



**Faculty of Medicine**

**University of Dhaka**

**THE LEVEL OF PSYCHOLOGICAL STRESS AMONG KNEE  
OSTEOARTHRITIS PATIENTS ATTENDED AT CRP**

**Afsana Mimi**

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

DU Roll No: 1116

Registration No: 8637

Session: 2017-2018

BHPI, CRP, Savar, Dhaka



**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 acceptance of this dissertation entitled.

**THE LEVEL OF PSYCHOLOGICAL STRESS AMONG KNEE OSTEOARTHRITIS PATIENTS ATTENDED AT CRP**

Submitted by **Afsana Mimi** for the partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc. In PT)

.....*Skdh*.....

**Dr. Shazal Kumar Das, PhD**

Lecturer and Coordinator, MPT Program

Department of Physiotherapy

BHPI, CRP, Savar, Dhaka

.....*[Signature]*.....

**Prof. Md. Obaidul Haque**

Vice Principal

BHPI, CRP, Savar, Dhaka

.....*[Signature]*.....

**Dr. Mohammad Anwar Hossain, PhD**

Associate Professor of Physiotherapy, BHPI

Senior consultant & Head of the Department of Physiotherapy

CRP, Savar, Dhaka

**Approved date:**

## DECLARATION

This work is not presently being presented as a candidate for any degree and has not previously been approved in content for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of B. Sc. in Physiotherapy.

I certify that any instances of plagiarism or other forms of dishonesty in my work will result in an immediate failure and will be grounds for official disciplinary action. I guarantee for the fact that the thesis' bound copy and electronic version are the same.

The research supervisor will be extremely concerned if the results of this project are shared for potential publishing, and it will be properly acknowledged as a graduate thesis with permission obtained from the physiotherapy department of the Bangladesh Health Professions Institute (BHPI).

Signature:

Date:

**Afsana Mimi**

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

DU Roll No: 1116

Registration No: 8637

Session: 2017-2018

BHPI, CRP, Savar, Dhaka

# CONTENTS

|                                      | <b>Page no.</b> |
|--------------------------------------|-----------------|
| Acknowledgement                      | i               |
| Acronyms                             | ii              |
| List of figures                      | iii             |
| List of tables                       | iv              |
| Abstract                             | v               |
| <b>CHAPTER-1: INTRODUCTION</b>       |                 |
| 1.1 Background                       | 1-3             |
| 1.2 Rationale                        | 4               |
| 1.3 research question                | 5               |
| 1.4 aim of the study                 | 6               |
| 1.5 Objectives                       | 7               |
| 1.6 Conceptual framework             | 8               |
| 1.7 Operational definition           | 9               |
| <b>CHAPTER-II: LITERATURE REVIEW</b> | 10-15           |
| <b>CHAPTER-III: METHODOLOGY</b>      | 16-22           |
| 3.1 Study design                     | 16              |
| 3.2 Study site                       | 16              |
| 3.3 Study population                 | 17              |
| 3.4 Sample size                      | 17              |
| 3.5 Duration of the study            | 17              |
| 3.6 Sampling technique               | 18              |

|  |              |
|--|--------------|
| 3.7 Inclusion criteria                           | 18           |
| 3.8 Exclusion criteria                           | 18           |
| 3.9 Data collection tools                        | 19           |
| 3.10 Measurement tools                           | 19           |
| 3.11 Data analysis procedure                     | 21           |
| 3.12 Level of significance                       | 22           |
| 3.13 Ethical consideration                       | 22           |
| <b>CHAPTER-IV: RESULTS</b>                       | <b>23-50</b> |
| <b>CHAPTER-V: DISCUSSION</b>                     | <b>51-54</b> |
| Limitation                                       | 55           |
| <b>CHAPTER-VI: CONCLUSION AND RECOMMENDATION</b> |              |
| Conclusion                                       | 56-57        |
| Recommendation                                   | 58           |
| <b>REFERENCES</b>                                | <b>59-65</b> |
| <b>APPENDICES</b>                                | <b>66-75</b> |
| Inform consent (English)                         |              |
| Inform consent (Bangla)                          |              |
| Questionnaire (English)                          |              |
| Questionnaire (Bangla)                           |              |
| Permission letter                                |              |

## ACKNOWLEDGEMENT

First of all, I would like to pay gratitude to **Almighty Allah** who has given me the ability to complete this project in time with success. The second acknowledgement must go to my parents and my elder sister who has always inspired me for preparing the project properly. I am extremely grateful to my honorable and praiseworthy Supervisor **Dr. Shazal Kumar Das**, Lecturer, Department of Physiotherapy, and Bangladesh Health Professions Institute (BHPI) for giving me his valuable time, his proper supervision and excellent guidance without which I could not be able to complete this project.

I am very thankful to **Prof. Md. Obaidul Haque**, Vice Principal, BHPI; **Dr. Mohammed Anwar Hossain**, Associate Professor of Physiotherapy Department, CRP; **Fabiha Alam Disha**, Assistant Professor, Department of Physiotherapy and also all of my respected teachers for helping me in this study.

I would like to state my grateful feelings towards some of my honorable seniors especially I am indebted to Shahid Afridi, Intern Physiotherapist, CRP, Savar and Farjana Akter Bristi, Clinical Physiotherapist, CRP, Savar. I would also like to thank Sumaiya Rahman for helping me with data collection.

Finally I would like to thank all the participants who willingly participated as study population during the conduction of my study and the entire individual who were directly or indirectly were involved with this study.

## Acronyms

|      |  |
|------|--|
| ADL  | Activities of Daily Living                     |
| BHPI | Bangladesh Health Professions Institute        |
| BMI  | Body Mass Index                                |
| CRP  | Centre for the Rehabilitation of the Paralysed |
| DALY | Disability Adjusted Life Years                 |
| DASS | Depression, Anxiety and Stress Scale           |
| GBD  | Global Burden of Disease                       |
| IRB  | Institution Review Board                       |
| KNO  | Knee Osteoarthritis                            |
| LMIC | Low and Middle Income Countries                |
| NCD  | Non Communicable Disease                       |
| QoL  | Quality of Life                                |
| VAS  | Visual Analogue Scale                          |
| WHO  | World Health Organization                      |
| YLD  | Years Lived with Disability                    |

## List of figures

| <b>Topics</b>  | <b>Page no.</b> |
|--|-----------------|
| Figure 1: Age group of the participants                        | 25              |
| Figure 2: Gender of the participants                           | 26              |
| Figure 3: Marital status of the participants                   | 27              |
| Figure 4: Educational status of the participants               | 28              |
| Figure 5: Family type of the participants                      | 29              |
| Figure 6: Monthly income of the participants                   | 31              |
| Figure 7: BMI of the participants                              | 34              |
| Figure 8: Involvement of knee joint of the participants        | 35              |
| Figure 9: Pain during stair climbing of the participants       | 36              |
| Figure 10: Pain at rest of the participants                    | 37              |
| Figure 11: Co-morbidities of the participants                  | 38              |
| Figure 12: Physiotherapy treatment outcome of the participants | 39              |
| Figure 13: VAS score of the participants                       | 40              |
| Figure 14: Depression level of the participants                | 42              |
| Figure 15: Anxiety level of the participants                   | 43              |
| Figure 16: Stress level of the participants                    | 44              |



