

**OUTCOME OF PHYSIOTHERAPY MANAGEMENT FOR
OSTEOARTHRITIS OF KNEE JOINT: A RETROSPECTIVE
SURVEY**

Sharmina Akther Mukta

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

Session: 2006-2007

BHPI, CRP, Savar, Dhaka.



Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy

CRP, Savar, Dhaka-1343

Bangladesh

August, 2012

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

**OUTCOME OF PHYSIOTHERAPY MANAGEMENT FOR
OSTEOARTHRITIS OF KNEE JOINT; A RETROSPECTIVE
SURVEY**

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

.....
Md. Shofiqul Islam
B.Sc. PT (Hons.), MPH
Lecturer
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka
Supervisor

.....
Md. Sohrab Hossain
B.Sc. PT (Hons.), Dip. ortho. Med, MPH
Associate Professor of BHPI &
Head, Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

.....
Mohammad Anwar Hossain
B.Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor of BHPI
Department of Physiotherapy
CRP, Savar, Dhaka

.....
Nasirul Islam
B.Sc.PT (Hons.), MPH
Assistant Professor
Department of physiotherapy
BHPI, CRP, Savar, Dhaka

.....
Md. Obaidul Haque
B.Sc. PT (Hons.), Dip. ortho. Med, MPH
Associate Professor and Course Coordinator
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

CONTENTS

	Page No.
Declaration	i
Acknowledgement	ii
Abbreviations	iii
List of figures	iv
Abstract	v
CHAPTER-I: INTRODUCTION	1-5
1.1 Background	1-3
1.2 Rationale	4
1.3 Research Question	5
1.4 Aim	5
1.5 Objectives	5
CHAPTER-II: LITERATURE REVIEW	6-11
CHAPTER-III: METHODOLOGY	12-13
3.1 Study design	12
3.2 Sample selection	12
3.3 Inclusion criteria	12
3.4 Exclusion criteria	12
3.5 Study site	13
3.6 Study area	13
3.7 Data collection procedure	13
3.8 Materials and method	13
3.9 Ethical issue	13
3.10 Limitation of the study	14
CHAPTER-IV: RESULTS	15-22
CHAPTER-V: DISCUSSION	23-26
CHAPTER-VI: CONCLUSION	27
REFERENCES	28-32

APPENDIX

33-36

Questionnaire

33-35

Permission letter

36

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 for any publication, presentation or dissemination of information of the study. I would be bound to take written consent from my supervisor.

Signature:

Date:

Sharmina Akther Mukta

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

Session: 2006-2007

BHPI, CRP, Savar, Dhaka

Acknowledgement

At first, I would like to thank Almighty Allah for the timely completion of this study. Secondly, I am very much grateful to my family to give me mental and economical support. I would like to express my highest gratitude to my honorable supervisor, respected teacher, Md. Shofiqul Islam for providing me good opportunity to complete the study with excellent guidance.

I also want to give respect to my teacher, associate Professor and OPD in charge Md. Anwar Hossain, Associate Professor & Course Coordinator Md. Obaidul Haque, Md. Sohrab Hossain, Associate Professor of BHPI & Head, Department of Physiotherapy & Assistant Professor Nasirul Islam.

My special thanks to my friend Tareq Mahmud for his good support to collect the background information. I am also grateful to all the staff of musculoskeletal unit of CRP, Savar for their kind support to gather information's about the study. Last but not least, thanks to the librarians of Bangladesh Health Professions Institute and their associates of BHPI for their kind support to find out related books, journals and also access to internet especially HINARI.

Abbreviations

ACR:	American College of Rheumatology.
ADL:	Activity of Daily Living.
BHPI:	Bangladesh Health Professions Institute.
CRP:	Centre for the Rehabilitation of the Paralyzed.
MRI:	Magnetic Resonance Images.
MS:	Musculo-Skeletal.
NSAID:	Non Steroidal Anti Inflammatory drugs.
OA:	Osteoarthritis.
RKOA:	Radiographic Knee Osteoarthritis.
ROM:	Range of Motion.
SOAP:	Subjective, Objective, Analysis and Plan.
USA:	United States of America.
VAS:	Visual Analogue Scale.
WHO:	World Health Organization.

List of Figures

		Page No.
Figure 1:	Age range of the participants	15
Figure 2:	Sex of the participants	16
Figure 3:	Occupation of the patients	17
Figure 4:	Ratio of joint involvement	18
Figure 5:	Past history of trauma	18
Figure 6:	Onset of osteoarthritis	19
Figure 7:	Major disease of the participants	20
Figure 8:	Outcome score of pain	21
Figure 9:	Achievement of aims of treatment	22
Figure 10:	Aims of treatment not achieved	22

Abstract

Purpose: The purpose of the study was to explore the outcomes of physiotherapy management for osteoarthritis of knee joint. *Objectives:* To explore the outcome of physiotherapy management for patient with osteoarthritis of knee joint, to explore the socio-demographic information of the patient, to compare the number of affected knee joint among the patient with knee OA, to focus on the outcome score of pain after receiving physiotherapy treatment, to know the percentage of achievement of aims of treatment, to identify the possible cause if treatment aims is not achieved. *Methodology:* The study design was a non-experimental retrospective survey. Total number of sample was 52 osteoarthritis patient's documents. *Results:* Result shows that 34-50 years age group were most affected and female were mostly affected by osteoarthritis. Among them the rate of housewives was 65.4%. They are more vulnerable. Effectiveness of physiotherapy was very impressive. Percentage of improvement was approximately 60%. In total achievement, approximately 40% aims of treatment are not achieved due to some causes. It means that physiotherapy has a great role to treat osteoarthritis of knee joint. *Conclusion:* Osteoarthritis is a common physiotherapy related problem. Because it is not a curable disease but regular physical exercise can reduce the symptoms.

Key word: Outcomes of physiotherapy, Osteoarthritis of knee joint.

1.1 Background

The burden of musculoskeletal conditions is rising; all over the world osteoarthritis is one of them. It is the major burden of musculoskeletal condition and causes pain in the limb (Khaltayev et al, 2003). Osteoarthritis is also known by other names that are more reflective of the underlying disease process, including: “wear-and-tear” arthritis, degenerative arthritis, degenerative joint disease, and osteoarthrosis. In a healthy person, the ends of the bones that form a joint are cushioned by cartilage, allowing for smooth, unconstrained movement of the joint. With osteoarthritis, the cartilage breaks down and deteriorates. As the cartilage deteriorates and is worn away, bone rubs on bone, resulting in pain, stiffness, and reduced mobility. Bone spurs (also known as osteophytes) may develop which intrude on the joint space and fragments of bone may dislodge, which also interferes with normal movement of the joint. The lining of the joint, or synovium, becomes inflamed as cartilage breaks down, starting a process which itself causes even more cartilage deterioration and joint damage. There are a few different problems that can cause joint inflammation or arthritis. Osteoarthritis of the knee is the most common joint disease in elderly people and associated with significant physical disability (Lawrence et al, 2008). The American College of Rheumatology randomly assigned the sixty patients into three treatment groups: these groups are active laser with dosage of 3 J/per painful point, active laser with a dosage of 1.5/J per painful point and placebo laser treatment groups (Tascioglu et al, 2004).

The disease impacts upon activities of daily living (e.g. walking, stair-climbing and housekeeping), ultimately leading to a loss of functional independence and quality-of-life. People should be aware about the core management procedure of OA because published study shows that there are some limitations in treatment of osteoarthritis (Conaghan et al, 2008). Although not an inevitable part of aging, it is a major contributor to morbidity in the elderly population. Painful knee osteoarthritis affecting 10% of people aged over 55 in the United Kingdom causing pain, physical disability, and reduced quality of life. It also imposes a considerable economic burden on the health care system. Over 80% of patients experience limitations in performing

activities of daily living, such as mobility outside the home, household chores, and work duties. Osteoarthritis is the most common prevalent of rheumatic disease, affects more than 40% of western world adults (Marks & Ghnagaraja, 2000). Disease prevalence is estimated at 15.8 million American adults or 12 percent of the population. The overall incidence of newly diagnosed osteoarthritis of the hip or knee is estimated at 200 per 100000 person's years (Larry, 1996). In 1990; an estimated 15.0% of the US population had arthritis. Estimated prevalence rates were 49.4% for persons aged greater than or equal to 65 years. Where Bangladesh there is no real statistic's that how many patients are affected by OA over a year. But one statistics give a general indication to the prevalence of OA and that is 10,392,681 people are affected by OA. Osteoarthritis is particularly prevalent among older people, their number is predicted to increase in all countries in the developing ones (Paul, 2003).

With the Advancement of medical science all of us are benefited, which has occurred in the twentieth century because of improvements in imaging, medications, and surgical techniques and instruments, doctors can more effectively diagnose and treat illness. Despite these advances, Osteoarthritis is the most common form of arthritis (Lawrence et al., 2008), and the pain associated with OA is a major cause of activity limitation, functional disability and reduced health-related quality of life (Hochberg, 2007). Osteoarthritis is a multifactorial disease involving firstly, systemic factors (e.g. age, sex, hormones, genetics and nutritional factors). Secondly, intrinsic joint vulnerabilities (e.g. previous damage, bridging muscle weakness, malalignment and laxity) and finally, extrinsic factors acting on joints (e.g. specific injurious activities and obesity), causes the progression of osteoarthritis was defined as a decrease joint space width (Reijman et al, 2007).

