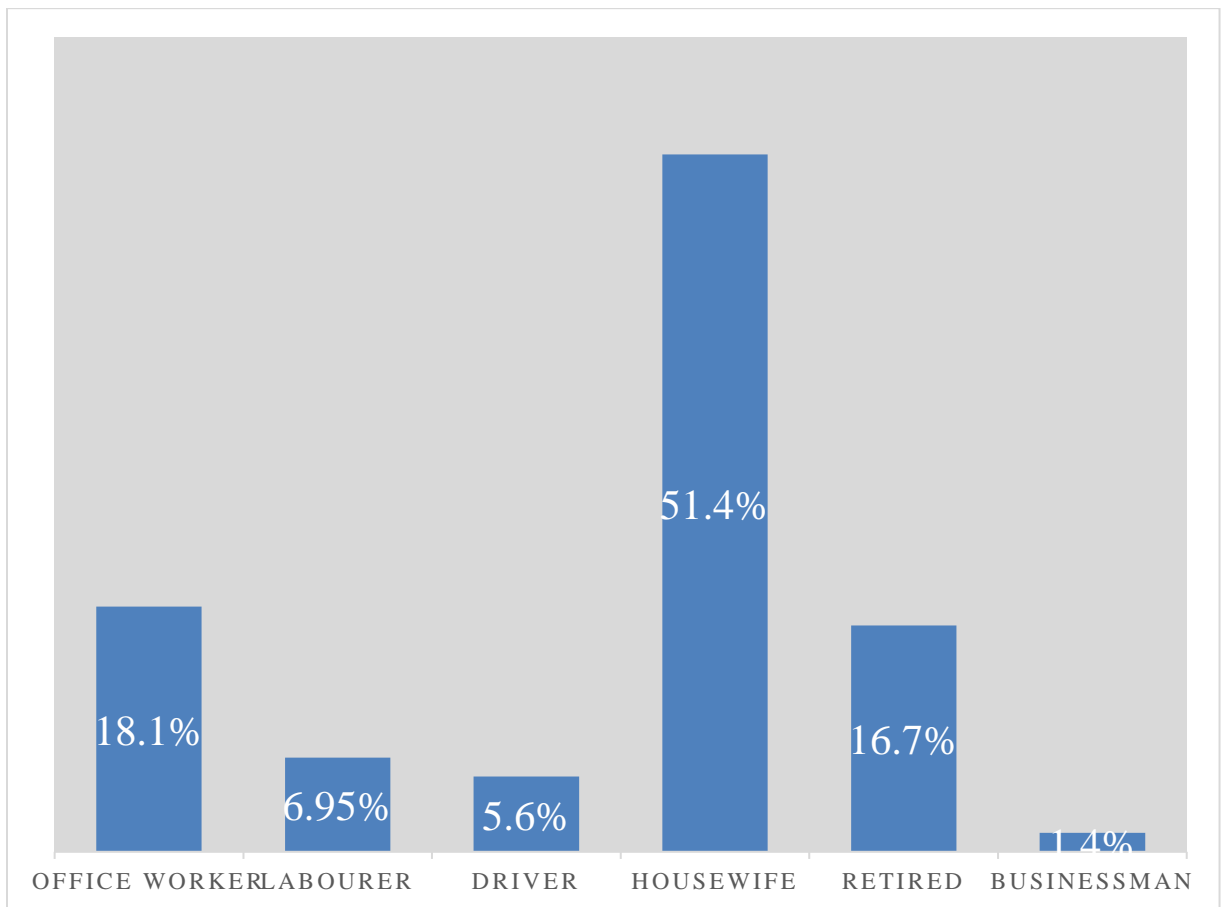
Figure-7: Occupation of the participants.

4.8 Pain type of the participants

Among the 72 participants it was found that 72% was chronic pain and 28% was acute pain.
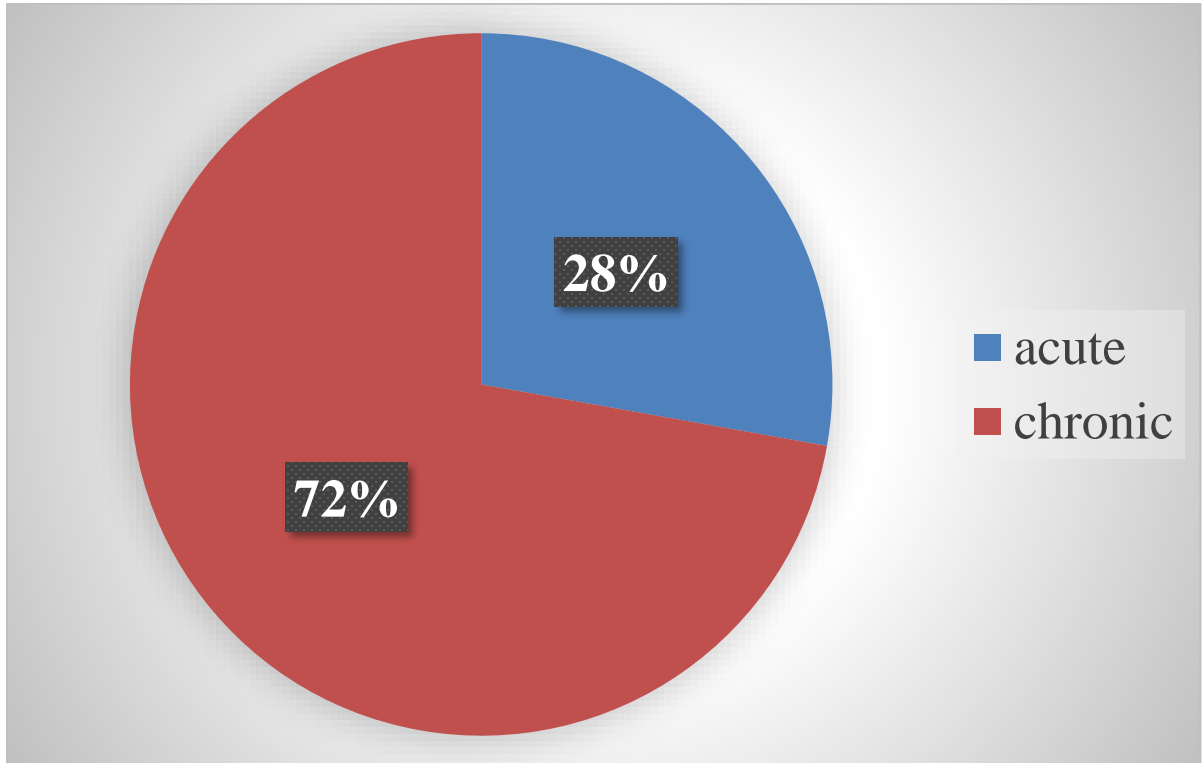
Figure-8: Pain type of the participants

4.9: Analysis between subjects for association

In chi-square test was used to find out the among different association. If the p-value is <0.05 then the result is significant which means there is the association between the variables.