## List of tables

| Topics   | Page no. |
|--|----------|
| <b>Table 1: DASS-21</b>  | 20       |
| <b>Table 2: Level of DASS -21</b>  | 21       |
| <b>Table 3: Socio-demographic profile of the participants</b>  | 23       |
| <b>Table 4: Occupation of the participant</b>  | 30       |
| <b>Table 5: Knee OA related information of the participants</b>  | 32       |
| <b>Table 6: DASS-21 scale profile of the participants</b>  | 41       |
| <b>Table 7: Association between depression and socio-demographic and Knee OA related variables of the participants</b> | 46       |
| <b>Table 8: Association between anxiety and socio-demographic and Knee OA related variables of the participants</b>    | 48       |
| <b>Table 9: Association between stress and socio-demographic and Knee OA related variables of the participants</b>     | 50       |

## ABSTRACT

**Background:** The focus of this study was to explore the level of Psychological stress and determine their association with socio-demographic among knee OA patients attended at CRP. **Objectives:** To identify the level of Psychological stress among knee OA patients attended at CRP. **Method:** The study design was cross-sectional. A total of 80 samples were selected conveniently for this study from the Musculoskeletal unit, Department of Physiotherapy, CRP, Savar. Data was collected by using a self structured questionnaire, and the DASS 21 Scale. Descriptive statistics using SPSS software version 22.0 were used for data analysis. **Result:** In this study, the mean age of the participants was  $(52.31 \pm 7.127)$  years. Females were about 72% ( $n = 58$ ) and males were about 28% ( $n = 22$ ). Among the participants, 9% had moderate depression, 25% had mild depression, and 2% had severe level of depression. Among the participants, 4% had severe anxiety, 39% had moderate anxiety, and 9% had extremely severe anxiety. Among the participants, 11% had mild stress, 3% had moderate stress, and 70% had less mild stress. The researcher found that Educational status, Occupation, Family income and Physiotherapy treatment outcome are less than 0.05 which means this are significant with depression. The researchers discovered a link between Educational status, Number of earning member, Family income are correlated with anxiety. And Gender, Educational status, Occupation, Family member, Earning member, Number of involvement of knee joint, Family income are correlated with stress. **Conclusion:** This study find out the level of Psychological stress among knee OA patients.

**Key words:** *Knee OA, Depression, Anxiety, Stress, DASS-21*

**Word count:** 10000

## 1.1 Background

Osteoarthritis (OA) is a condition marked by a variety of anatomical and physiological changes in joint tissues, including as cartilage deterioration, bone remodeling, and osteophyte production, changes result in pain, stiffness, swelling, and restrictions in joint function (Cui et al. 2020, p. 3). Osteoarthritis is one of the most prevalent chronic health diseases which affects many different outcomes, such as mental health, sleep, work involvement, and even mortality, in addition to pain and functional ability (Cui et al. 2020, p. 4).

People who have knee OA (KOA) experience a progressive loss of function, showing an increasing reliance on their lower extremities for tasks like walking and stair climbing, as well as an increased risk of cardiovascular comorbidities (Carotti et al. 2017, P. 1).

Osteoarthritis has traditionally been assessed from a biomechanical perspective, however there is evidence that psychosocial aspects play a significant influence in how well people manage their pain (Urquhart et al. 2014, p. 446). It appears that a complex interplay of elements, including structural damage, peripheral and central pain processing mechanisms, obesity, culture, demographic, and psychosocial factors, underlies the feeling of pain and the symptoms of impairment in osteoarthritis patients (Helminen et al. 2020, p. 406).

One of the most important public health issue is arthritis and 10% of the world's population who are 60 years or above having health problems that can attribute to OA (Yahaya et al. 2021, p. 1222). Osteoarthritis is characterized by joint pain, stiffness and functional limitation and it is common in the joints of the knees, hands, hips, and feet, sometimes also affecting the joints of the shoulder and the spine (Yahaya et al. 2021, p. 1222).

The global prevalence of knee OA was 16.0% in individuals aged 15 and over and was 22.9% in individuals aged 40 and over. Besides, there are around 654.1 million individuals (40 years and older) with knee OA in 2020 worldwide and the prevalence

was 19.2% in Asian, 13.4% in Europe, 15.8% in North America, 4.1% in South America, 3.1% in Oceania, 21.0% in Africa (Cui et al. 2020, p. 10).

The incidence of knee OA is rising day by day increasing average age of general population. Major risk factor for knee OA are age, weight, trauma to joint due to repeated movements in particular joint are common risk factors of knee OA and several pathological factors include cytokines, leptin. History of diabetes, cancer, or cardiovascular disease and the presence of walking disability are major risk factors (Heidari 2011, p. 205).

Pain and other symptoms of OA may have a profound effect on quality of life affecting both physical function and psychological parameters. Knee OA is not a localized disease of cartilage but also a chronic disease of the whole joint, including articular cartilage, meniscus, ligament, and peri-articular muscle that may result from multiple pathophysiological mechanisms (Hayami 2008, p. 1575).

The prevalence rate was significantly higher among women than in men and increased significantly with age and symptomatic knee OA was significantly more common in rural compared to urban and suburban populations (Andriankos et al. 2011, p. 2509).

Sports participation, injury to the joint, obesity, and genetic susceptibility predispose adolescent athletes to the development of premature osteoarthritis. Previous knee trauma increases the risk of knee OA 3.86 times (Blagojevic et al. 2010, p. 26). Determination of risk factors particularly in the weight-bearing joints and their modification may reduce the risk of OA and prevent subsequent pain and disability (Zhang and Jordan 2010, p. 356).

Physiotherapists are important providers of non-surgical care for people with knee OA and receive more OA referrals from general practitioners than other allied health providers. In addition, patients generally perceive physiotherapists to be important to assist them in managing their OA and prescribing exercises (Teo et al. 2021, p. 5). Weight loss, medication and surgical advice were perceived to be outside of their scope of practice but physiotherapists' reported experiences treatment technique were mostly consistent with the quality care standard (Teo et al. 2021, p. 5).

The burden of depression, anxiety and other mental disorders call for concerted, inter-sectoral response. Not only to raise public awareness but also to provide

treatment and prevention strategies that can reduce this large and growing health problem, including the economic losses attributable to them. The correlations between poor mental health and an increased prevalence of musculoskeletal conditions, multiple areas of pain, chronic and preventable diseases, emphasizes the need for an effective and holistic multidisciplinary approach to the management of these conditions.

## **1.2 Rational**

Psychological distress can negatively influence disability, quality of life, and treatment outcomes for individuals with hip and knee osteoarthritis (OA). Depression is a common mental disorder. Globally it is estimated that 5% of adults suffer from the disorder.

Knee osteoarthritis (OA) is a common and major health problem and causes chronic pain and disability among elderly in most of the developed countries. It is a common cause of disability in older person associated with mobility impairment, limitations in performing daily activities that causes decrease in physical function.

The purpose of the study is to find out the level of psychological distress among knee OA patients. Physical therapy plays an important role not only in the management of OA but also to prevent the disease as well as to reduce activity limitation, functional disability and to improve quality of life. For that researcher interested to conduct this research to find out new things. If the level of psychological stress is find out that means the vulnerable gender group of OA, the age group of people are who affected by OA, Body type and most involvement joint of the OA patient and outcome of physiotherapeutic treatment in Knee OA. As a Physiotherapist it will help to deal with Knee OA patients easily and will give details about psychological stress related information to the patient so that people can modify their life style regarding OA at knee and can improve their mental health. We can provide better treatment as well as essential advice to the patients. . Furthermore, the study intended to provide a pathway for the prevention of depression and anxiety in light of risk factors. Beside this it will assist in the establishment of ergonomic rules for their residual circumstances. This research will also aid in their awareness, particularly increase the consciousness of our society and it also intends to put contribution to the establishment and enrichment of mental health. Besides that, it will aid professional growth, which is critical given the present state of the field and it is anticipated that knowledge enrichment will promote physiotherapy professional growth. As a health professional it improves our knowledge. Research makes the profession strongest. So there is no alternative option to do research as a professional to develop the profession.