Osteoarthritis is the commonest cause of disability in older people. Prevalence figures for knee osteoarthritis range from 7–25% in people aged over fifty five with over 70% of sufferers experience pain and limitations in performing activities of daily living, such as mobility outside the home. In Paris more than 80% of all patients reported limitations in their activities of daily living, either for basic tasks, leisure activities, or work. Those patients were substantially more limited than controls. Disabilities of OA have a significant impact on the retired person, those still involved in the labor market

(Fautrel et al, 2005). Affecting over 20 million individuals in the United States alone. It represents a heterogeneous group of conditions that result in common histopathology and radiologic changes (Kellgren, 1961). It is a degenerative disorder that results from the biochemical breakdown of articular (hyaline) cartilage in the synovial joints especially as the hip and knee (Loughlin, 2005). The exact cause of knee pain in patients with OA remains enigmatic because hyaline cartilage does not contain pain fibers and, as such, cannot be the direct cause of pain in OA. Pain fibers are present in other structures in the knee, such as the joint capsule, periosteum, insertional sites of ligaments and muscles, outer third of the menisci, and, possibly, the synovium but their role is uncertain. Radiographs remain the usual means for assessment of osteoarthritic changes in the knee and their association with clinical features, such as knee pain. The association between findings of OA on radiographs and clinical features, however, is poor MRI allows another perspective of the structural abnormalities associated with OA, and MR imaging findings have been associated with clinical features, which include knee pain. Reported findings include the association between knee pain and MR imaging findings, such as joint effusion and synovial thickening, bone marrow edema, focal or diffuse cartilaginous osteophytes, subchondral cysts, baker cysts, minimal cartilaginous lesions, alterations in volume of patellar cartilage, and periarticular lesions, which include bursitis and iliotibial band syndrome (Kornaat et al, 2006). Osteoarthritis is a leading cause of disability among non institutionalized adults. It is the most common disorder of synovial joints. Survey from the United states suggest that OA is ten times more common than rheumatoid arthritis, the second most prevalent joint disease (Chitnavis et al, 2002). Most of the available literature shows that there is no cure for osteoarthritis, and individuals with this disease have little benefit from prescribed medications (Holman & Lorig, 2004).

1.2 Rationale

Osteoarthritis of knee joint is now a common disorder all over the country. Male-female, all of them are equally affected by this disorder and they are familiar with this disorder because it is most prevalent and is associated with aging. It occurs most in women of age over 45. It occurs in 80% of people over 55 years of age, 23% experience limitation of activities, Radiographic evidence of osteoarthritis is present in the majority of people over age 65; 80% of those over 75, Approximately 11% of those over 65 have symptomatic osteoarthritis of the knee (Croft, 2005).

From them maximum patient received medical treatment like drugs to minimize the pain. But some patients are aware about this disorder. They receive physiotherapy treatment from various physiotherapy centers, because physiotherapy is well established as an important part of clinical management for people with knee osteoarthritis. The musculoskeletal department of CRP regularly conducts with many other knee joint osteoarthritis patients. But it is unknown to all of us that how much improvement occurs in that case and what is the outcome of patient after taking physiotherapy and which group of people are more affected by OA. Progressive evaluation of physiotherapy treatment outcomes is an integral part of professional accountability and is a requirement for physiotherapy standards. This study will help us to know about the outcome of physiotherapy management of osteoarthritis of knee joint from May 2012 to July 2012. Because this Evaluate the need for continued physiotherapy to maintain or improve patient status, benefits of physiotherapy in relation to treatment goals and act on factors that may compromise treatment consequence or predict poor outcomes. That will help our musculoskeletal department by know the condition of the patient who received physiotherapy from this musculoskeletal unit for osteoarthritis of knee joint.

1.3 Research Question

- What are the outcomes of physiotherapy management for patient with osteoarthritis of knee joint?

1.4 Aim of the study

- To find out the outcome of physiotherapy management for osteoarthritis of knee joint patient at CRP musculoskeletal department.

1.5 Objectives of the study

1.5.1 General objective

- To explore the outcome of physiotherapy management for patient with osteoarthritis of knee joint.

1.5.2 Specific objective

- To explore the socio-demographic information of the patient.
- To compare the number of affected knee joint among the patient with knee OA.
- To focus on the outcome score of pain after receiving physiotherapy treatment.
- To know the percentage of achievement of aims of treatment.
- To identify the possible cause if treatment aims is not achieved.

Osteoarthritis is a chronic joint disorder, characterized by progressive softening and disintegration of the articular cartilage which is influenced by secondary factors that are calcium containing crystals and ischemic changes in the joint (Solomon et al, 2001). Structural abnormalities of all tissues in the joint-including the cartilage, subchondral bone, synovium, capsule, and ligaments-also may be present (William & Shiel, 1996). Pain and functional limitation are the main complaints in people with symptomatic OA in United Kingdom. Worldwide, OA is one of the leading causes of disability, particularly in the elderly population and is most prevalent at the hip and knee. It also has an effect on the individual's function, quality of life, occupation, mood, relationships, and leisure activities. Osteoarthritis can be managed conservatively, and in more severe cases, by joint replacement surgery. However international guidelines recommend conservative treatments as first-line care for people with OA. Core treatment is the first choice of treatment which varies on individual's different needs, risk factors, and preferences. These treatments include medications, exercise, education, and weight loss (Conaghan et al, 2008).

Its occurs most in women of age over 45.It occurs in 80% of people over 55 years of age, 23% experience limitation of activities, Radiographic evidence of osteoarthritis is present in the majority of people over age 65; 80% of those over 75, Approximately 11% of those over 65 have symptomatic osteoarthritis of the knee (Croft, 2005).

The prevalence of OA varies according to the definition of OA, the specific joint under study, and the characteristics of the study population. The age standardized prevalence of radiographic knee OA in adult's age ≥ 45 was 19.2% among the participants in the Framingham Study and 27.8% in the Johnston County Osteoarthritis Project. In the third National Health and Nutrition Examination Survey (NHANES III), approximately 37% of participants age >60 years or older had radiographic knee OA. Symptomatic knee OA occurs in 10% men and 13% in women aged 60 years or older (Zhang & Jordan, 2008).

In Malaysia, 14.4% complained of pain in the joints and/or musculoskeletal pain. The knee was responsible for 64.8% of all complaints pertaining to the joints, and more than half those examined with knee pain had clinical evidence of osteoarthritis (OA). The complaint rate increased with age, up to 53.4% in the group age > 65 years. The inability to squatting (3.1%) was the major disability. Fibromyalgia, soft tissue lesions, and localized OA of the knees were the main clinical diagnoses. Indian women had the highest rate of pain (28.4%), while Chinese men had the lowest age-standardized pain rate (9.9%) and was higher in women (23.8%) (Veerapen et al, 2007).

Pain was measured by the VAS scale of the patient with osteoarthritis of knee joint according to their severity of pain by using a 10-point VAS scale. Patient was self-classified their pain OA according to absent, mild, moderate or severe (Robert & Petrella, 2010)

Osteoarthritis commonly affects the hands, feet, spine and large weight bearing joints such as the hip and knees (William & shiel, 1996). Lower limb is the most common site for OA. Patient with knee osteoarthritis complain pain and difficulty with everyday activities such as prolonged sitting, ascending and descending stairs, squatting, kneeling, rising from a chair and getting in and out of a car.

The daily stresses applied to the joints, especially the weight-bearing joints (e.g. ankle, knee, and hip) play an important role in the development of osteoarthritis. Most investigators believe that degenerative alterations in osteoarthritis primarily begin in the articular cartilage, as a result of either excessive loading of a healthy joint or relatively normal loading of a previously disturbed joint. External forces accelerate the catabolic effects of the chondrocytes and disrupt the cartilaginous matrix (Burkitt et al, 1996).

Risk factors of osteoarthritis include-Age, Obesity (increases mechanical stress) Trauma ,Genetics, Sex hormones, Muscle weakness, mal-alignment, Repetitive use or excessive load .i.e. jobs requiring heavy labor and bending (Felson, 2004), Infection, Crystal deposition, Acromegaly, Previous rheumatoid arthritis (i.e. burnt-out rheumatoid arthritis), Heritable metabolic causes (e.g. alkaptonuria, hemochromatosis,

Wilson disease), Hemoglobinopathies (e.g. sickle cell disease, thalassemia), Neuropathic disorder leading to a Charcot joint (e.g. syringomyelia, tabes dorsalis, diabetes), Underlying orthopedic disorders (e.g. congenital hip dislocation, slipped femoral capital epiphysis), Disorders of bone (e.g. Paget disease, avascular necrosis)

OA is the commonest joint disorder. Men and women are equally affected by this disorder (Solomon et al, 2001). There is a steady rise in overall prevalence from age 30 such that by 65.80% of people have some radiographic evidence of OA. Though only 25-30% has associated symptoms (Doherty, 2002). In the community the prevalence of physical disability is rises with age. Among them those has multiple joint problems it was highest at risk but it was also high in those people who have isolated back or knee pain. The highest prevalence of knee pain is among women aged 75 and over 35% (Urwina et al, 1998). In adults aged 50 years old and over, 23% report severe pain and disability. Among them 34% patients had severe knee pain and disability but their pain is non-chronic and 54% had also severe knee pain and disability but their pain is chronic (Jinks et al, 2004). Radiographic surveys suggest that the prevalence rises from 1% below the age of 30 years to over 50% in people above the age of 60 years. The prevalence of knee OA is 40% in individuals aged over 75 years. The medial compartment is most commonly affected and leads to a varus deformity previous trauma, meniscal and cruciate ligament tears and obesity are the risk factors for developing knee osteoarthritis. It is common in women than men (Kumar & Clark, 2002).