4.9.1: The association between the age and past medical history

age	past medical history	Chi-square	P-value
40-45 46-50 51-55 55-60	history of traumatic shoulder injury diabetes mellitus previous history of adhesive capsulitis others none	25.247	0.047

Table-1: Cross Tabulation between Age and past medical history of the participants.

The observed P-value for association of age and past medical history score is 0.047. So the result is significant which means there is the association between the age and past medical history.

4.9.2: The association between the age and The Oxford Shoulder Score

The association between the age and The Oxford Shoulder Score	Chi-square	P-value
	66.605	0.454

Table-2: Cross Tabulation between Age and The Oxford Shoulder Score of the participants.

The observed P-value for association of age and The Oxford Shoulder score is 0.454. So the result is not significant which means there is no the association between the age and The Oxford Shoulder score. Oxford Shoulder Score indicated the functional ability.

4.9.3: The association between the sex and The Oxford Shoulder Score

The association between the sex and The Oxford Shoulder Score	Chi-square	P-value
	24.742	0.310

Table-3: Cross Tabulation between sex and The Oxford Shoulder Score of the participants.

The observed P-value for association of sex and The Oxford Shoulder score is 0.310. So the result is not significant which means there is no the association between the sex and The Oxford Shoulder score.

4.9.4: The association between the occupation and The Oxford Shoulder Score

The association between the occupation and The Oxford Shoulder Score	Chi-square	P-value
	128.989	0.104

Table-4: Cross Tabulation between the occupation and The Oxford Shoulder Score of the participants.

The observed P-value for association of occupation and The Oxford Shoulder score is 0.104. So the result is not significant which means there is no the association between the occupation and The Oxford Shoulder score.

4.9.5: The association between the occupation and The VAS scale

The association between the occupation and The VAS scale	Chi-square	P-value
	27.961	0.310

Table-5: Cross Tabulation between the occupation and The VAS scale of the participants.

The observed P-value for association of occupation and The VAS scale score is 0.310. So the result is not significant which means there is no the association between the occupation and VAS scale.

4.9.6: The association between the age and pain type

age	pain type	Chi-square	P-value
40-45 46-50 51-55 55-60	Acute Chronic	10.805	0.013

Table-6: Cross Tabulation between the age and pain type of the participants.

The observed P-value for association of age and pain type is 0.013. So the result is significant which means there is the association between the age and pain type.

4.9.7: The association between the sex and pain

The association between the sex and The pain	Chi-square	P-value
	10.945	0.001

Table-7: Cross Tabulation between the sex and pain of the participants.

The observed P-value for association of sex and pain is 0.001. So the result is significant which means there is the association between the sex and pain.

4.9.8: The association between the past medical history with the duration of receiving treatment

The association between the past medical history with the duration of receiving treatment	Chi-square	P-value
	17.388	0.081

Table-8: Cross Tabulation between the past medical history with the duration of receiving treatment of the participants.

The observed P-value for association of the past medical history with the duration of receiving treatment is 0.081. So the result is not significant which means there is no association between the past medical history with the duration of receiving treatment.

CHAPTER-V	DISCUSSION

The aim of this study was to identify possible factors influencing therapeutic outcomes of patients with adhesive capsulitis. In the study there was about 72 adhesive capsulitis patients were taken. The data that were collected by the researcher through questions, analyzed and discussed below.

Frozen shoulder commonly occurs in patients with certain medical comorbidities and is often correlated with increased pain and dysfunction with these comorbid medical factors (Wolf & Green, 2002).

From the literature, it is evident that not all patients with adhesive capsulitis make a full recovery, raising doubts as to whether this condition is self-limiting (Theodorides et al. 2014).

In this study, 72 participants were selected who had adhesive capsulitis. This study found that the average age of the incidence of the shoulder capsulitis was 40-50 years (± 10 Years). Earlier studies also found that in typical patients shoulder capsulitis developed in 5th to 7th decade of life and the age range from 40 to 60 years (Hand et al. 2008) which was similar this study. Among 72 participants the number participants, in the age range of 40-45 years, 26.4% participants were in the aged between 46-50 years, 26.4% participants were in the age between 51-55 years 25.0% and 56-60years 22.2% were found in the age range between 54-65 years.

The study was conducted on 72 participants of adhesive capsulitis patients. Out of 72 participants 40% (n=29) were male and 60%(n=43) were female. Here the result of this study is female were predominantly higher than male. Majority of the respondents of this study was male but earlier studies found that female are more affected with shoulder capsulitis (Hand et al., 2008) which indicate dissimilarities from our findings. This might be because this was a hospital based study and females seek less care than men in least develop countries like Bangladesh (Ahmed et al., 2000).

Education is important issue for the socio-demographic characteristics. In this study found that the number of participants 9.7% is in the never attended school, number of participants 18.1% is in the completed primary education, number of participants 23.6% is in the completed secondary education, number of participants 20.8% were completed the higher secondary education, 19.4% were completed the bachelor and 8.3% were completed the masters or above. So this study indicates that less education level might be the vital issue for incidence of adhesive capsulitis due to lack of education they were not aware the adhesive, risk factors and its treatments. So the prevalence of this problem is increasing day by day. Frozen shoulder commonly occurs in patients with certain medical comorbidities and is often correlated with increased pain and dysfunction with these comorbid medical factors (Wolf and Green, 2002). This indicates that though people may have knowledge on their health but their occupation and income might play an important role for the development of diseases in a way that they made them habituated to inhale risky behavior.

Among the participants a highest number respondents 51.4% found those are housewife, 18.1% participants occupation are office worker, 1.4% respondents are businessman, 6.9% participants were labor, 5.6% participants occupation are driver and 16.7% participants are retired. In the study we can see women are more affected and their occupation is housewife. On the other hand this study found that majority of the cases did not perform overhead activity. This indicates that not performing overhead activity might be a risk factor because overhead activity causes the shoulder to be stretched up to certain amount. It is well documented that stretching improves the flexibility of the joint so that it can move throughout a full range of movement which is an important component of good health (Brukner and Khan, 2006). This study also revealed that majority of the respondents who did not perform overhead activity of the shoulder was female. This is because majority of the Bangladeshi women's are housewife and household activity does not involve overhead activity of the shoulder which made women more porn to develop shoulder capsulitis.