This study will be able to identify depression anxiety and stress in knee OA patients, as well as their associated mental health issue. Furthermore, the study intended to provide a pathway for the prevention of depression, anxiety and stress in light of risk factors.

### **1.3 Research question**

What are the level of psychological stress among knee OA patients attended at CRP?



#### **1.4 Aim of the study**

To explore the level of psychological stress among knee osteoarthritis patients attended at CRP?

## **1.5 Objectives**

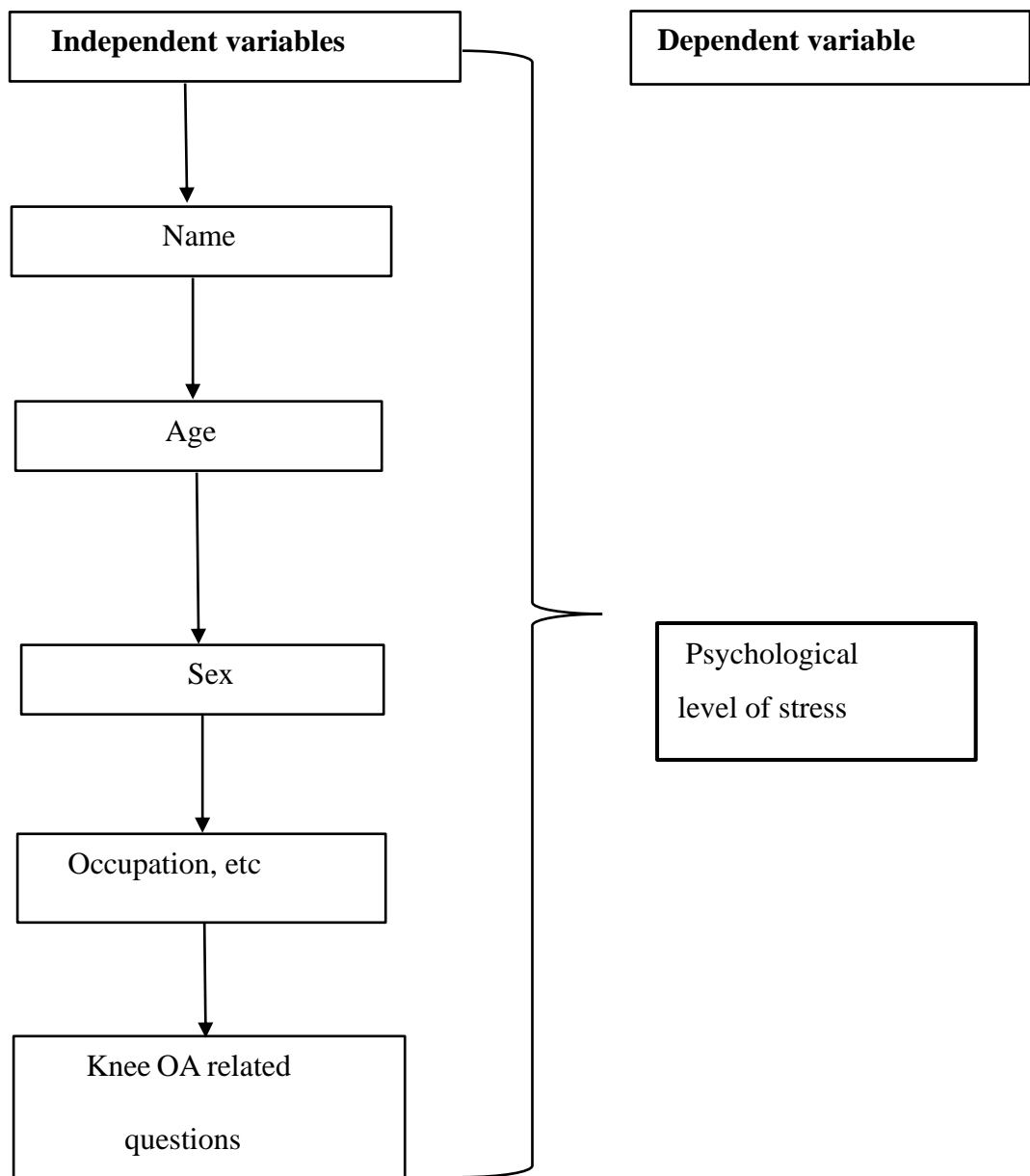
### **1.5.1 General objective**

To identify the level of psychological stress among knee osteoarthritis patients attended at CRP.

### **1.5.2 Specific objectives**

1. To find out the socio-demographic characteristics of knee OA patients.
2. To identify the vulnerable gender affected from depression, anxiety and stress.
3. To determine the level of depression among knee OA patients.
4. To identify the level of anxiety among knee OA patients.
5. To identify the level of stress among knee OA patients.
6. To explore the association between depression and socio-demographic.
7. To identify the association between anxiety and socio-demographic.
8. To identify the association between stress and socio-demographic.

## 1.6 Conceptual framework



## **1.7 Operational definition**

### **Knee OA**

Knee osteoarthritis is also known as degenerative joint disease, is typically the result of wear and tear and progressive loss of articular cartilage.

### **Psychological stress**

Psychological distress refers to non-specific symptoms of stress, anxiety and depression, and it is more common in women.

### **Depression**

It is characterized by persistent sadness and lack of interest or pleasure in previous rewarding or enjoyable activities. It can also disturb sleep and appetite. Tiredness and poor concentration are common.

### **Anxiety**

Anxiety disorders are characterized by excessive fear and worry and related behavioral disturbance. Symptoms are severe enough to result in significant distress or significant impairment in functioning.

### **Stress**

Stress can be defined as a result of worry and mental tension cost by a difficult situation. Stress is a natural human response that prompts us to address challenges and threats in our lives.

### **Depressive symptoms**

The depressive symptoms are measured by Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) which is a collection of three self-report measures that assess depression, anxiety, and stress. Each of the three DASS21 scales has seven items that are grouped into subscales that have comparable content. Dysphoria, despair, devaluation of life, self-deprecation, and lack of interest/participation, anhedonia, and lethargy are all assessed on the depression scales.

The term “osteoarthritis” is the most common pathological condition, namely the degenerative joint disease. “Osteoarthritis” is derived from the Greek word part osteo-, meaning “bone”, combined with arthritis: arthr-, meaning “joint”, the suffix “-itis” implies the presence of inflammation (Tanchev 2017, p. 1).

Knee osteoarthritis (OA) is a chronic degenerative joint disease affect millions of people worldwide, particularly those who are above 60 years. It is a significant cause of disability and can impact an individual’s quality of life (Sajaan et al. 2023, p. 127).

Osteoarthritis (OA) is the most prevalent of the chronic rheumatic diseases and is a leading cause of pain and disability in most countries worldwide. The prevalence of OA increases with age and generally affects women more frequently than men (Yahaya et al. 2021, p. 1221).