Causes of Primary knee osteoarthritis: though exact cause is not known. The following factors are suspected to causation of primary knee osteoarthritis are age, obesity, genetics, occupation, prolonged standing, sports, metabolic disorders (Ebenezer, 2003). Another study shows the following factors are responsible for primary knee osteoarthritis such as crystals in joint fluid or cartilage, high bone mineral density, injury to the joint, peripheral neuropathy, joint hyper mobility (Hinton et al, 2002).

Causes of secondary knee osteoarthritis: the causes of secondary osteoarthritis of the knee are as valgus and varus deformities of the knee-rheumatoid arthritis, infection, TB, hyperparathyroidism, over use of intra articular steroid therapy (Ebenezer, 2003). Repeated minor trauma may lead to micro fractures and subsequent osteoarthritis.

Occupational factors are thought to be important in the development of secondary OA. Hemophilia, acromegaly and hyperthyroidism all predispose joints to secondary OA (Porter, 2003).

Arthroscopic classification of severity of OA according to ACR criteria-

- Grade-1 = Swelling and softening of cartilage. Oedema and cellular infiltrate.
- Grade-2 = Superficial fibrillation.
- Grade-3 = Deeper and large cartilage fibrillation.
- Grade-4 = Visualization of underlying subchondral bone (Ayril et al., 1993).

There are 100 different types of arthritis conditions. Classification of osteoarthritis is various and often dependent on several factors. These are - Primary osteoarthritis is more nebulous. Although primary osteoarthritis is related to the aging process and typically occurs in older individuals, in the broadest sense of the term, it is an idiopathic phenomenon, occurring in previously intact joints and having no apparent initiating factor. In most of the cases osteoarthritis have no known cause and referred to as primary osteoarthritis (William & Shiel, 1996). This is typically found in women of menopausal age who have multiply joint involvements often of knees, hands and hips. When the cause of the osteoarthritis is known then the condition is referred to as a secondary osteoarthritis. Secondary OA estimated to account for 80% of osteoarthritis. In Inflammatory osteoarthritis, obvious inflammation present in many joints (Chadwick, 1998). In Erosive osteoarthritis, the distal interphalangeal and proximal interphalangeal joints are inflamed and equally affected. This is rare. In contrast to nodal OA, the functional outcome is poor (Kumar & Clark, 2002). In Generalized osteoarthritis, affecting many joints usually in women aged 45-64 (Chadwick, 1998).

The American college of rheumatology emphasizes that drug therapy for OA is best used as an addition to nonpharmacologic treatment-oral, topical and intraarticular agents is available for the treatment of OA. Acetaminophen is comparable in efficacy to nonsteroidal anti-inflammatory drugs (NSAIDs) for controlling mild to moderate OA pain. Though Acetaminophen is the first line analgesic, many patients who may

respond better to NSAID. But gastro-intestinal complications are the side effects of greatest concern with NSAID therapy.

The Australian Physiotherapy Association in 2001 proved that, there is a good evidence to support the use of a number of physiotherapy interventions in the management of knee joint osteoarthritis. The management of osteoarthritis depends on the joint involvement, the stage of the disorder, the severity of the symptoms, age of the patient and his or her functional needs (Solomon et al, 2001). The major goals of physiotherapy are– educate the patient, caregivers and relatives, relieve symptoms such as pain and stiffness, preserve joint motion and function by limiting disease progression (Larry, 1996), strengthen weak muscles related to the arthritic joint, encourage correct function, restore and maintain function and minimize disability.

Several epidemiologic studies suggest that estrogen replacement therapy reduce the risk of knee and hip osteoarthritis. Similar studies suggest that maintaining normal vitamin D levels may reduce the occurrence and progression of osteoarthritis (Hellmann & Stone, 2002). Maintaining appropriate body weight may be the single most important factor in preventing osteoarthritis from occurring in weight bearing joints (Hinton et al, 2000).

Osteoarthritic disease is increasing day by day in the world, so the prevention of osteoarthritis is important and necessary. Osteoarthritis has three strong risk factors. And these are-excessive musculoskeletal loading, high body mass index and previous knee injury, in which prevention may work. According to Hochberg, avoiding squatting and kneeling and carrying heavy loads during work have been associated with a reduction of 15–30% in the prevalence of osteoarthritis in men. Another study showed a significant exposure–response relationship between symptomatic knee osteoarthritis and squatting and kneeling. Overweight is a risk factor for knee osteoarthritis, but weight reduction is not only the symptoms and progression of osteoarthritis, and also the risk of acquiring osteoarthritis. The Osteoarthritis Research Society International Group strongly recommends that the patients who have osteoarthritis must be should maintain the body weight and also should try to lose weight. Knee injuries such as knee ligament tears, meniscal injuries and fractures involving the articular surfaces is a strong risk factor for knee osteoarthritis. Prevention programs for sports injury, especially ACL injury, have recently shown

encouraging results. Norwegian studies showed that with the use of neuromuscular training programs the prevention of ACL injuries was possible. According to Felson, by prevention of joint injuries 14–25% reduction of osteoarthritis is possible (Takeda et al, 2011).

The prognosis of osteoarthritis depends on the joints involved and the severity of the condition. No proven disease/structure-modifying drugs for osteoarthritis are currently known. Thus the medication-based regimen is directed at symptom relief. Nevertheless, a recent systematic review of the literature has noted several clinical features associated with more rapid knee osteoarthritis (OA) progression. These include age, body mass index, varus deformity, and multiple involved joints, and their presence may help identify those more likely to have knee OA progression. Knee osteoarthritis has life time risk for developing estimated as 44.7% and the annual report of US showed that it is 4% per year (Chapple et al, 2011).

3.1 Study design

A quantitative research model was used in the form of retrospective type of descriptive survey in design. The meaning of retrospective study is to find out what is already happened. Survey was used to gather information about a large number of populations in order to answer a set of hypothesis. Descriptive survey design is chosen rather than any other design because the aim of the study will explore the “outcome of physiotherapy management for patient with osteoarthritis of knee joint; a retrospective survey over last May 2012 to July 2012, at CRP Musculoskeletal outdoor department”. Therefore the study needs as much information as possible.

3.2 Sample selection

For the accomplish of the study, the documents (Assessment form, SOAP notes, Discharge summary and Outcome measurement form) of those patients was selected, who have already been treated and discharged from Musculoskeletal outdoor physiotherapy department of CRP from May 2012 to July 2012.

3.3 Inclusion criteria

- Patients suffering from osteoarthritis of knee joint.
- Both male and female patient of osteoarthritis of knee joint between 20-80 years old, because before 20 years of age osteoarthritis is a common phenomenon.
- Patient with osteoarthritis of knee joint who received minimum two sessions of physiotherapy in musculoskeletal outdoor unit.

3.4 Exclusion criteria

- Incomplete or unclear documents.
- Patients who have osteoarthritis in hip or others joint but not in knee joint.
- Patients who did not receive physiotherapy minimum two sessions in musculoskeletal outdoor unit of CRP.

3.5 Study site

The study was conducted in musculoskeletal department of CRP where the service is offered for all outpatients who come from all over the country.

3.6 Study area

The study area was CRP, Savar which is 25 km away from Dhaka.

3.7 Data collection procedure

Researcher started the study and collected the relevant information from previous assessment, SOAP notes and discharge summary of each participant.

3.8 Materials and method

Materials of the research were paper, pen check list and medical records of all patients with osteoarthritis of knee joint who had taken treatment from musculoskeletal outdoor department at CRP from last May to July 2012.

3.9 Ethical issue

A research proposal was submitted to the supervisor of the research and administrative bodies of the ethical committee and musculoskeletal department of CRP. The study was beneficial for the patients, musculoskeletal department of CRP, society and it will add a new perception for osteoarthritic patient.

3.10 Limitation of the study

Regarding this study as below there was some situational limitation or barrier to consider the results of the study.

- Documents were collected from musculoskeletal outdoor department of CRP. But it needed to collect from different places and organizations to make the results more valid or reliable.
- The samples were 52 documents of patient with knee osteoarthritis according to inclusion and exclusion criteria. The sample size was too small to represent the whole population of knee osteoarthritis.
- In case of day laborer the working level, type of working and duty hour is not mentioned. For that reason the possible causes of osteoarthritis were not identified.
- Researcher want to collected data from February 2012 to July 2012, but documents of February to March were not available to collect data. So data were collected from May to July 2012.

Age range

The mean age of the participants was approximately 52 years. n= 29 approximately (56%) affected by OA knee in between 34-50 years of age, n=23 (44%) in between 51-77 years of age. The ratio between the age group 34-50 years and 54-77 years was 1.3:1. Result shows that 34-50 years are more vulnerable age group to develop knee osteoarthritis.