Frozen shoulder commonly occurs in patients with certain medical comorbidities and is often correlated with increased pain and dysfunction with these comorbid medical factors

(Wolf and Green, 2002). Most well-known is the strong association between diabetes and adhesive capsulitis (Bridgman, 1972). In this study found that the association of age and past medical history.

Study showed that there have strong association between the age and past medical history adhesive capsulitis patient (chi-25.247; p value-0.047). And also strong association between Age and pain type adhesive capsulitis patient (chi- 10.805; p value-0.013). And also association between the sex and The pain adhesive capsulitis patient (chi- 10.945; p value-0.001).

There is strong evidence to suggest that females have a significant 2.5- point improvement in OSS compared to males when adjusted for diabetes, age, aetiology and the duration of symptoms (p < 0.0025). However, in isolation, there is no significant effect of diabetes, whether the aetiology of adhesive capsulitis was primary or secondary, age or symptom length prior to MUA on the efficacy of MUA assessed by OSS ((Theodorides et al. 2014). In this study there is no the association between the age and The Oxford Shoulder Score.

Study showed that there have no association between the Age and The Oxford Shoulder Score adhesive capsulitis patient (chi-66.605; p value-0.454). And The observed P-value for association of occupation and The Oxford Shoulder score is 0.104. So no the association between the occupation and The Oxford Shoulder score.

(Hazleman 1972) found that 50% of the patients reported that the shoulder was either painful or stiff or both at the time of follow up. 19% had mild pain, 16% had mild stiffness and 15% had both and also other study shows that 60% of the 62 participants demonstrated some restriction of motion. Only 11% had mild functional limitation. In this study there is the association between the age and the pain.

(Shaffer et al. 1992) found that 80% of the 62 participants reported some interference with function. The restriction predominantly involved recreational activities for 8% (n=16), overhead activity for 72% (n=36). There was strongly association between functional impairment and subjective symptoms. Among the 50 participants it was found

that 98% (n=49) has shoulder pain during overhead activity and only 2% (n=1) has no shoulder pain during overhead activity.

Study showed that there have strong association between age and pain type Of adhesive capsulitis patient (chi-10.805; p value-0.013). And also strong association pain and the VAS scale adhesive capsulitis patient (chi-25.078; p value-0.000). And also strong association between pain and sex (chi-10.945; p value-0.001).

(Balci et al. 1999) also found that 29% (man=33.6%, women= 25.9%) had adhesive capsulitis having at least one months of shoulder pain, an inability to lie on the affectedside and restriction active and passive shoulder motion and at least 50% reduced in external rotation motion. (Shaffers et al., 1992) also found that 69% (n=43) of patients had a history of pain at night which often was associated with inability to sleep in the affected side.

4.1 Limitations

There were some situational limitation and barriers while considering the study. Those are as follows:

This study has some limitations. 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 limitation of this study range of motion cannot add. The 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. The researcher was a 4th year B.Sc. in physiotherapy student so she had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first the research so might be there were some mistakes.

CHAPTER- VI   CONCLUSSION AND RECOMMENDATIONS

6.1 Conclusion

Frozen shoulder, also known as adhesive capsulitis refers to a condition where the shoulder becomes painful and stiff. It may occur following a relatively minor injury or trauma to the shoulder but most often develops without a clear reason. Adhesive capsulitis can also be linked to other health problems such as diabetes and thyroid disease. With this condition, the pain and stiffness can limit performing daily tasks. Literature showed that the condition affects between 2%-5% of the general population and up to 20% of patients with diabetes and typically occurs in adults between 40-60 years. The problem usually lasts 1 to 2 years. The objective of this study to identify possible factors influencing therapeutic outcomes of patients with adhesive capsulitis.

From the study it can be concluded that the socio-demographic characteristics like most vulnerable age group is 40-60, female are more vulnerable than male, most of the participants educational level are complete secondary education, housewife are more affected group among all occupation.

At this study also found that shoulder capsulitis related information like severity of pain, type of pain, functional activity etc. The findings show the necessity of preventive measure focusing on adhesive capsulitis and health promotion should focus on life style, repetitive shoulder movement. In practice, the results of this study can help to estimate adhesive capsulitis problems, promotion of healthy lifestyle, controlled blood sugar level, perform daily task and to reduce disease related clinical manifestation.

6.2. Recommendation

The following recommendations to certain authorities and personnel are proposed:

- Government need to plan awareness program in different area of our country for preventing the adhesive capsulitis and others behavioral risk factors.
- Beside subjective assessment objective physical measurement including height, weight, blood pressure etc. and biochemical examination including blood glucose level, lipid profile, and lung function is also needed.

Recommendations for other researcher as follows:

- Increasing the number of the participants and conduct the research in different places.
- Other important aspects including range of motion, muscle weakness, parasthesia and numbness, functional activity of the Shoulder joint etc. should further are included in such type of research.
- Including both subjective and objective to find out the objective.

REFERENCES

Arkkila, PE, and Gautier, JF 2003, 'Musculoskeletal disorders in diabetes mellitus', *Best Pract Res Clin Rheumatol*, vol.45, pp.945-970.

Aydeniz, A, Gursoy, S, & Guney, E 2008, 'Which musculoskeletal complications are most frequently seen in type 2 diabetes mellitus?', *British journal of sports medicine*, vol.55, pp.505-11.

Ahmed, AS, Sanchez, CP, & Candela, M, E 2000,'Evaluation of induction of systemic resistance in pepper plants (Capsicum annuum) to Phytophthora capsici using Trichoderma harzianum and its relation with capsidiol accumulation', *European Journal of Plant Pathology*, vol.56, pp.817-824.

Arshad, M, Zaidi, SMIH, and Mahmood, K, Carr, A 2015,'Self-Esteem & Academic Performance among University Students', *Journal of education and practice*, vol.34, pp.156-162.

Angst, F, Schwyzer, HK, Aeschlimann, A, Simmen, BR, & Goldhahn, J 2011, 'Measures of adult shoulder function: Disabilities of the arm, shoulder, and hand questionnaire (DASH) and its short version (QuickDASH), shoulder pain and disability index (SPADI), American shoulder and elbow surgeons (ASES) society standardized shoulder assessment form, constant (Murley) score (CS), simple shoulder test (SST), oxford shoulder score (OSS), shoulder disability questionnaire (SDQ), and Western Ontario shoulder instability index (WOSI)', *Arthritis care & research*, vol.23, pp.174-S188.