The prevalence of OA was 16.4% in South Asia, 15.7% in East Asia and Pacific, and 14.2% in Sub Saharan Africa. Low- and middle-income countries (LMICs) are experiencing a dramatic shift in the burden of disease from communicable to non-communicable disease (NCD). The prevalence of NCD continues to grow and was responsible for 70% of deaths worldwide in 2016. NCDs also accounted for 61% of global disability adjusted life years (DALYs) in 2016, around 20% higher than in 1990, with the highest rise observed in LMICs settings. Musculoskeletal conditions account for a significant proportion of NCDs contributing to DALYs, with osteoarthritis (OA) contributing most to this burden. OA carries an excess mortality and financial burden both societally and to individuals suffering from it, and is a major contributor to the global disability burden, with an increase of 9.6% of the global age-standardised years lived with disability (YLD) between 1990 and 2017. The Global Burden of Disease (GBD) study (2015) ranked OA and diabetes highest in terms of largest increase in years lived with disability when compared to the other top causes of disability (Yahaya et al. 2021, p. 1225).

Depression is a major global public-health issue and is projected to be the second leading cause of disease burden by the year 2020 (Rodda, Walker and Carter 2011, p. 686). A recently systematic review and meta-analysis recently reported that 19.9% of

people with OA had depressive symptoms, with a relative risk of depression of 1.17 in those with OA compared to those without (Stubbs et al. 2016, p. 230). However, depression is often under-recognised and under-treated in older adults, particularly in patients with OA. Furthermore, concomitant depression in OA patients contributes to increased difficulties in OA management and disease burden (Zheng et al. 2021, p. 5).

About 13% of women and 10% of men aged 60 years and older have symptomatic knee OA. The proportions of people affected with symptomatic knee OA is likely to increase due to the aging of the population and the rate of obesity or overweight in the general population (Heideri 2011, p. 206).

The economic costs of OA are high, including those related to treatment, for those individuals and their families who must adapt their lives and homes to the disease, and those due to lost work productivity (Altman 2010, p. 44).

Osteoarthritis, also referred to as joint pains, is a significant cause of disability and is the most common type of arthritis, affecting 10% of the global population aged 60 years and above (Jakiela, Waugh and White 2021, p. 157). The older population (aged 60 years) is projected to double and triple by 2050 and 2100, respectively. It is anticipated that osteoarthritis is primarily related to aging, becoming the leading cause of disability by 2030 (Jahan et al. 2017, p. 1140). The global prevalence of knee osteoarthritis was estimated to 22.9% in the population aged 40 and above (Cui et al. 2020, p. 3). Osteoarthritis is a prime contributor to the global disability burden and was ranked as the 15<sup>th</sup> highest cause of years lived with disability (YLDs) in the year 2019, causing a significant financial burden to the health system and societally. Osteoarthritis is comorbidity frequently exists with other non-communicable diseases like heart disease, diabetes, and mental health problems, resulting in further deterioration in the patient's quality of life (Hunter, March and Chew 2020, p. 1711).

Emerging evidence from Bangladesh reported a high prevalence of osteoarthritis and related illnesses among the older population in Bangladesh. One study reported that 12.1% of adults aged 60 and above have symptomatic knee osteoarthritis, and the prevalence of osteoarthritis in rural and urban slum and affluent urban communities are 7.5%, 9.2%, and 10.6%, respectively. Findings from the first national survey related to musculoskeletal conditions and related disabilities in Bangladeshi adults show that

30.4% of adults in Bangladesh have musculoskeletal conditions, 7.3% have knee arthritis, and among the adults with musculoskeletal conditions, 24.4% have some form of disabilities (Mistry et al. 2022, p. 3).

The majorities (80%) of patients with knee osteoarthritis have limitations in movement, and 25% cannot perform their major daily activities of life. Among the patients with osteoarthritis, knee involvement is more prevalent (Safiri et al. 2020, p. 822).

Central pain sensitivity plays an important role in pain severity among patients with knee OA, and psychosocial factors account for some of this variance in pain and other symptoms (Somers et al. 2009, p. 503). OA was demonstrated to be responsible for declined life satisfaction, and depression and anxiety were two major mood problems correlated. The level of disability experienced in patients with KOA showed to correlate more accurately with psychological involvement than with radiographic scores (Carotti et al. 2017, p. 935).

Recently, the importance of depressive symptoms in individuals with knee OA has gained increased recognition. Depressive symptoms are a major comorbidity in older adults with knee OA with prevalence rate of 20%, which is higher than the prevalence in the general US population. Depression symptoms have been suggested to be inversely associated with both knee pain and self-reported physical function. The importance of depressive symptoms in individuals with knee OA is further evidenced by the observation that treating depression in patients with knee OA reduces knee pain and improves self-reported physical function (Iijima et al. 2018, p. 4).

Osteoarthritis (OA) of the knee, a leading cause of pain and physical impairment (Vos et al. 2010, p. 2165). Recently, the importance of depressive symptoms in individuals with knee OA has gained increased recognition (Wilkie et al. 2013, p. 913).

Interestingly, individuals with depressive symptoms had a non-significant association with night pain. Greater knee pain at night causes poorer sleep quality at night and feeling less refreshed after sleep, which may exacerbate depressive symptoms (Iijima et al. 2018).

Osteoarthritis is the deterioration of the knee joints by having chronic and permanent articular cartilage damage. The destruction of the articular cartilage occurs slowly and continuously due to inappropriate postures or had an accident in the knee joint, the cartilage can cause the cartilage to rub against one another. This can results in pain,

swelling, stiffness, inflammation, decreased ability to move, and cause a deformity of the knee joint. OA knee is a chronic illness that occurred in the middle age to the elderly (Siripongpan and Sindhupakorn 2022, p. 2).

Prevalence of knee pain in OA knee around the Asian region ranged from 38.1% to 50.0% in the elderly. Knee pain is a common symptom in OA knee and caused disability. Pain depends on the experience of each patient, whether there is any by direct injury or by abnormal nerve impulses, psychological, personality factors, and expectations related to pain in the future. Pain cannot be identified when it occurs causing fear and anxiety (Wylde, Palmer and Learmonth 2013, p. 1254). Chronic illness also affects psychological. It causes several impacts such as affecting work due to structural changes in the knee joint so the difficulty in activities, walking, going up and down the stairs, which affects the quality of life (QoL) and increase the mortality rate. In the United States, economic loss commonly affects adults with arthritis, which is the main cause use of disability in the United States (Siripongpan and Sindhupakorn, 2022).

However age, the severity of osteoarthritis, and depression were correlated to the residential area. The patient lived in a rural area which is a semi-urban community with a good utility system, resulting in a QoL that was not different. Previous research found that there was no difference in each residential area in severity and quality of life. But there were differences between the gender in which females have a higher level of pain and severity (Alkan et al. 2014, p. 170).

Persons with mental disorders have a decreased life expectancy of approximately 10–15 years in comparison with the general population. Therefore, early interventions at the onset of mental disorders can greatly improve outcomes (Solmi et al. 2022, p. 285).

A 2021 study found that both aerobic and resistance exercise training have promising resulting in the treatment and management of mental health conditions, particularly depression and anxiety (Smith and Merwin 2021, p. 45) Recent research has shown that daily exertion ranging from low to high intensity exercise, physical activity, and or regular participation in recreational games can be used as part of the treatment of acute and chronic stress, depression and anxiety in the general population. This study found that aerobic exercises and walking



programmes are the most effective and most commonly used interventions for the treatment of psychological disorder (Dogra, Shukla and Bhattacharjee 2022, p. 2355).