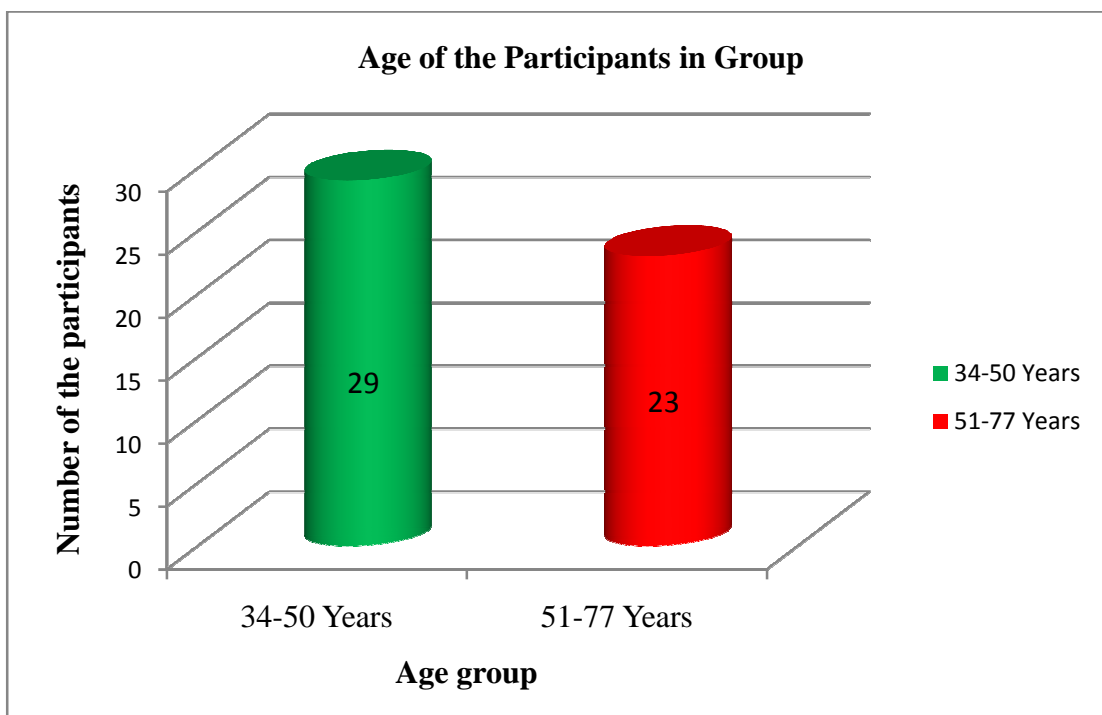


Figure 1: Age group of the patient.

Sex

Among all the participants n=18 (35%) was male and n= 34(65%) was female. The ratio between male and female was 1:2. Result shows that female are more affected by OA than male.

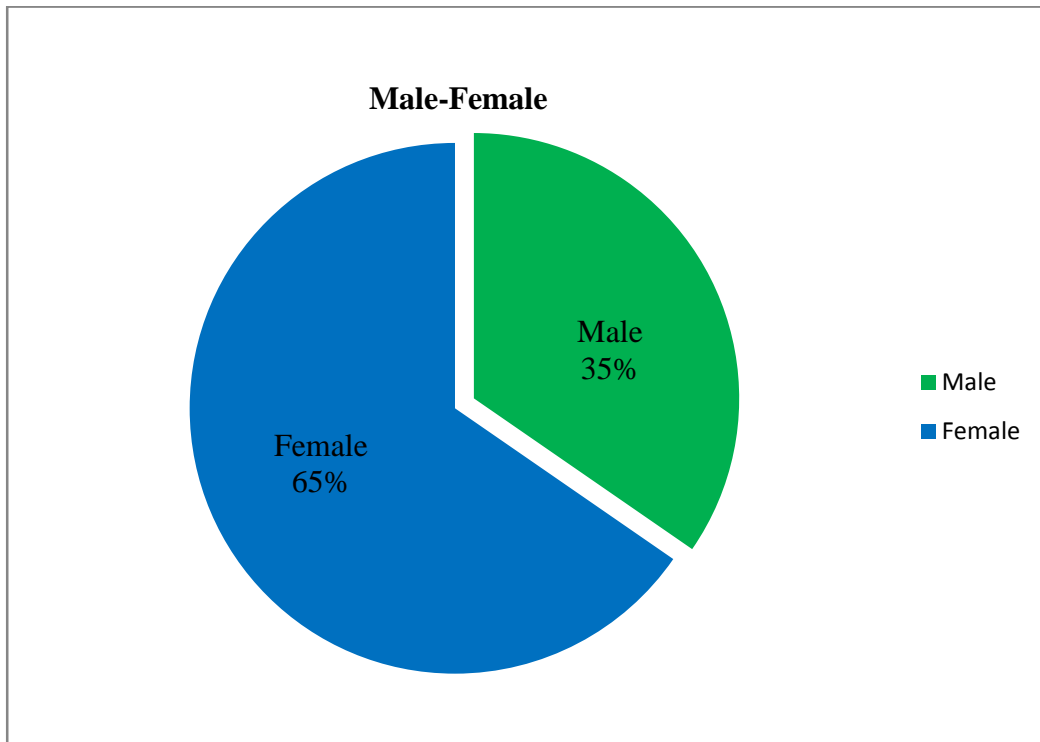


Figure 2: Sex of the participants

Occupation

It is known that sometimes osteoarthritis is related to occupational hazard. Especially it is more common for those patients who work in long time knee bending position. Among the 52 participants affected by knee OA, n=1 approximately (2%) person was farmer/agriculturer, n=3 (6%) was factory/garments worker, n=7 (14%) was businessman, n=3 (6%) was unemployed, n=34 (65%) was housewife, n=4 (8%) were in others occupation like office job, service. The occupation of those patients who had taken physiotherapy treatment from CRP MS outdoor department is given below as a Bar graph-

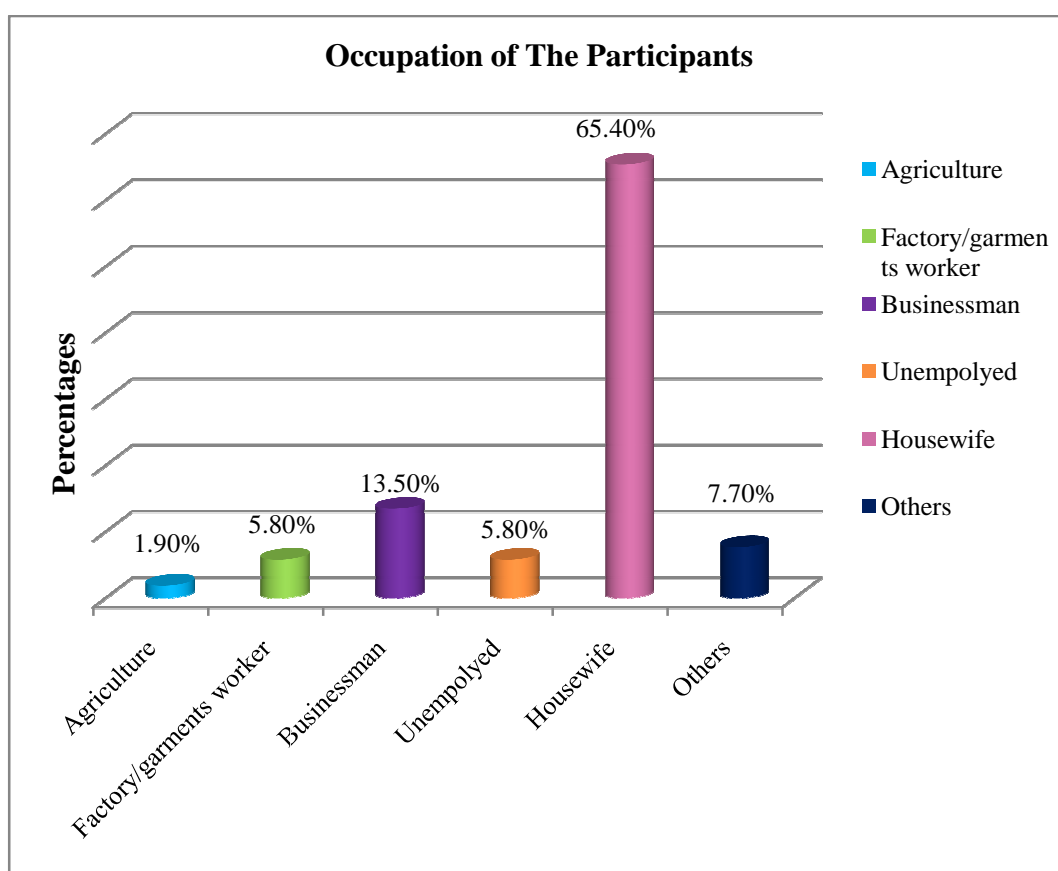


Figure 3: Occupation of the participants.

Joint involvement

Among participants affected by knee OA, n=14 (27%) was affected by right knee OA, n=13 (25%) was affected by left knee OA and n=25 (48%) patients was affected by both knee OA.

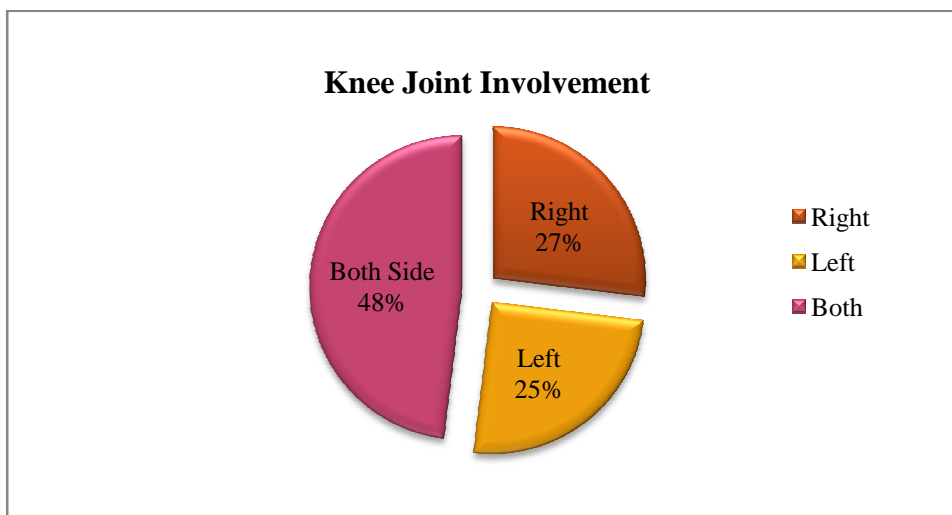


Figure 4: Knee joint involvement.