Bhargav, D, and Murrell, GA 2011,'Basic science of adhesive capsulitis', *Techniques in Shoulder & Elbow Surgery*', vol.*12*, pp.126-129.

Beltran, LS, and Beltran, J 2014,'Biceps and rotator interval: imaging update', *Semin Musculoskelet Radiology*, vol.39, pp.425–435.

Brukner, P, Khan, K, & Singer, K 2006,'Thoracic and chest pain', *In Clinical Sports Medicine*, vol.88, pp. 340-350.

Balci, N, Balci, MK, & Tuzuner, S 1999,'Shoulder adhesive capsulitis and shoulder range of motion in type II diabetes mellitus: association with diabetic complications', *Journal of Diabetes and its Complications*, vol.77, pp.135-140.

Cinar, M, Akpinar, S, Derincek, A, et al. 2010,'Comparison of arthroscopic capsular release in diabetic and idiopathic frozen shoulder patients', *Journal of Arch Orthop Trauma Surg*, vol.66, pp.401–406.

Capitulo, KL, 2009,'Addressing disruptive behavior by implementing a code of professionalism to transform hospital culture', *Journal of Nurse Leader*, vol.34, pp.38-43.

D'Orsi, GM, Via, AG, Frizziero, A, et al. 2012,'Treatment of adhesive capsulitis: a review. Muscles Ligaments Tendons', *Journal of orthopaedic and trauma surgery*, vol.10, pp.70–78.

Donatelli, R, Ruivo, RM, Thurner, M, Ibrahim, MI, et al. 2014,'New concepts in restoring shoulder elevation in a stiff and painful shoulder patient', *Journal of Phys Ther Sport*, vol.55, pp.3-14.

Dias, R, Cutts, S, & Massoud, S 2005,'Clinical Review: Frozen Shoulder', *Development policy review*, vol.12, pp.1456.

Dawson, J, Rogers, K, Fitzpatrick, R, & Carr, A 2009,'The Oxford shoulder score revisited', *Archives of orthopaedic and trauma surgery*, vol.23, pp.119-123.

Ewald, A 2011,'Adhesive capsulitis: a review. Am Fam Physician', *Journal of the American Dietetic Association*, vol.78, pp.417–422.

Fields, BK, Skalski, MR, Patel, DB, et al. 2019,'Adhesive capsulitis: review of imaging findings, pathophysiology, clinical presentation, and treatment options', *Journal of Skeletal Radiology*, vol.67, pp.84.

Freitas, Silva, R, Conde, DM, DE, Freitas, Junior, R, & Martinez, EZ 2010,'Comparison of quality of life, satisfaction with surgery and shoulder-arm morbidity in breast cancer survivors submitted to breast-conserving therapy or mastectomy followed by immediate breast reconstruction', *British journal of sports medicine Clinics*, vol.45, pp.781-787.

Fernandes, MR 2014,'Arthroscopic treatment of refractory adhesive capsulitis of the shoulder', *Journal of shoulder and elbow surgery*, vol.88, pp.30–35.

Favejee, MM, and Koes, BW 2011,'Frozen shoulder: the effectiveness of conservative and surgical interventions systematic review', *British journal of sports medicine*, vol.66, pp.49-56.

Guyver, PM, Bruce, DJ, & Rees, JL 2014,'Frozen shoulder a stiff problem that requires a flexible approach. Maturitas', *Journal of Diabetes research and clinical practice*, vol.32, pp.11–6.

Griggs, J, Tan, JP, Buchanan, A, Attar, Schwartz S et al. 2010, 'They've always been there for me Grandparental involvement and child well-being', *British journal of Children & Society*, vol.36, pp.200-214.

Goyal, P, Rahman, Z, & Kazmi, AA 2013,'Corporate sustainability performance and firm performance research: Literature review and future research agenda', *Management Decision*, vol.77, pp.361-379.

Hsu, CL, Sheu, WH, 2016,'Diabetes and shoulder disorders', *Journal of Diabetes Investig*, vol.12, pp.51.

Harris, G, Bou, Haidar, P, & Harris, C 2013,'Adhesive capsulitis: review of imaging and treatment',*A Journal of Medicine Imaging Radiation Oncology*, vol.56, pp.33–43.

Hsu, JE, Anakwenze, OA, Warrender, WJ, Abboud, JA et al. 2011,'Current review of adhesive capsulitis', *A Journal of Shoulder Elbow Surgery*, vol.39, pp.502–514.

Hand, C, Clipsham, K, Rees, JL, Carr. AJ et al. 2007,' Long-term outcome of frozen shoulder', *A Journal of Shoulder Elbow Surgery*, vol.19, pp.9-13.

Hannafin, JA, and Chiaia, TA 2000,'Adhesive capsulitisA treatment approach', *Biomedical Chromatography*, vol.105, pp.95-109.

Hanchard, NC, Goodchild, L, Thompson, J, O'Brien, T, Davison, D, Richardson, C et al. (2012) Evidence-based clinical guidelines for the diagnosis, assessment and

physiotherapy management of contracted (frozen) shoulder: quick reference summary', *Journal of shoulder and elbow surgery*, vol.8, pp.117– 120.

Hand, C, Clipsham, K, Rees, JL, & Carr, AJ 2008,'Long-term outcome of frozen shoulder', *Journal of shoulder and elbow surgery*, vol.16, pp.231-236.

Hazleman, BL 1972,'The painful stiff shoulder', *Rheumatology*, vol.20, pp.413-421.

Jason, JI, Ganesh, Sundaram, S, & Vengata, Subramani, M 2015,'Physiotherapy interventions for adhesive capsulitis of shoulder: a systematic review', *International journal of orthopaedic medicine,* vol.15, pp.1318-25.

Kelley, MJ, Shaffer, MA, Kuhn, JE, Michener, LA, Seitz, AL, Uhl, TL et al. 2013,'Shoulder pain and mobility deficits: adhesive capsulitis', *Journal of Orthopaedic Sports Physical Therapy*, vol.68, pp.44-45.

Kelley, MJ, McClure, PW, & Leggin, BG 2009,'Frozen shoulder: evidence and a proposed model guiding rehabilitation', *Journal of Orthopaedic Sports Physical Therapy*, vol.75, pp.135-48.