Knee OA results in chronic pain and impaired joint function, significantly limiting the activities of ADL. Consequently, these patients experience a poorer health-related quality of life and are at higher risk of developing depression compared to the general population. It has been estimated that up to 20% of patients with knee OA may be suffering from depression (Nowinka et al. 2022, p. 3).

A longitudinal study conducted by Rathbun et al. (2018, p. 1456) found that depressive symptoms affected the physical functioning and pain severity of patients with knee OA. Another study showed that a persistently depressed mood significantly increases the severity of pain. Additionally, a bidirectional relationship between pain and depression in patients with knee OA has been described, where concurrent depression increases pain perception and, reciprocally, higher pain levels may lead to a more depressed state (Rathbun et al. 2018, p. 1452).

Obtaining adequate mental health support should be of primary importance, as the presence of depressive symptoms is a significant predictor of worsening outcomes. However, less than half of all patients affected by knee OA and concurrent depression actively seek support or receive adequate treatment. Unfortunately, poor mental health is frequently overlooked by clinicians, who focus primarily on the physical aspects of knee OA and so fail to recognize depression or its role in contributing to persisting knee symptoms (Nowinka et al. 2022, p. 2).

Recently, the importance of major depression, depressive symptoms and anxiety among people with osteoarthritis has gained increasing recognition. Depressive symptoms were highlighted as a potential barrier to physical activity for people with osteoarthritis in a recent systematic review. This is important as physical activity has been demonstrated to reduce pain and disability in this population. Gleicher et al. (2011, p. 4) reported that among a cohort of over 2,000 individuals with probable osteoarthritis, 29% had probable depression yet almost half did not receive any mental healthcare support. This is despite a recent evidence suggesting that cognitive behavioral therapy,

exercise and integrated depression management may improve outcomes for those with osteoarthritis and co-morbid depression (Stubbs et al. 2016, p. 230).

Depression may be dangerous to one's health, especially if it is recurring and of moderate or severe degree. It can make the individual who is affected suffer severely and perform poorly at job, school, and in the family. Depression can lead to suicide in the worst-case scenario (Mahboobi et al. 2020, p. 3).

Anxiety is a sensation of tension accompanied by concerned thoughts and bodily changes such as elevated blood pressure. It's fairly unusual for someone suffering from anxiety to also be depressed, or vice versa. Anxiety disorders are found in nearly half of people diagnosed with depression. According to the World Health Organization (WHO), one in every thirteen people worldwide suffers from anxiety. As per the WHO, anxiety disorders are the most frequent mental disorders globally, with the most common anxiety disorders being specific phobia, major depressive disorder, and social phobia (WHO, 2021).

### **3.1 Study design**

A cross-sectional study design was performed with structured questionnaires and interviews were conducted with persons having knee Osteoarthritis. This study design was appropriate to find out the objectives. For this reason, the type study was chosen Cross-sectional study. In the case of the cross-sectional study, the most important advantage was it needs less time and it is also cheap as there was no follow up, fewer resources required running the study (Nagendrababu et al., 2020).

The purpose of quantitative research is theory testing to establish facts, show causal explanations and relationships between variables, allow prediction. Quantitative research designs are predetermined and structured and do not change during the study. Quantitative research studies answered specific research questions by producing statistical evidence to prove a point. A Quantitative design, a cross sectional study was conducted for identify the level of Psychological stress among knee OA patients attended at CRP, Savar. The researcher will try to identify the correlation between the dependent variable and independent variable. To find these questions answer cross sectional study is the best to collect information from large data.

### **3.2 Study site**

The researcher collected data from the Musculoskeletal Unit, Department of Physiotherapy, CRP, Savar. Researcher explained every participant about the research aim and objectives. Researcher had taken sampling from those who willingly participated in this research.

### **3.3 Study population**

A population refers to the members of a clearly defined set or class of people, objects or events that are the focus of the investigation. The criteria of study populations were determined from a literature review and the goals for the study. Selection criteria were

established gradually, as the assumptions and theoretical base of the study unfold. The study populations were the patients who were diagnosed with knee OA.

### 3.4 Sample size

It is very difficult to establishing the best size of sample since this decision depends very largely on the investigator which is being undertaken. Statistical studies are always better when they are carefully planned. In the study, sample must be adequate in size, relative to the goals of the study. Study sample must be “big enough” that an effect of such magnitude as to be of scientific significance will also be statistically significant.

In a cross-sectional research with a finite sample frame, the equation for finite population correction is:

$$\begin{aligned}n &= \frac{z^2}{d^2} \times pq \\&= \frac{(1.96 \times 1.96) \times 0.073 \times 0.927}{(0.05 \times 0.05)} \\&= \frac{0.2599649136}{0.0025} \\&= 103\end{aligned}$$

Here,

Sample size = n

Confidence interval, Z = 1.96

Prevalence of depression, p = 0.073 (Haider et al., 2022)

Expected non-prevalence, q = (1-p)

$$= (1 - 0.073)$$

$$= 0.927$$

Margin of error, d = 0.05

Due to limitation of the study time duration 80 sample was collected among 103.

### **3.5 Duration of data collection**

Data was collected from 4<sup>th</sup> May- 28<sup>th</sup> July, 2023.

### **3.6 Sampling technique**

Convenience sampling technique is used for easy to access a particular subset of people from large population. The samples were collected based on some inclusion and exclusion criteria. 80 participants with knee OA were selected through purposive sampling technique from musculoskeletal Physiotherapy unit of CRP. Participants were selected from CRP because they were easily accessible for the researcher. Purposive sampling targets a particular group of people. The samples were collected on the basis of some inclusion and exclusion criteria.

#### **3.6 Inclusion criteria**

1. Patients with knee osteoarthritis who were attending in CRP
2. Both male and female were included
3. Subjects who were willing to participate

#### **3.7 Exclusion criteria**

1. Patients who were medically unstable
2. Inability to walk without assistive device
3. Any history of pathological condition (malignancy, heart disease etc.)
4. Patients were excluded if they had neurological, vestibular, fracture of the lower extremity, rheumatoid arthritis.

### **3.8 Data collection tools**

The tools that were needed for the study were the Bengali Consent form and questionnaire and other necessary materials that were pen, pencil, eraser, clipboard, white paper, and notebook.

### **3.9 Measurement tools**

DASS-21 scale: Each question has a number 0, 1, 2, or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree or a good part of the time
- 3 Applied to me very much or most of the time

Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, selfdeprecation, and lack of interest/involvement, anhedonia, and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable / over-reactive, and impatient. Scores for depression, anxiety, and stress are calculated by summing the scores for the relevant items.

The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder. The assumption on which the DASS-21 development was based (and which was confirmed by the research data) is that the differences between the depression, anxiety, and the stress experienced by normal subjects and clinical populations are essentially differences of degree. The DASS-21, therefore, has no direct implications for the allocation of patients to discrete diagnostic categories postulated in classificatory systems such as the DSM and ICD.

### **3.10 Data analysis procedure**

Data were analyzed with the software named Statistical Package for Social Science (SPSS) version 22.0 and Microsoft Excel 2016. Every questionnaire was rechecked for missing information or unclear information. 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 the data view of SPSS. After

inputting all data researcher checked the inputted data to ensure that all data had been accurately transcribed from the questionnaire sheet to the SPSS data view. Then the raw data was ready for analysis in SPSS.