Past history of trauma

Among the participants n=6 (11.5%) have positive history of trauma at the knee joint and n=46 (88.5%) have negative history of trauma at knee joint. Result shows that knee OA may developed from previous trauma at knee joint.

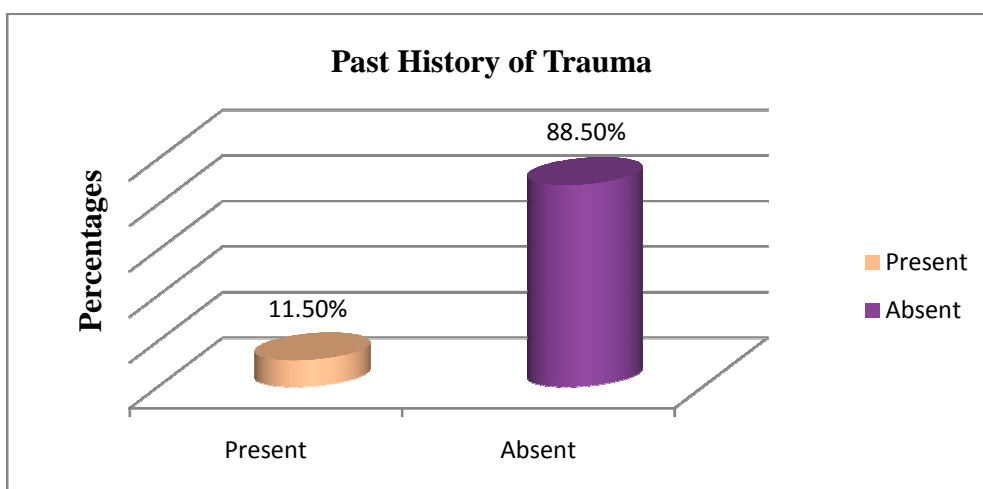


Figure 5: Past history of trauma

Onset of osteoarthritis

Onset of osteoarthritis may be sudden or gradual. Among the participants approximately 27% osteoarthritis occurs suddenly and 73% occurs gradually.

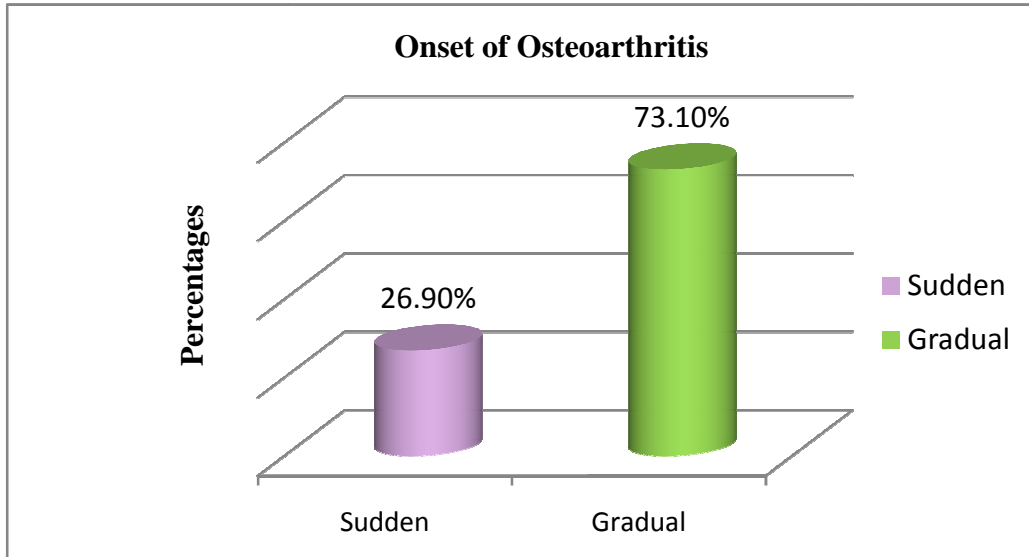


Figure 6: Onset of osteoarthritis.

Major disease

Among 52 participants n=9 approximately (17%) was have diabetes mellitus, n=2 (40%) was have hypertension, n=4 (8%) was have lung disease, n=6 (12%) was have heart disease, n=13 (25%) was have others disease.

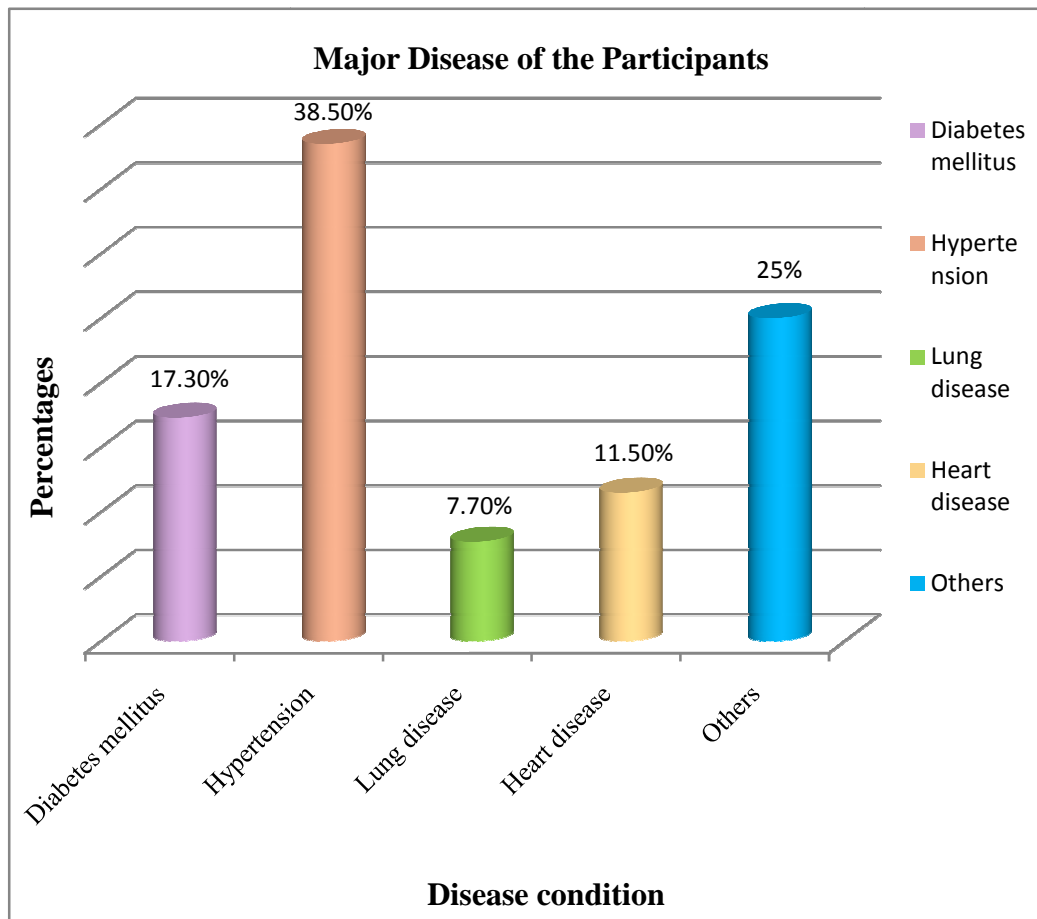


Figure 7: Major disease of the participants

Outcome of pain according to VAS

Among 52 patients From initial to discharge, n=4 approximately 8% patients improvement level were 2, n=9 (17%) patients improvement level were 3, n=7 (13%) patients improvement level were 4, n=7 (13%) patients improvement level were 5, n=5 (10%) patients improvement level were 6, n=6 (12%) patients improvement level were 7, n=14 (27%) patients improvement level were 8.