Kidwai, SS, Wahid, L, Siddiqi, SA, Khan, RM, Ghauri, I, Sheikh, I et al. 2013,'Upper limb musculoskeletal abnormalities in type 2 diabetic patients in low socioeconomic strata in Pakistan', *BMC research notes*, vol.95, pp.1-6.

Laubscher, P, and Rosch, TG 2009,'Frozen shoulder: a review', *Orthopaedic Journal of Sports Physical Therapy*, vol. 99, pp.24-9.

Lin, J, and Chang, HJ 2009,'A debate between Justin Lin and Ha-Joon Chang', *Development policy review*, vol.23, pp.483-502

Lin, HS, Yue, BD, & Ho, PC 2009,'Determination of pterostilbene in rat plasma by a simple HPLC-UV method and its application in pre-clinical pharmacokinetic study', *Biomedical Chromatography*, vol.115, pp.1308-1315.

Ludewig, PM, and Braman, JP 2011,'Shoulder impingement: biomechanical considerations in rehabilitation', *Manual therapy*, vol.15, pp.33-39.

Larson, NI, Neumark, Sztainer, D, Hannan, PJ, Story, M et al. 2007,'Family meals during adolescence are associated with higher diet quality and healthful meal patterns during young adulthood', *Journal of the American Dietetic Association*, vol.27, pp.1502-1510.

McAlister, I, and Sems, SA 2016,'Arthrofibrosis after periarticular fracture fixation. *Journal of Orthopaedic*', *Sports Physical Therapy*,vol.43, pp.345–355.

Neviaser, AS, and Neviaser, RJ 2011,'Adhesive capsulitis of the shoulder', *Journal of the American orthopaedic surgery*, vol.57, pp.536–542.

Neviaser, AS, and Hannafin, JA, 2010,'Adhesive capsulitis: a review of current treatment', *Journal of the American Sports Medicine*, vol.66, pp.2346–2356.

Nakandala, Piumi, Indumathie, Nanayakkara, Surangika, Wadugodapitiya, & Indika, Gawarammana. 2015,'The efficacy of physiotherapy interventions in the treatment of adhesive capsulitis: A systematic review', *Journal of back and musculoskeletal rehabilitation*, vol.45, pp.195-205.

Ozkan, S, Yalcyn, S, Guler, C, Kozanoglu, H, Cabuk, M, & Basmacyoglu, H 2005,'The effect of cold temperature on tonic immobility and heterophil to lymphocyte ratio in male broilers', *Animal Science Papers and Reports. Supplement*, vol.76, pp.23.

Rill, BK, Fleckenstein, CM, Levy, MS, Nagesh, V, Hasan, SS et al. 2011,'Predictors of outcome after nonoperative and operative treatment of adhesive capsulitis', *The American journal of sports medicine*, vol.48, pp.567-574.

Redler, LH, and Dennis, ER 2019, 'Treatment of adhesive capsulitis of the shoulder', *Journal of the American Academy of Orthopaedic Surgeons*, vol.63, pp.544-554.

Ramirez, J 2019,'Adhesive capsulitis: diagnosis and management. American family physician', *Journal of the American Academy of Orthopaedic Surgeons*, vol.55, pp.297-300.

Seth, A 2014,'Thawing the frozen shoulder',*International Journal of Current Research and Review*, vol.88, pp79-80.

Sheridan, MA, and Hannafin, JA 2006,'Upper extremity: emphasis on frozen shoulder', *Journal of back and musculoskeletal rehabilitation*, vol.95, pp.531–539.

Smith, KR, and Mehta, S 2003,'The burden of disease from indoor air pollution in developing countries: comparison of estimates', *International journal of hygiene and environmental health*, vol.73, pp.279-289.

Stella, SM, Ciampi, B, Orsitto, E, Melchiorre, D, Lippolis, PV et al. 2013,'Factors affecting short-and long-term outcomes of manipulation under anaesthesia in patients with adhesive capsulitis of the shoulder', *International journal of Shoulder & Elbow*, vol.88, pp.567-568.

Sathe, S, Khurana, SK, Damke, U, & Agrawal, PV, 2020,'To compare the effects of maitland mobilization with conventional physiotherapy in adhesive capsulitis', *International Journal of Current Research and Review*, vol.42, pp.546-548.

Song, C, Song, C, & Li, C 2021,'Outcome of manipulation under anesthesia with or without intra-articular steroid injection for treating frozen shoulder: a retrospective cohort study', *Journal of the American college of physical therapy*, vol.27, pp.93.

Shaffer, B, Tibone, JE, & Kerlan, RK 1992,'Frozen shoulder. A long-term follow-up', *Journal of the American college orthopaedic medicine*, vol.29, pp.738-746.

Tighe, CB, and Oakley, JS 2008,'The prevalence of a diabetic condition and adhesive capsulitis of the shoulder', *Southern medical journal*, vol.38, pp.591-595.

Thomas, RJ, King, M, Lui, K, Oldridge, N, Pina, I,L, Spertus, J, Bonow, RO, Estes, NM, Goff, DC, Grady, KL, Hiniker, AR, et al. 2007,'AACVPR/ACC/AHA 2007 performance measures on cardiac rehabilitation for referral to and delivery of cardiac rehabilitation/secondary prevention services: endorsed by the American college of chest physicians, American college of sports medicine, American physical therapy association, Canadian association of cardiac rehabilitation, European association for cardiovascular prevention and rehabilitation, inter-American heart foundation, national association of clinical nurse specialists, preventive', *Journal of the American college of Cardiology*, vol.345, pp.1400-1433.

Theodorides, AA, Owen, JM, Sayers, AE & Woods, DA 2014,'Factors affecting short- and long-term outcomes of manipulation under anaesthesia in patients with adhesive capsulitis of the shoulder', *American Journal of Shoulder & Elbow*, vol.6, pp.245-256.

Wong, CK, Levine, WN, Deo, K et al. 2017,'Natural history of frozen shoulder: fact or fiction? A systematic review. Physiotherapy', *American Journal of Shoulder & Elbow surgery*, vol.103, pp.40-7.

Walmsley, S, Osmotherly, PG & Rivett, DA 2014,'Clinical identifiers for early-stage primary/idiopathic adhesive capsulitis: are we seeing the real picture', *American Journal of* physical therapy, vol.7, pp.968–76.

Withrington, RH, Girgis, FL & Seifert, MH 1985,'A placebo-controlled trial of steroid injections in the treatment of supraspinatus tendonitis', *Scandinavian journal of rheumatology*, vol.4, pp.76-78.