### **3.11 Level of Significance**

To find out the significance of the study, the “p” value was calculated. A p-value of  $<0.05$  was accepted as the significant result for health service research. If the p-value is equal to or smaller than the significant level, the results are said to be significant.

### **3.12 Ethical consideration**

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines, Institution Review Board (IRB), BHPI, CRP, Savar, Dhaka, and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology was approved by Institutional Review Board and obtained permission from the concerned authority of the ethical committee of Bangladesh Health Professions Institute (BHPI). Informed consent was used to take permission from all participants.

Participants’ rights and privileges were ensured. All the participants were aware of the aim and objectives of the study. Findings of the study were disseminated with the approval of regarding authority. The researcher strictly maintained the confidentiality regarding participant’s condition and treatment.

For the purpose of this research, a total of 80 participants who had Knee OA patients were questioned. The result of this investigation are summarized in the following paragraphs. Data were analyzed by descriptive statistics and computed through percentages then submitted by tables, bar chart and pie chart.

#### 4.1 Socio-demographic profile of the participants

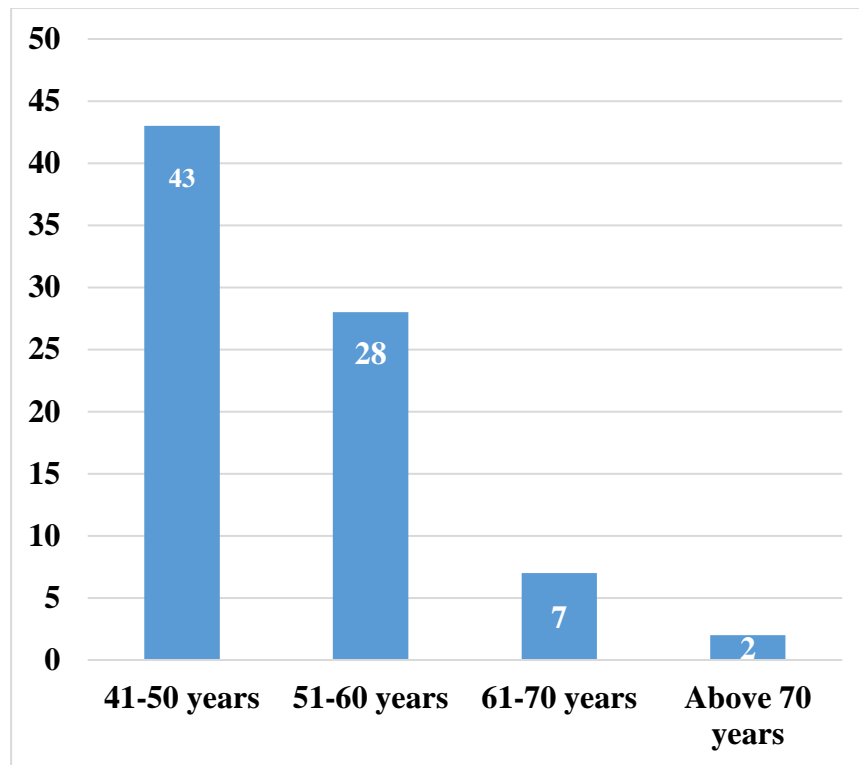
Out of the 80 participants, the minimum age 45 years, maximum age is above 70 years, the mean and standard deviation is  $52.31 \pm 7.127$ .

| Variable           | Trait            | Frequency | Percent age (%) |
|--------------------|------------------|-----------|-----------------|
| Age                | 41-50 years      | 43        | 53.8            |
|                    | 51-60 years      | 28        | 35.0            |
|                    | 61-70 years      | 7         | 8.8             |
|                    | >70 years        | 2         | 2.5             |
| Gender             | Male             | 22        | 27.5            |
|                    | Female           | 58        | 72.5            |
| Marital status     | Married          | 68        | 85              |
|                    | Divorced         | 6         | 7.5             |
|                    | Widow            | 6         | 7.5             |
| Educational status | Illiterate       | 17        | 21.3            |
|                    | Primary          | 46        | 57.5            |
|                    | S.S.C.           | 11        | 13.8            |
|                    | H.S.C.           | 2         | 2.5             |
|                    | Honors           | 2         | 2.5             |
|                    | Masters or above | 2         | 2.5             |



|                      |                 |    |      |
|----------------------|-----------------|----|------|
| Family type          | Nuclear family  | 64 | 80   |
|                      | Extended family | 16 | 20   |
| Living area          | Rural           | 42 | 52.5 |
|                      | Urban           | 38 | 47.5 |
| Occupation           | Office worker   | 6  | 7.5  |
|                      | Labourer        | 9  | 11.3 |
|                      | Driver          | 9  | 11.3 |
|                      | Housewife       | 49 | 61.3 |
|                      | Unemployed      | 4  | 5.0  |
|                      | Retired         | 3  | 3.8  |
| Family income (Taka) | 10000-20000     | 34 | 42.5 |
|                      | 21000-30000     | 28 | 35.0 |
|                      | 31000-40000     | 12 | 15.0 |
|                      | 41000-50000     | 4  | 5    |
|                      | >50000          | 2  | 2.5  |

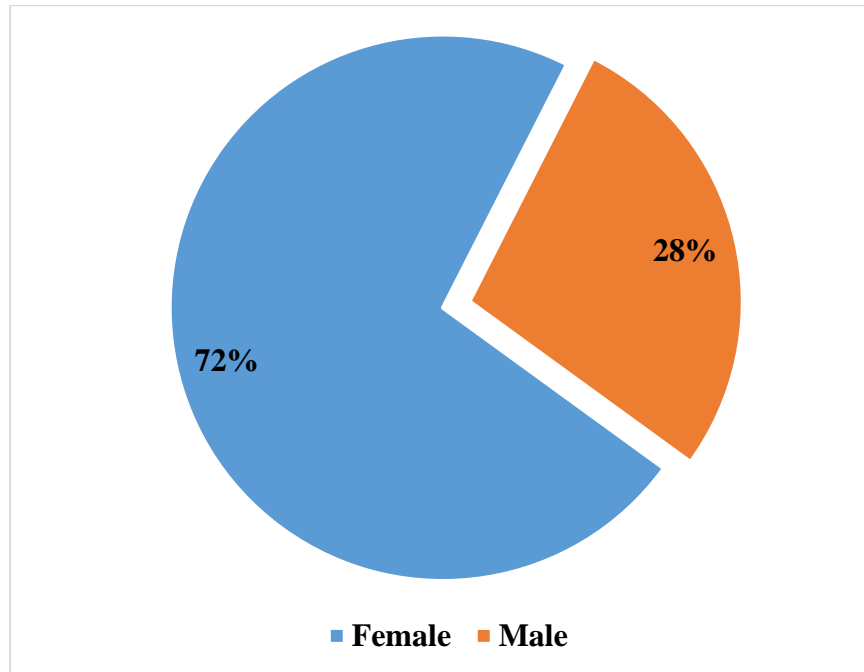
#### 4.1.1 Age of the participants



**Figure 1: Age group of the participants**

Among the 80 participants, maximum patients was between the 41-50 and 51-60 age range. In the age group 41-50 were 53.8% (n=43), age group 51-60 were 35% (n=28), age group 62-70 were 8.8% (n=7), age group more than 70 were 2.5 % (n=2).