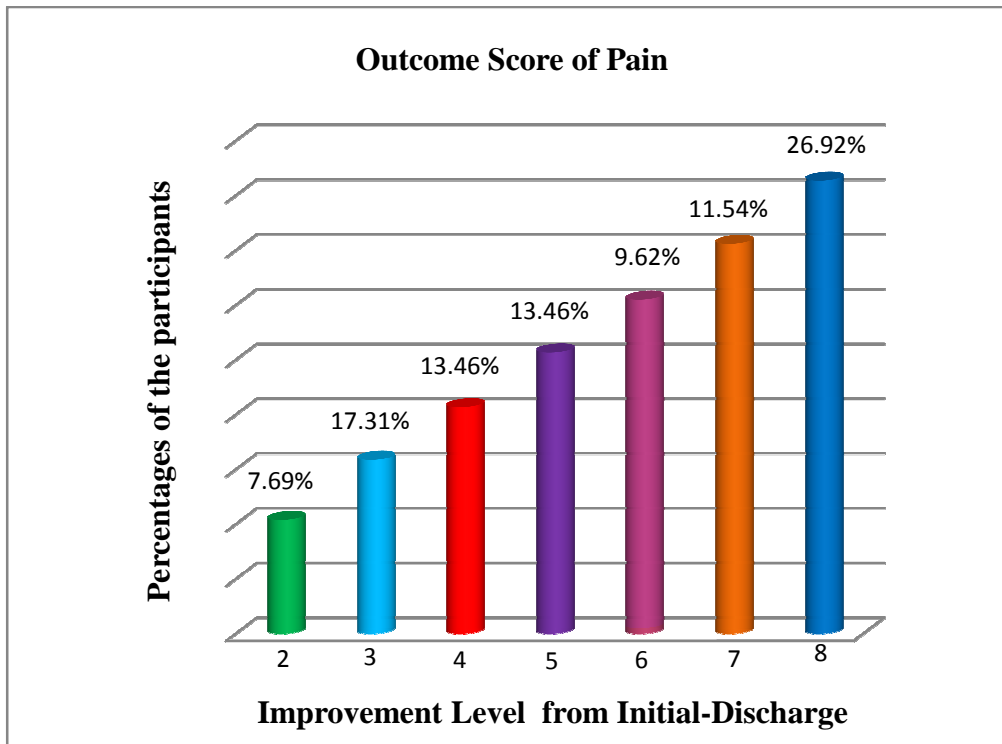


Figure 8: Outcome score of pain

Achievement of aims of treatment

Among 52 participants affected by knee OA, n=31 approximately 60% patients have been achieved aims of treatment more than 50%. Another approximately 40% (n=21) patients came to receive Physiotherapy. Result shows that Physiotherapy is an effective treatment for Knee OA.

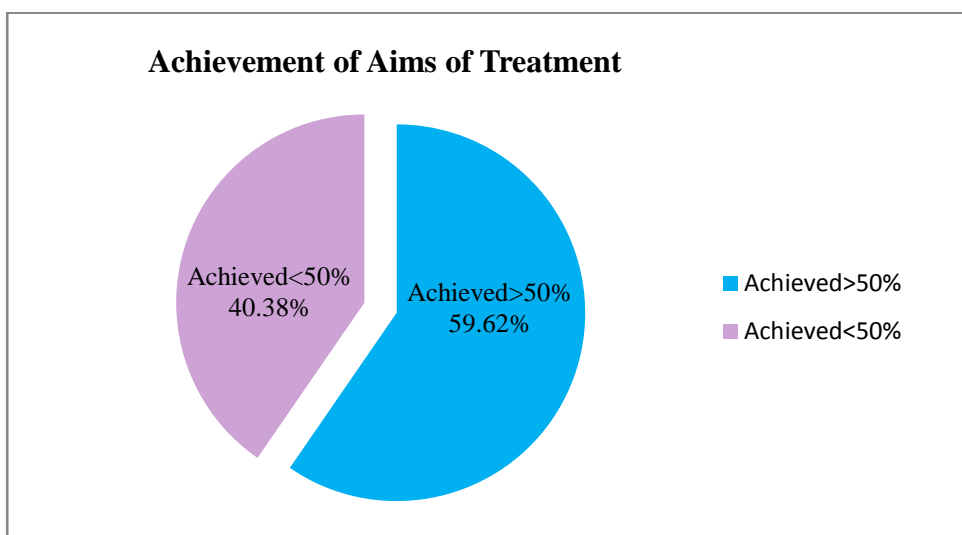


Figure 9: Achievement of aims of treatment

Aims of treatment not achieved

In total achievement, approximately 40% aims of treatment are not achieved due to some cause. These possible causes are n=20 (38.9%) patient were stopped attending to receive treatment and n=1(1.9%) patient has other reason.

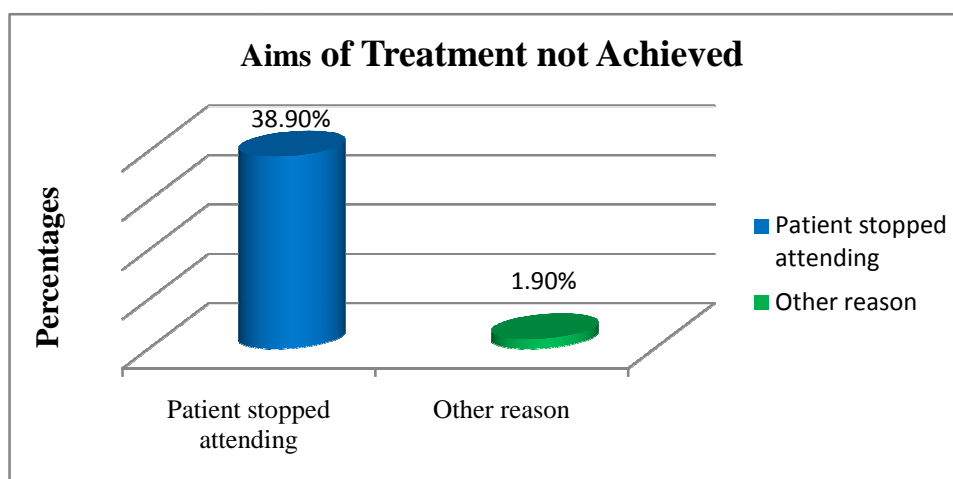


Figure 10: Aims of treatment not achieved

In this study, the researcher found out the male female ratio of those participants who have received Physiotherapy treatment for osteoarthritis from CRP Musculoskeletal outdoor physiotherapy department. This data shows that most of the osteoarthritis patients were female who had come to take physiotherapy at CRP Musculoskeletal outdoor physiotherapy department. Fifty two patients of OA knee were studied. Out of them, 18 (35%) were male and 34 (65%) were female. This data indicates that females were more affected than male. OA is the most common joint disorder of human body and is more often found in women than in men (Hendriks et al, 2003). Another study also suggests that women are more affected than men especially with OA of the fingers and the knees (Manek, 2000). The prevalence of RKOA and symptomatic RKOA among US adults was 37.4% and 12.1%, respectively. RKOA prevalence was greater among women than men and it was (42.1% vs 31.2%). Women had significantly more changes (12.9% vs 6.5% in men) (Dillon et al., 2006). The prevalence of osteoarthritis sometimes depends on geographical and ethnic differences. For example the female to male ratio for OA of the hip is about 1:1 in Northern Europe but is nearer 2:1 in Southern Europe, where there is a high incidence of acetabular dysplasia in girls (Solomon et al, 2001). Men and women both are equally prone to develops OA. But male preponderances may be due to more male attendance in the hospital than female because there are many social and religious beliefs in our society. And it is shows in a study of Chittagong in Bangladesh that was 61% male were affected by OA and 39% female were affected by OA. In another studies shows that 64.80 % of the study subjects were males and 35.20 % were females (Shakoor et al, 2009).

Primary osteoarthritis more common in women who have multiple joint involvements often of knees, a higher prevalence after the menopause suggests a role for sex hormones (Kumar & Clark, 2002). With increased postmenopausal bone resumption, gaps appear in the plates of trabecular bone; not all this defects are repaired and the loss of structural connectivity further reduces the overall strength of the bone (Solomon et al, 2001). There is a strong relationship between obesity and knee osteoarthritis incase of women. Because over weight may result in premature muscle fatigue which is turn leads to abnormal kinematics and the subsequent development of

OA (Porter, 2003). There different age group who were affected with OA. The participants were different ages. For better presentation the subjects were divided into two age groups. First age group is less than 50 years (34-50), and second age groups more than 50 years (51-77). Among them more participants were into the age groups 34-50 years. There were 29 participants out of 52 and the ratio between the age group 34-50 years and 54-77 years was 1.3:1. It indicates that overall 34-50 years are more vulnerable age group to be affected with osteoarthritis. Osteoarthritis is wide spread, slowly developing disease, with a high prevalence increasing with age (Regind et al, 1998). According to the WHO osteoarthritis is one of the ten most disabling disease in adults over 30 years (Throstensson et al, 2005) the peak onset for development of OA is between 50 and 60.it is estimated amongst the population over 65; about 12% are likely to have symptomatic OA (Chadwick, 1998).

Occupation of OA patients was an important focusing point of this study. A number of studies have considered the role of occupational factors in the development of OA. It has been suggested that repetitive use of specific joints by workers exceeds normal tolerances and might be conducive to degeneration of joints (Chitnavis et al, 2002). The pattern of joint involvement in osteoarthritis is influenced by prior vocational or a vocational overload. In my study 34 (65.4%) patients were house wife. that means housewife are mostly affected by knee OA, this may be due to long time activity in knee bending position according to our culture. In Bangladesh women constitute 48.6% of total population. More or less every woman, in Bangladesh is primarily work as unpaid family workers. Women's maximum activity is floor level. They were responsible in 75%, 69%, 50%, 90%, 91% of the following work activities: washing utensils and cleaning house compound, releasing poultry and its feeding, post harvest activities (crops), crop preservation, cooking and fuel collection (Paul et al, 1991). Some studies have related occupational knee bending to knee OA. Squatting associated with three to seven times increased risk for patellofemoral osteoarthritis (Chitnavis et al, 2002). It also found that in my study 1.9 % person were farmer, 5.8% were factory/garments worker, 13.5% were businessman, 5.8% were unemployed, 7.7% were in others occupation like office job, service. Prolong standing occupation causes the primary osteoarthritis of the knee (Ebenezer, 2003).