Wang, D, Villa, A, Su, D, Prati, L & Schlogl, R 2013,'Carbon-supported gold nanocatalysts: shape effect in the selective glycerol oxidation.', *Journal of back and musculoskeletal rehabilitation*, vol.5, pp.2717-2723.

Whiting, DR, Guariguata, L, Weil, C & Shaw, J 2011,'IDF diabetes atlas: global estimates of the prevalence of diabetes for 2011 and 2030', *Diabetes research and clinical practice*, vol.4, pp.311-321.

Wolf, JM and Green, A 2002,'Influence of comorbidity on self-assessment instrument scores of patients with idiopathic adhesive capsulitis', *Journal of back and musculoskeletal rehabilitation*, Vol.7, pp.1167-1173.

Yip, M, Francis, AM, Roberts, T, Rokito, A, Zuckerman, JD & Virk, MS 2018,'Treatment of adhesive capsulitis of the shoulder: a critical analysis review', *Journal of the American Academy of Orthopaedic Surgeons*, vol.6, pp.5.

Zappia M, Di, Pietto, F & Aliprandi, A 2016,'Multimodal imaging of adhesive capsulitis of the shoulder', *Journal of the American Academy of Orthopaedic physical therapy*, vol.7, pp.65–71.

APPENDIX

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

Appendix- 1

VERBAL CONSENT FORM

Bangladesh Health Professions Institute (BHPI)

The Academic Institute of CRP

Chapain, Savar, Dhaka

Assalamualaikum/Namasker,

This informed consent form is for men and women who are Adhesive Capsulitis patients and attending at CRP for Physiotherapy treatment and who are inviting to participate in research on B.Sc. in Physiotherapy dissertation program. The title of my research project is "Factors Influencing Therapeutic Outcomes of Adhesive Capsulitis Patients attendance at C.R.P in Musculoskeletal Unit".

I am Priyanka Rani Padder , working for "Bangladesh Health Professions Institute ."I am going to give you information and invite you to be a part of this research. Before you decide, you can talk to anyone you feel comfortable with about the research. Adhesive Capsulitis is the most common in the elderly person. The intensity of the clinical symptoms may vary from each individual. Many Factors influencing the quality of life of Adhesive Capsulitis patients. There is lacking of research to find out the Factors Influencing Therapeutic Outcomes of Adhesive Capsulitis patients. This researchwill help the researcher to find out the Factors Influencing Therapeutic Outcomes among them. It will also helpto modify rehabilitation set up and improve overall health function. And so I want to evaluate theFactors and Therapeutic Outcomes of Adhesive Capsulitis patients.

I am inviting all men and women with Adhesive Capsulitis who are taking treatment in CRP.

Your participation in this research is entirely voluntary. It is your choice to participate or not. Nothing will be affected, if you refused. You may change your mind later and stop participating even if you agreed earlier.

Do you have any question before I start?

| YES | | NO |

So, do I have your consent?

| YES | | NO |

Signature and date of the participant...

Signature and date of the interviewer…………………………..

Signature and date of the therapist……………………………….

Appendix- 2 (a)

Questionnaire –English

Title:
Musculoskeletal unit, CRP, Savar

Code no: Date:

Part I: Patients Identification

Patients ID number:

Patients name:

Address:

Mobile number:

Appendix- 2 (b)

Part II: Socio-demographic information

1. Age

2. Gender: Male [____]   Female [____]

3. Material status:

             Unmarried [____]

             Married [____]

             Divorced [____]

             Widow [____]

4. Educational status:

             Illiterate [____]

             Primary [____]

             S.S.C [____]

             H.S.C [____]

             Honours [____]

             Masters and above [____]

5. Family type:

             Nuclear family [____]   Extended family [____]

6. Living area:

Rural ☐   Urban ☐

7. Occupation:

Office worker ☐

Labourer ☐

Driver ☐

Housewife ☐

Unemployed ☐

Retired ☐

Student ☐

Businessman

8. Family member: ………………………… person.

9. Earning member in the family: ……………………… person.

10. Family income: ……………………… taka.

Appendix- 2 (c)

Part III: Shoulder adhesive capsulitis related information

1. During the past 4 weeks……

How would you describe the **worst** pain you had from your Shoulder?

None	Mild	Moderate	Severe	Unbearable
☐	☐	☐	☐	☐

2. During the past 4 weeks……

Have you had any trouble dressing yourself because of your shoulder?

No trouble At all	A little bit of trouble	Moderate trouble	Extreme trouble	Impossible to do
☐	☐	☐	☐	☐

3. During the past 4 weeks……

Have you had any trouble getting in and out of car or using public transport because of your shoulder?

No trouble At all	A little bit of trouble	Moderate trouble	Extreme trouble	Impossible to do
☐	☐	☐	☐	☐

4. During the past 4 weeks……

Have you been able to use a knife and fork – at the same time?

Yes Easily	With little difficulty	With moderate difficulty	With extreme difficulty	No Impossible
☐	☐	☐	☐	☐

5. During the past 4 weeks……

Could you do the household shopping on your own?

Yes Easily	With little difficulty	With moderate difficulty	With extreme difficulty	No Impossible
☐	☐	☐	☐	☐

6. During the past 4 weeks……

Could you carry a tray containing a plate of food across a room?

Yes Easily	With little difficulty	With moderate difficulty	With extreme difficulty	No Impossible
☐	☐	☐	☐	☐

7. During the past 4 weeks……

Could you brush/comb your hair with the affected arm?

Yes Easily	With little difficulty	With moderate difficulty	With extreme difficulty	No Impossible
☐	☐	☐	☐	☐

8. During the past 4 weeks……

How would you describe the pain you usually had from your shoulder?

None	Very mild	Mild	Moderate	Severe
☐	☐	☐	☐	☐

9. During the past 4 weeks……

Could you hang your clothes up in a wardrobe, using the affected arm?

Yes Easily	With little difficulty	With moderate difficulty	With extreme difficulty	No Impossible
☐	☐	☐	☐	☐

10. During the past 4 weeks……

Have you been able to wash and dry yourself under both arms?

Yes Easily	With little difficulty	With moderate difficulty	With extreme difficulty	No Impossible
☐	☐	☐	☐	☐

11. During the past 4 weeks……

How much has been pain from your shoulder interfered with your usual work (including housework)

Not att all	A little bit	Moderately	Greatly	Totally
☐	☐	☐	☐	☐

12. During the past 4 weeks……

Have you been troubled by pain from your shoulder in bed at night?