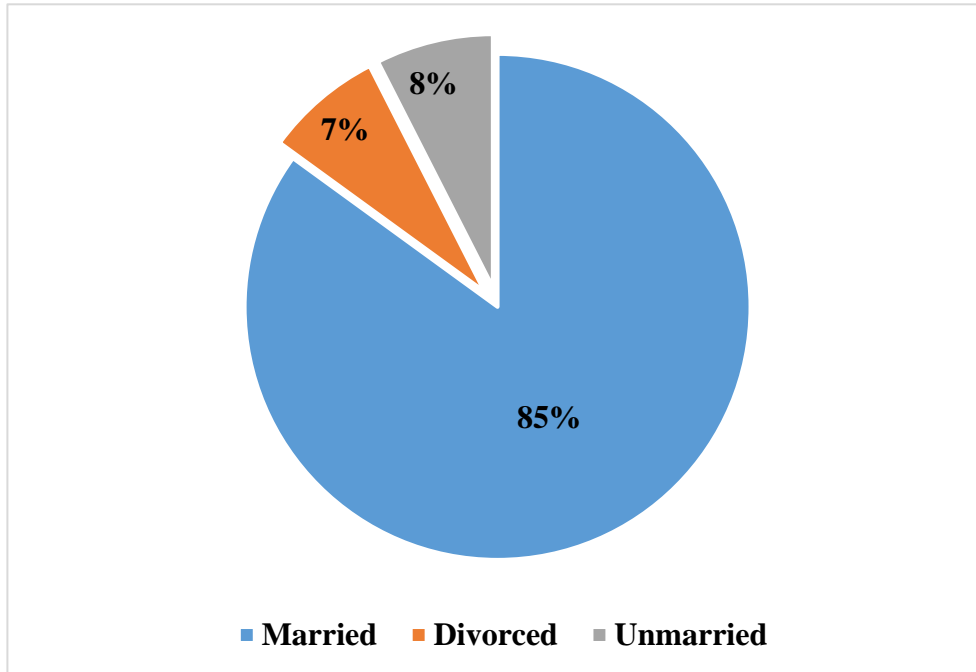
#### 4.1.2 Gender of the participants



**Figure 2: Gender of the participants**

Among the 80 participants, female are about 72.5% (n=58) and the rest of the participants were males, which was about 27.5% (n=22).

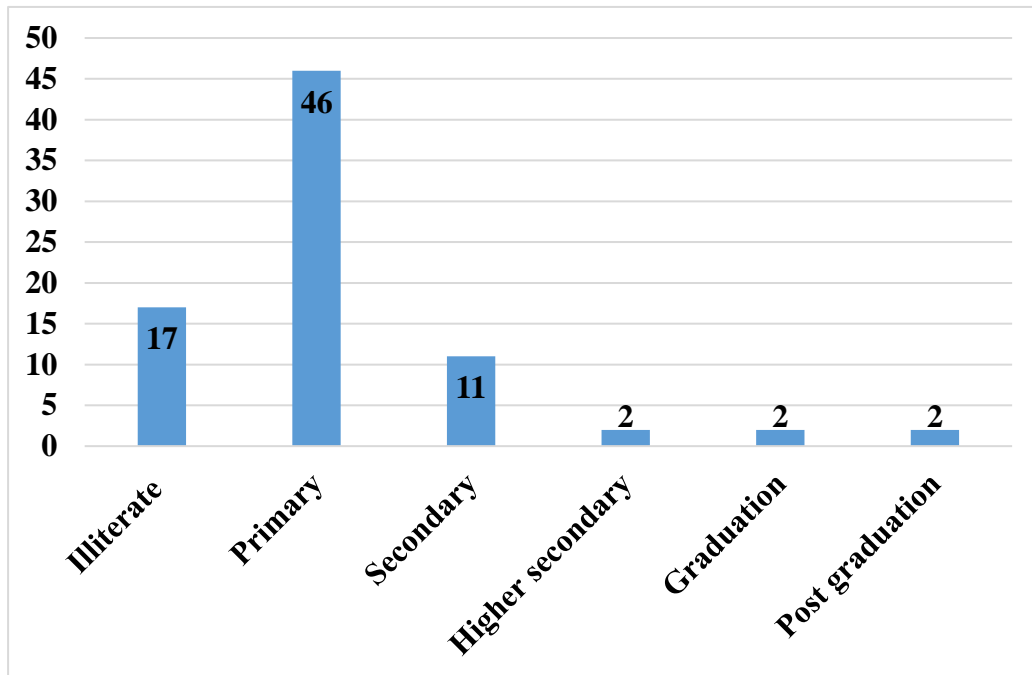
### 4.1.3. Marital status of the participants



**Figure 3: Marital status of the participants**

Among the 80 participants, 85% (n=68) were married and 7.5% (n=6) were divorced and 7.5% (n=6) were widow.

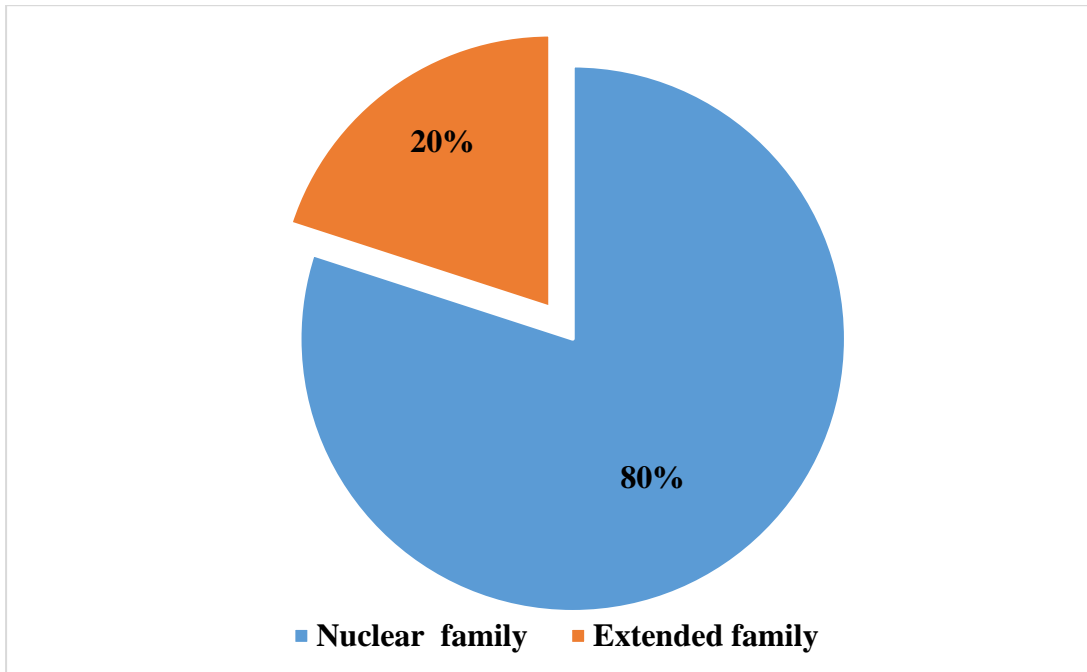
#### 4.1.4 Educational status of the participants



**Figure 4: Educational status of the participants**

Among the 80 participants Higher secondary graduation and post-graduation participants were the lowest rate, at 2.5% (n=2). Primary passed was the highest at 57.5% (n=46). Secondary passed were 13.8% (n=11) and 21.3% (n=46) participants were illiterate.