In this study 27% patients were affected by right knee OA, 25% patients were affected by left knee OA and 48% patients were affected by both knees OA. A study in Chittagong, Bangladesh shows that most of the study subjects were suffering from both sided knee OA 48.1%, 27.2 % patients were suffering from right sided knee OA and 24.7 % patients were suffering from left sided knee OA (Shakoor et al, 2009). The outcome score of pain after physiotherapy treatment was main focus of the study. Improvement rate was measured from initial to discharge score of pain. In this study according to VAS scale 4 (7.7%) patients improvement level were 2, 9 (17.3%) patients improvement level were 3, 7(13.5%) patients improvement level were 4, 7 (13.5%) patients improvement level were 5, 5 (9.6%) patients improvement level were 6, 6 (11.5%) patients improvement level were 7, 14 (26.9%) patients improvement level were 8. Here most of the patients (14) improvement levels were 8 from initial to discharge. Currently there is no cure for OA. Treatment focus primarily on relieving symptom and preventing progress physiotherapy is the most cost effective treatment achievable for knee OA according to Australian study evaluating the cost benefit relationship for different osteoarthritis treatments (Throstensson et al, 2005). Regular exercise modifies the risk factors for OA, improve psychological health and promote functional independence. It may also reduce the physical impairment and burden of co-morbidities and thus improve the OA patient's quality of life (Katz et al, 2001). In my study 17.30% participants were affected by Diabetes, 38.50% patients were affected by Hypertension and 25% patients had other disease condition. On the other hand a study about Risk factors for osteoarthritis: genetics have done by Spector and MacGregor. According to their study the multifactorial nature of osteoarthritis (OA) is well recognized, genetic factors have been found to be strong determinants of the disease. Classic twin studies have shown that the influence of genetic factors is between 39% and 65% in radiographic OA of the hand and knee in women, about 60% in OA of the hip, and about 70% in OA of the spine. Taken together, these estimates suggest a heritability of OA of 50% or more, indicating that half the variation in susceptibility to disease in the population is explained by genetic factors (Spector & MacGregor, 2004). The aims of the physiotherapy treatment is control pain, reduce the risk of disability, increase muscle power or strength, give stability of the joints, increase range of motion and maintain aerobic fitness. It is a non pharmacological treatment for patients with hip or knee osteoarthritis (Baara et al, 2001). Exercise is an effective as pharmacological treatment in pain relief. In this

study the aims of treatment is achieved more than 50% for 31 (59.62%) of the patients and aims achieved less than 50% for 21 (40.38%) of the patients. Physiotherapy helps a patient of OA of knee by controlling pain, improve proprioception, strength, stability and endurance all of which improve functional independence. It was found the participants with minimal to moderate osteoarthritis recruited from both community and clinic that were being treated with various types of exercise treatment (Patrella, 2001). Range of motion exercise decrease stiffness, increase joint mobility and prevent soft tissue contractures. Isometric exercise can improve muscle strength and static endurance. Aerobic exercise such as swimming reduces blood pressure and improves cardiovascular fitness (Katz et al, 2001). Marks & Cantin also proved that physiotherapy can achieve aims of treatment by improve knee strength in 47% of cases; reduce knee pain level in 76% of cases; knee range of motion is improved in 53% cases. In addition 79% patients improved in stair climbing, level of walking and sit to stand activities. In general treatments have been more successful at decreasing pain rather than disability (Baker et al, 2000). Unsuccessful rate of the treatment procedure was less than successful rate. Sometimes aims of treatment are not achieved due to some cause and problems of the patient. In this study only 21 participants aims of treatment is achieved <50% in out of 52 participants. That means 40.38% patients were not improved by taking physiotherapy. The reason of this result was identified from the discharges summary. Researcher found that 20 patients stopped attending after completing 2 session of physiotherapy treatment and 1 patient for other reason. That means participants took self discharge. By evaluating SOAP notes of those participants showed that they had too much poor improvement. Everybody knows that OA is a progressive disease and physiotherapy is a long time treatment process. For that participants need patience to complete treatment session. The possible reason of this result may be they do not continue exercise at their home due to lack of knowledge. Short of time or some participants are too much lazy. They do not want to give physical effort. On the other hand in our country most of the people are poor. They have not enough money to continue a long time treatment session or after 2-3 session of treatment patient think that they learn all of the treatment procedure and know everything and it's no need to go to a physiotherapist.

The main aim of the study was to explore the outcome of physiotherapy management for osteoarthritis of knee joint. In this study it was proved that osteoarthritis is common over 30 to 50 years of age and 30% female are more affected than male. Among 52 participants 65.4% was housewife. It indicates that house wives are more affected by OA of knee joint.

Osteoarthritis is one of the ten most disabling disease in adults. Though it is not a curable disease, but regular physical activity plays a vital role in maintaining the physical wellbeing. If the patient receive physiotherapy regularly and maintain therapeutic activities at their home then 80% symptoms will be subsided. This study proved that physiotherapy is effective for the patient with osteoarthritis of knee joint. If general people are aware about the effectiveness of physiotherapy then more people will come to receive physiotherapy in the early stage of the disease. It will be always helpful to other health care professionals to understand the importance of physiotherapy for osteoarthritis and will also ensure a good referral system. So government should aware the people about the importance physiotherapy for patient with osteoarthritis.

REFERENCES

- Ayral X, Dougados M, Lustrat V, Bonvarlet JP, Simonnet J, Poiraudreau S, Amor B, 1993, Chondroscopy: a new method for scoring chondropathy, *Semin Arthritis rheumatism*, 5:289-97.
- Baara MEV, Dekkera J, Oostendorpc RAB, Bijla D and Bijlsmae JWJ, 2001, Effectiveness of exercise in patients with osteoarthritis of hip or knee: nine month's follow up, *Annals of the rheumatic diseases*, 60:1123-1130.
- Baily DM, 1998, *Research for the health professionals*, 2nd edn, F.V. Davis company, Philadelphia.
- Baker, Kristin PhD, McAlindon, Tim MD, 2000, Exercise for knee osteoarthritis, *Current opinion in Rheumatology*, 12(5):456-463.
- Burkitt HG, Stevens A and Lowe JS, 1996, *Skeletal system In: Basic Histopathology*, 3rd edn, New York, Churchill Livingstone.
- Chadwick A, Bulstrode C, Bucjwalter J, Carr A, Marsh L and Fairbank J, 1998, *Osteoarthritis*, Oxford Textbook of Orthopedics and trauma, OXFORD University, USA, 2:1410.
- Chapple CM, Nicholson H, Baxter GD and Abbott JH, 2011, Patient characteristics that predict progression of knee osteoarthritis: A systematic review of prognostic studies, *Arthritis Care and Research*, 63(8):1115-25.
- Chitnavis J, Car A, Bulstrode C, Buckwaltar J, Carr A, Marsh L, Fairbank J, MacDonald and Bowden G, 2002, *Osteoarthritis*, Oxford text book of orthopedic and trauma, 2:1406-1418.
- Conaghan PG, Dickson J and Grant RL, 2008, Care and management of osteoarthritis in adults: summary of NICE guidance, *British Medical Journal*, 336:502.
- Croft P, 2005, *The epidemiology of osteoarthritis: Manchester and beyond* retrieved on 7th July 2012
http://rheumatology.oxfordjournals.org/content/44/suppl_4/iv27.full.pdf+html

- Dillon CF, Rasch EK, Gu Q, Hirsch R, 2006, Prevalence of knee osteoarthritis in the United States: arthritis data from the Third National Health and Nutrition Examination Survey 1991-94, *Journal of Rheumatology*, 33:2271-9.
- Doherty M, 2002, Musculoskeletal disorders cited in Haslett C, Chilvers ER, Boon AN and Colledge NR, *Davidson's principles and practice of medicine*, 19th edn, Churchill Livingstone, London.
- Ebenezer J, 2003, *Essentials of orthopedics for physiotherapists: Disorders of joints*, 2nd edn, Jaypee, New Delhi.
- Fautrel B, Hilliquin P, Rozenberg S, Allaert FA, Coste P, Leclerc A, and Rossignol M, 2005, Impact of osteoarthritis: results of a nationwide survey of 10,000 patients consulting for OA, *Joint Bone Spine*, 72:235-240.
- Felson DT, 2004, Risk factors for osteoarthritis: understanding joint vulnerability. *Clinical Orthopedics and Related Research*, 427:16-21.
- Goulding S, 1992, *Doing your research project: Analysis and presentation of information*, Open University, Philadelphia.
- Hellmann DB, and Stone JH, 2001, Arthritis and musculoskeletal Disorders cited in Tietney LM, Mcphee SJ, and Papadakis MA, *Current medical Diagnosis and Treatment*, 49th edn, Lange medical Books, London.
- Hendriks HJM, Baar MEV, Bloo H and Verhoef J, 2003, *Clinical practice guidelines for physical therapy patients with osteoarthritis of the hip or knee*, Royal Dutch society for physical therapy, 6:1-37.
- Hicks CM 1999, *Research methods for clinical therapist: applied project design and analysis: Questionnaires, surveys, sampling and Techniques of descriptive statistics*, 3rd edn, Churchil Livingstone, London.
- Hilt NE, and Cogburn SB, 1980, *Manual of orthopedic: Joint disease and disorders*, The C.V Mosby Company, London.
- Hinman RS and Crossley KM, 2007, Patellofemoral joint osteoarthritis: an important sub-group of knee osteoarthritis, *Rheumatology (Oxford)*, 46 (7):1057-1062.
- Hinton R, Moody RL, Davis AW and Thomas SA, 2002, Osteoarthritis: Diagnosis and therapeutic considerations, *American academy of family physicians*, 65:5