No Every nights	Only 1 or 2 nights	Some nights	Most nights	nights
☐	☐	☐	☐	☐

Appendix- 2 (d)

Part IV: VAS Scale and Session Past Medical History Related Questionnaire

1. How many physiotherapy sessions have you had?

    …………………………………

2. Are you willing to stop physiotherapy treatment yourself?

YES

NO

3. What are reasons for not running physiotherapy treatment?

…………………………..

4. Do you have any pain in your body?

YES

NO

5. What is your pain type?

Acute

Chronic

6. Place a mark on the bottom line to indicate your current pain level

0……………………………………………………..10

7. Do you have any of the following disease?

i. History of traumatic shoulder injury

ii. Diabetes mellitus

iii. Thyroid disease

iv. Previous history of adhesive capsulitis

v. Others

vi. None

অনুমতি পত্র

(অংশগ্রহণকারীকে পড়ার জন্য অনুরোধ করা হলো)

আসসালামু আলাইকুম আমি প্রিয়াংকা রানী পোদ্দার, ঢাকা বিশ্ববিদ্যালয় এর চিকিৎসা অনুষদের অন্তর্ভুক্ত বাংলাদেশ হেলথ প্রফেশন্স ইন্সটিটিউট এর বিএসসি ইন ফিজিওথেরাপি কোর্সের ২০১৭-২০১৮ সেশনের শিড়ার্থী। বিএসসি ইন ফিজিওথেরাপি ডিগ্রী অর্জনের জন্য আমাকে একটি গবেষণা সম্পূর্ণ করতে হবে। আমার গবেষণার শিরোনাম হল " এ্যাডহেসিভ ক্যাপসুলাইটিস রোগীর থেরাপিউটিক ফলাফলকে প্রভাবিত করার ফ্যাক্টর "। এই গবেষণা সম্পূর্ণ করার জন্য আমি আপনাকে আপনার ব্যক্তিগত ও মানসিক অবস্থা সম্পর্কিত কিছু প্রশ্ন করব | এতে আনুমানিক ৩০ থেকে ৪০ মিনিট সময় লাগবে। আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের একটি অংশ যা অন্য কোন উদ্দেশ্যে ব্যবৃহত হবে না। তাই এই গবেষণায় অংশগ্রহণ আপনার বর্তমান ও ভবিষ্যতের চিকিৎসায় কোন প্রভাব ফেলবে না। আপনি যে তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে | এই গবেষণায় আপনার অংশগ্রহণ স্বেচ্ছায় এবং কোন নেতিবাচক প্রভাব ছাড়াই আপনি যে কোন সময় এই অধ্যয়ন থেকে নিজেকে প্রত্যাহার করে নিতে পারবেন। এছাড়াও কোন প্রশ্ন আপনার পছন্দ না হলে উত্তর না দেওয়ার বা সাড়্গাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার আপনার আছে। এই অধ্যয়নে অংশগ্রহণকারী হিসেবে আপনার কোন প্রশ্ন থাকলে আপনি আমার সাথে যোগাযোগ করতে পারেন।

আপনি যদি অনুগ্রহপূর্বক আপনার সম্মতি দেন, তবে আমরা শুরম্ন করতে পারি।
হ্যাঁ   না
ধন্যবাদ আপনার অংশগ্রহণের পাশপাশি প্রশ্নগুলোর যথাযথ উত্তর দিয়ে সহযোগিতা করার জন্য।
অংশগ্রহণকারীর স্বাড়্গার ....
তারিখ ....
তথ্য সংগ্রহকারীর স্বাড়্গার ....
তারিখ ....
গবেষকের স্বাড়্গার ....
তারিখ ....

মাস্কিউলোস্কেলিটাল ইউনিট, সি. আর. পি, সাভার

কোড নং:   তারিখ:

অংশ ১: রোগী সনাক্তকরণ

রোগীর আইডি নাম্বার:

রোগীর নাম: ঠিকানা:

মোবাইল নাম্বার:

অংশ ২: সামাজিক জনসংখ্যা সংক্রান্ত তথ্য

১. রোগীর বয়স:

২. লিঙ্গ:

পুরুষ
মহিলা

৩. বৈবাহিক অবস্থা:

অবিবাহিত
বিবাহিত
তালাকপ্রাপ্ত
বিধবা

৪. শিক্ষাগত অবস্থা:

নিরক্ষর
প্রাথমিক
এস.এস.সি
এইচ.এস.সি
স্নাতক মাস্টার্স
তার উপরে

৫.পারিবারিক ধরন:

একক পরিবার
যৌথ পরিবার

৬. বসবাসের জায়গা:

গ্রাম
শহর
উপশহর

৭. পেশা:

অফিস
কর্মকর্তা
শ্রমিক
গাড়ি চালক
গৃহিণী
বেকার
অবসরপ্রাপ্ত
শিক্ষার্থী
ব্যবসা

৮. পরিবারে সদস্য: .... জন

৯. পরিবারে আয়ের সদস্য: .... জন

১০. পারিবরিক আয়: .... টাকা

অংশ ৩: আপনার কাঁধের সাথে সমস্যা জনিত প্রশ্নাবলী

১. গত চার (৪) সপ্তাহে আপনার কাঁধ থেকে সবচেয়ে খারাপ ব্যথা আপনি কিভাবে বর্ননা করবেন?

কোনটিই না
মৃদু
পরিমিত
গুরুত্বর
অসহ্য

২. গত চার (৪) সপ্তাহে আপনার কাঁধের কারণে নিজেকে সাজাতে আপনার কি কোন সমস্যা হয়েছে?

কোন ঝামেলা নেই
একটি সামান্য বিট কষ্ট
মাঝারি ঝামেলা
চরম অসুবিধা
অসম্ভব করতে

৩. গত চার (৪) সপ্তাহে আপনার কাঁধের কারণে গাড়িতে উঠতে বা নামতে বা পাবলিক ট্রান্সপোর্টে ব্যবহারে কোন সমস্যা হয়েছে?

কোন ঝামেলা নেই
একটি সামান্য বিট কষ্ট
মাঝারি ঝামেলা
চরম অসুবিধা
অসম্ভব করতে

৪. গত চার (৪) সপ্তাহে আপনি কি একই সময়ে একটি ছুরি এবং কাঁটা ব্যবহার করতে সক্ষম হয়েছেন?

হ্যাঁ সহজে
অল্প কষ্ট
মাঝারি অসুবিধা
চরম কষ্টে
না অসম্ভব

৫. গত চার (৪) সপ্তাহে আপনি কি নিজ থেকে পরিবারের কেনা কাটা করতে পারেন?

হ্যাঁ সহজে
অল্প কষ্ট
মাঝারি অসুবিধা
চরম কষ্টে
না অসম্ভব

৬. গত চার (৪) সপ্তাহে আপনি কি একটি রন্ধম জুড়ে খাবারের পেন্ট সহ একটি ট্রে ব্যবহার করতে পারেন?

হ্যাঁ সহজে
অল্প কষ্ট
মাঝারি অসুবিধা
চরম কষ্টে
না অসম্ভব

৭. গত চার (৪) সপ্তাহে আপনি প্রভাবিত হাত দিয়ে আপনার চুল আঁচরাতে পারেন?

হ্যাঁ সহজে
অল্প কষ্ট
মাঝারি অসুবিধা
চরম কষ্টে
না অসম্ভব

৮. গত চার (৪) সপ্তাহে আপনার কাঁধ থেকে সাধারণত যে ব্যথা ছিল তা আপনি কিভাবে বর্ণনা করবেন??

কোনটিই না
খুব মৃদু
মৃদু
পরিমিত
অসহ্য

৯. গত চার (৪) সপ্তাহে আক্রান্ত হাত ব্যবহার করে আপনি কি আপনার কাপড় ওয়ারড্রোবে ঝুলিয়ে রাখতে পারেন?

হ্যাঁ সহজে
অল্প কষ্টে
সঙ্গে মধ্যপযয়ী অসুবিধা
চরম কষ্টে
না অসম্ভব

১০. গত চার (৪) সপ্তাহে আপনি কি উভয় হাতের নীচে নিজেকে ধুয়ে শুকাতে সক্ষম হয়েছেন?

হ্যাঁ সহজে
অল্প কষ্টে
সঙ্গে মধ্যপযয়ী অসুবিধা
চরম কষ্টে
না অসম্ভব

১১. গত চার (৪) সপ্তাহে আপনার কাঁধ থেকে কতটা ব্যথা আপনার স্বাভাবিক কাজে (গৃহকর্ম সহ) হস্তক্ষেপ করেছে?

একদমই না
অল্প একটু
পরিমিতভাবে
দারুণ ভাবে
সম্পূর্ণ

১২. গত চার (৪) সপ্তাহে আপনি কি রাতে বিছানায় আপনার কাঁধ থেকে ব্যথা দ্বারা কষ্ট পেয়েছেন?

কোন রাতই নয়
মাত্র ১ বা ২ রাত
কিছু রাত
অধিকাংশ রাত
সম্পূর্ণ

অংশ ৪: ভাস স্কেল, পূর্বের চিকিৎসার ইতিহাস এবং সেশন সম্পর্কিত প্রশ্নাবলী

১. আপনি কয়টা ফিজিওথেরাপির সেশন নিয়েছেন?

....

২. আপনি নিজেই কি ফিজিওথেরাপি চিকিৎসা বন্ধ করতে ইচ্ছুক?

হ্যাঁ
না

৩. ফিজিওথেরাপি চিকিৎসা না চালানোর কারণ কি?

....

৪. আপনার শরীরে কি কোন ব্যথা আছে?

হ্যাঁ
না

৫. আপনার ব্যথার ধরন কি রকম?

আকস্মিক
দীর্ঘস্থায়ী

৬. আপনার বর্তমান ব্যথার মাত্রা নির্দেশ করতে নীচের লাইনে একটি চিহ্ন রাখুন

০--১০

৭. আপনার কি নিচের কোন রোগ আছে?

আগের কাঁধের আঘাত জনিত কোন ইতিহাস
ডাইবেটিস মেল্লাইটাস
থাইরয়েড রোগ
পূর্ববর্তী এডহেসিপ ক্যাপসুলাইটিসের ইতিহাস
অন্যান্য
কোনোটিই নয়

Ref: Date:

CRP/BHPI/IRB/05/2023/713   03/05/2023

Priyanka Rani Padder
4th Year B.Sc. in Physiotherapy
Session: 2017-2018, DU Reg. No: 8653
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

Subject: Approval of the dissertation proposal "**Factors Influencing Therapeutic Outcomes of the Patients with Adhesive Capsulitis Attending at the Musculo-skeletal Unit, CRP, Savar**" by ethics committee.

Dear Priyanka Rani Padder,
Congratulations.
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal Investigator; Shamima Islam Nipa, Lecturer- Department of Rehabilitation Science, BHPI as dissertation supervisor. The following documents have been reviewed and approved:

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

The purpose of the study is to find out the factors influencing therapeutic outcomes of the patients with adhesive capsulitis attending at the Musculo-skeletal unit, CRP, Savar. Should there any interpretation, typo, spelling, grammatical mistakes in the title, it is the responsibilities of the investigator. Since the study involves questionnaire that takes maximum 20- 30 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on January 9, 2023 at BHPI, 34th IRB Meeting.

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

Best regards,

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

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৫৪৬৪-৫, +৮৮ ০২ ২২৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭
CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd

74

22 MAY, 2023

The Head of the Physiotherapy Department

Centre for the Rehabilitation of the Paralyzed (CRP)

Chapain, Savar, Dhaka-1343.

Through: Head, Department of Physiotherapy, BHPI.

Subject: Seeking permission for data collection to conduct my research project.

Dear Sir,

With due respect and humble submission to state that I am **Priyanka Rani Padder,** student of 4th Professional B.Sc in Physiotherapy at Bangladesh Health Professions Institute (BHPI). According to the course curriculum, I have to conduct an academic research for the partial fulfillment of our degree. My research project entitled **"Factors Influencing Tharapeutic Outcomes of the Patients with Adhesive Capsulitis Attending at Musculo-skeletal Unit CRP, Savar"** under the supervision of **Dr. Shamima Islam Nipa,** Lecturer- Rehabilitation Science, Department of M.Sc. in Rehabilitation Science (MRS), BHPI. So, I need to take permission to collect data for my research project from the Neurology Department, CRP-Savar. I would like to assure you that anything in my study will not be harmful to the participants.

I, therefore, pray and hope that you would be kind enough to grant my application & give me permission for data collection and oblige thereby.

Sincerely Yours,

Priyanka

Priyanka Rani Padder

4th Professional B.Sc in Physiotherapy

Roll: 32, Session 2017-2018

Bangladesh Health Professions Institute (BHPI)

Approved

23/5/23

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

Recommended & forwarded

Dr. Shamima Islam Nipa
Lecturer Rehabilitation Science
Department of MRS, BHPI
CRP, Chapain Savar, Dhaka-1343

FD: 1151

Recommended

Shofiz

23.05.23