- Hochberg MC, 2007, Quality measures in osteoarthritis, Retrieved on 10th July 2012 <<http://Scholar.google.com/scholar?hl=en&assdt=0,5 & q=sign/symptomofOA>>
- Holman H and Lorig K, 2004, Patient Self-Management: A Key to Effectiveness and Efficiency in Care of Chronic Disease, Public Health Reports, 119(3):239-243.
- Jinks C, Jordan K, Ong BN, Croft P, 2004, A brief screening tool for knee pain in primary care (KNEST).2. Results from a survey in the general population aged 50 and over, Rheumatology (Oxford), 43(1):55-61.
- Jordan K M, Arden NK, Doherty M, Bannwarth B, Bijlsma JWJ and Dieppe P, 2003, EULAR recommendations 2003: an evidence based approach to the management of knee osteoarthritis: report of a task force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT), Annals of the rheumatic diseases, 62:1145-1155.
- Katz BP, 2001, Exercise prescription for older adults with osteoarthritis pain: Consensus practice recommendations, American geriatrics society, 49(6):808-823.
- Kellgren JH, 1961, Osteoarthritis in patients and populations, British Medical Journal, 2:1-6.
- Khaltayev N, Pflieger B, Woolf AD, Mathers C, Akesson K, Hazes JM and Symmons D, 2003, Assessing the burden of musculoskeletal conditions: a joint World Health Organization, Bone and Joint Decade Project, 5:174.
- Kornaat PR, Bloem JL, Ceulemans RYT, Riyazi N, Rosendaal FR, Nelissen R G, Carter WO, and Kloppenburg M, 2006, Osteoarthritis of the Knee: Association between Clinical Features and MR Imaging Findings, Retrieved on 10th July 2012 <<http://radiology.rsna.org/content/239/3/811.short>>
- Kumar P and Clark M, 2002, Clinical medicine, 5th edn, Saunders, London.
- Larry E, 1996, Clinical Consult, The journal of the American Society of consultant pharmacists, 11:1-3.

- Lawrence RC, Felson DT, Helmick CG, Arnold LM, Choi H, Deyo RA, Gabriel S, Hirsch R, Hochberg MC, Hunder GG, Jordan JM, Katz JN, Kremers HM, Wolfe F and National Arthritis Data Workgroup, 2008, Estimates of the prevalence of arthritis and other rheumatic conditions in the United States: Part II, *Arthritis and Rheumatism*, 58(1):26-35.
- Loughlin J, 2005, The genetic epidemiology of human primary osteoarthritis: current status, *Expert reviews in molecular medicine*, 7(9):1-12.
- Manek NJ and Lane NE, 2000, Osteoarthritis: Current Concepts in Diagnosis and management, *American family physician*, 61(6):1795-1804.
- Marks R and Ghnagaraja S, 2000, Ultrasound for osteoarthritis of the knee, *physiotherapy journal*, 86(9):452-463.
- Patrella RJ, 2001, Is exercise effective treatment of osteoarthritis of the knee? *Western Journal of Medicine*, 174(3):191-196.
- Paul C, 2003, The burden of musculoskeletal conditions at the start of the new millennium, *International journal of Epidemiology*, 34(1):228-229.
- Porter SB, 2003, *Tidy's physiotherapy: Osteoarthritis*, 13th edn, Butterworth-Heinemann, Oxford.
- Regind H, Nielson B B, Jensen B and Biddal H, 1998, The effects of a physical training program on patients with osteoarthritis of the knee, *Archives of Physical Medicine and Rehabilitation*, 79(11):1421-7.
- Reijman M, Pols HAP, Bergink AP, Hazes JMW, Belo JN, Lievense AM and Bierma-Zeinstra SMA, 2007, Body mass index associated with onset and progression of osteoarthritis of the knee but not of the hip: the Rotterdam Study, *Annals of the rheumatic diseases*, doi:10.1136/ard.2006.053538.
- Robert J and Petrella, 2010, A qualitative study on patients with knee osteoarthritis to evaluate the influence of different pain patterns on patients quality of life and to find out patients interpretation and coping strategies for the disease, *Rheumatology*, doi:10.4081/rr.2011.e3.
- Shakoor MA, Taslim MA, Ahmed MS and Hasan SA, 2009, Clinical profile of patients with Osteoarthritis of the knee: A study of 162 cases, *Indian Journal of Physical Medicine and Rehabilitation*, 20(2):44-47.

- Solomon L, Warwick DJ and Nayagam S, 2001, Apley's system of orthopedics and fractures: osteoarthritis, 8th edn, Library of Congress Cataloguing, Great Britain.
- Spector TD and MacGregor AJ, 2004, Risk factors for Osteoarthritis: genetics, retrieved on 14th July 2012, <<http://www.sciencedirect.com/science/article>>
- Takeda H, Nakagawa T, Nakamura K, and Engebretsen, L 2011, Prevention and management of knee osteoarthritis and knee cartilage injury in sports, *British Journal of Sports Medicine*, 45(4):304-309.
- Tascioglu F, Armagan O, Tabak Y, Corapci I, and Oner C, 2004, Low power laser treatment in patients with knee osteoarthritis, *Swiss medical weekly*, 134:254-8.
- Thorstensson CA, Petersson IF, Jacobsson LTH, Boegard TL, and Roos EM, 2004, Reduced functional performance in the lower extremity predicted radiographic knee osteoarthritis five years later, *Annals of the rheumatic diseases*, 63:402-7.
- Urwina M, Symmons D, Allison T, Brammah T, Busby H, Roxby M, Simmons A, and Williams G, 1998, Estimating the burden of musculoskeletal disorders in the community: the comparative prevalence of symptoms at different anatomical sites, and the relation to social deprivation, *Annals of the Rheumatic Diseases*, 57(11):649-55.
- Veerapen K, Wigley RD, and Valkenburg H, 2007, Musculoskeletal pain in Malaysia: a COPCORD survey, *Journal of Rheumatology*, 34(1):207-13.
- William C and Shiel J, 1996, Osteoarthritis, Retrieved on April 29, 2012, http://www.emedicinehealth.com/osteoarthritis/article_em.htm.
- Zhang Y and Jordan JM, 2008, Epidemiology of osteoarthritis, Retrieved on 6th July 2012 <<http://www.linkinghub.elsevier.com/retrieve/pii>>

APPENDICES

Questionnaire sheet

**Title: Outcome of physiotherapy management for osteoarthritis of
Knee joint.**

Identification number:
Name of the patient:
Date commenced treatment:
Date of last treatment:
Address:
Mobile number:

Section 1: Socio-demographic questions

1.	Age	----- yrs	
2.	Sex	Male Female	<input type="checkbox"/>
3.	Religion	Islam Hindu Others	<input type="checkbox"/>
4.	Residential area	Urban Rural	<input type="checkbox"/>
5.	Occupation	Rickshaw puller Agriculture Factory/garments worker Businessman Day laborer Unemployed Housewife Teacher Others	<input type="checkbox"/>

Section 2: Osteoarthritis related questions

1.	Which knee joint is more affected?	Right Left Both	<input type="text"/>
2.	Main problem	Pain Paraesthesia Numbness Others	<input type="text"/>
3.	Past history of trauma at the knee joint	Yes No	<input type="text"/>
4.	Constant symptom	Pain Paraesthesia Numbness	<input type="text"/>
5.	Aggravating factor	Rest Standing Walking Squatting Stair climbing	<input type="text"/>
6.	Ease factor	Rest Standing Walking Squatting Stair climbing	<input type="text"/>
7.	Onset of osteoarthritis	Sudden Gradual	<input type="text"/>
8.	Pain at	Night Morning evening	<input type="text"/>
9.	Severity of joint pain	Mild Moderate Severe	<input type="text"/>
10.	Any major disease	Diabetes mellitus Hypertension Lung disease Heart disease Epilepsy others	<input type="text"/>

11.	After physiotherapy outcome score of ROM	Initial-discharge: Minimum -Moderate Moderate - Full ROM Minimum -Full ROM No change	<input type="text"/>
12.	After physiotherapy outcome score of muscle power	Muscle power increased from Initial-discharge: 4 3 2 1 No change	<input type="text"/>
13.	After physiotherapy outcome score of pain	Pain decreased from initial- discharge: 9 8 7 6 5 4 3 2 1 No change	<input type="text"/>
14.	Aims of treatment	Achieved >50% Achieved <50%	<input type="text"/>
15.	Aims not achieved due to	Patient stopped attending Patient was referred to another department for further management Goals were unrealistic Other reason	<input type="text"/>

Date: August 8, 2012

To

Head, Department of Physiotherapy

Centre for the Rehabilitation of Paralyzed (CRP)

Savar, Dhaka-1343

Subject: Application for permission of data collection.

Dear Sir,

I beg most respectfully to state that, I am a student of 4th year B. Sc in physiotherapy at Bangladesh Health Professions Institute (BHPI) under the University of Dhaka. I am conducting research on “ outcome of physiotherapy management for osteoarthritis of knee joint” as a part of our course curriculum, under supervision of Md. Shofiqul Islam, lecturer, BHPI. So I need to collect data from musculoskeletal department of CRP.

I therefore, pray and hope that you would be kind enough to grant me and thus oblige thereby.

Sharmina Akther Mukta

08.08.2012

Sincerely yours,

Sharmina Akther Mukta

B.Sc in physiotherapy

4th year, Roll-05

Session: 2006-2007

BHPI, CRP, Savar, Dhaka.

Approved .1
[Signature]
HOD 08.08.12

Md. Sohrab Hossain
Assistant Prof. & Head of PT
Physiotherapy Dept.
CRP, Savar-1343.