#### 4.1.5 Family type



**Figure 5: Family type of the participants**

Among the 80 participants nuclear family was 80% (n=64) and extended family was 20% (n=16).

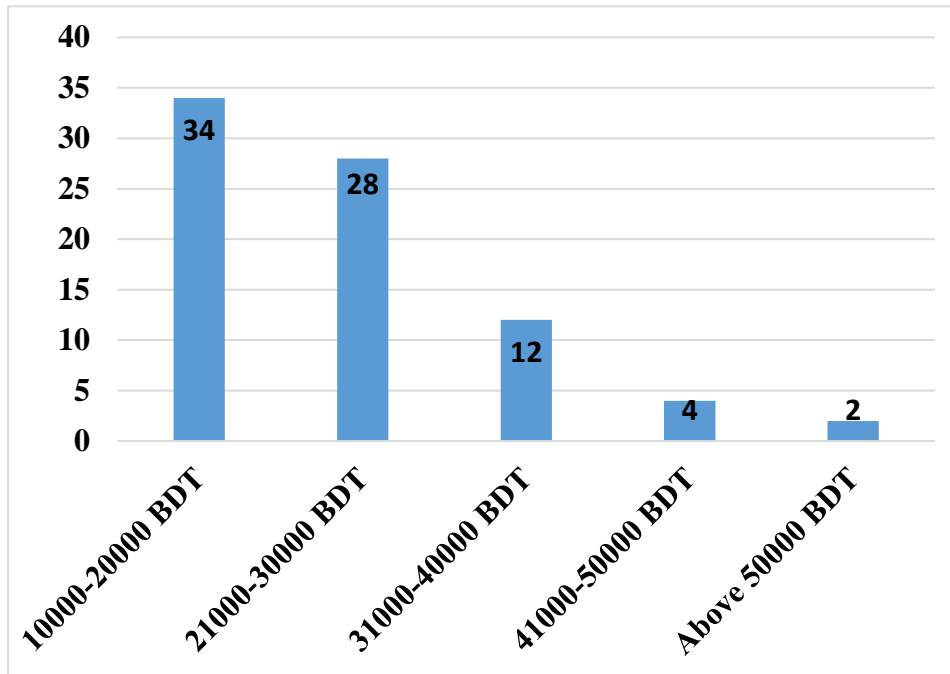
#### 4.1.6. Occupation of the participants

Among the 80 participants most of them were housewife 58.8% (n=47), 10% (n=8) were labourer, Office worker were 7.5% (n=6), Driver were 8.8% (n=7), unemployed were 6.3% (n=5), 3.8% (n=3) were retired from their work and garment worker were 5.0% (n=4).

| <b>Occupation</b> | <b>n</b> | <b>Percentage</b> |
|-------------------|----------|-------------------|
| Office worker     | 6        | 7.5               |
| Labourer          | 8        | 10.0              |
| Driver            | 7        | 8.8               |
| Housewife         | 47       | 58.8              |
| Unemployed        | 5        | 6.3               |
| Retired           | 3        | 3.8               |
| Garments worker   | 4        | 5.0               |

**Table 4: Occupation of the participants**

#### 4.1.7 Family income of the participants



**Figure 6: Family income of the participants**

Among the 80 participants highest income range was 42.5% (n=34)10k-20k, 35% (n=28) were range between 21k-30k, 15% (n=12) were range between 31k-40k, About 5% (n=4) were in between 41-50k, 3% (n=2) were above 50k.

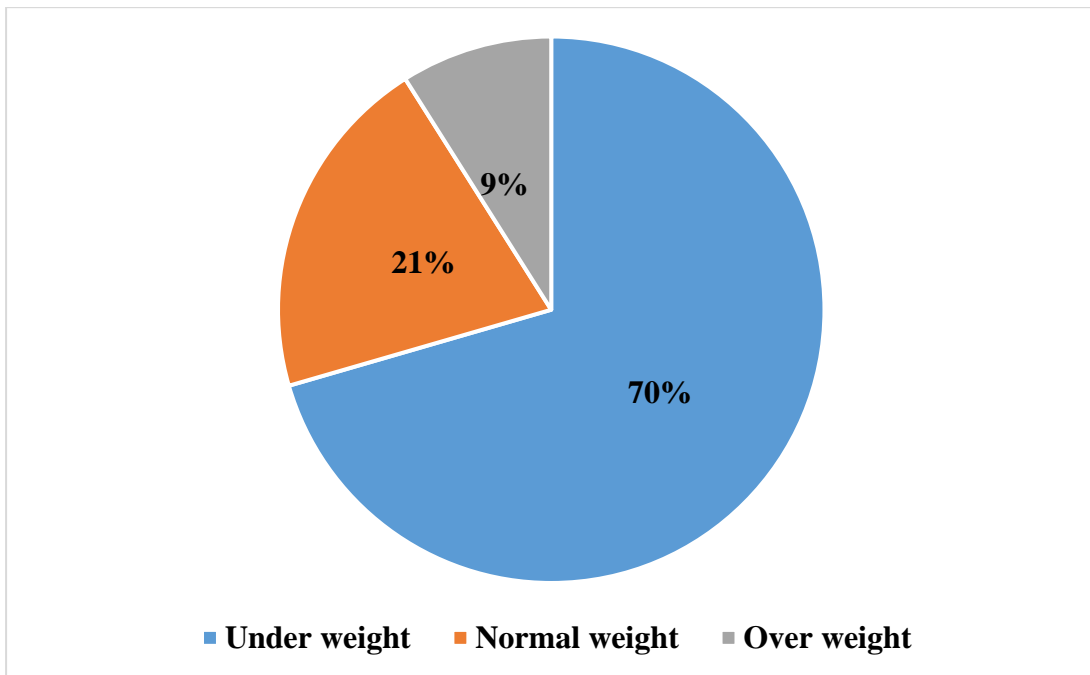


#### 4.2 Knee OA related information of the participants

| Variable                            | Traits            | Frequency | Percent age (%) |
|-------------------------------------|-------------------|-----------|-----------------|
| Patients BMI (Weight/Kg2)           | Under weight      | 11        | 13.8            |
|                                     | Normal weight     | 13        | 41.3            |
|                                     | Over weight       | 36        | 45.0            |
| Number of involvement of knee joint | Right             | 23        | 28.7            |
|                                     | Left              | 27        | 33.8            |
|                                     | Both              | 30        | 37.5            |
| Pain at stair climbing              | Yes               | 51        | 63.7            |
|                                     | No                | 29        | 36.3            |
| Pain at rest                        | Yes               | 48        | 60              |
|                                     | No                | 32        | 40              |
| Co-morbidities                      | Diabetes mellitus | 28        | 35              |
|                                     | Hypertension      | 20        | 25              |
|                                     | Asthma            | 4         | 5               |
|                                     | Kidney disorder   | 4         | 5               |
|                                     | Thyroid disorder  | 6         | 7.5             |
|                                     | None of the above | 18        | 22.5            |
| Physiotherapy treatment outcome     | Improve           | 38        | 47.5            |
|                                     | Not improve       | 19        | 23.8            |

|           |           |    |      |
|-----------|-----------|----|------|
|           | No change | 21 | 26.3 |
|           | Not taken | 2  | 2.5  |
| VAS score | Mild      | 15 | 18.8 |
|           | Moderate  | 46 | 57.5 |
|           | Severe    | 19 | 23.8 |

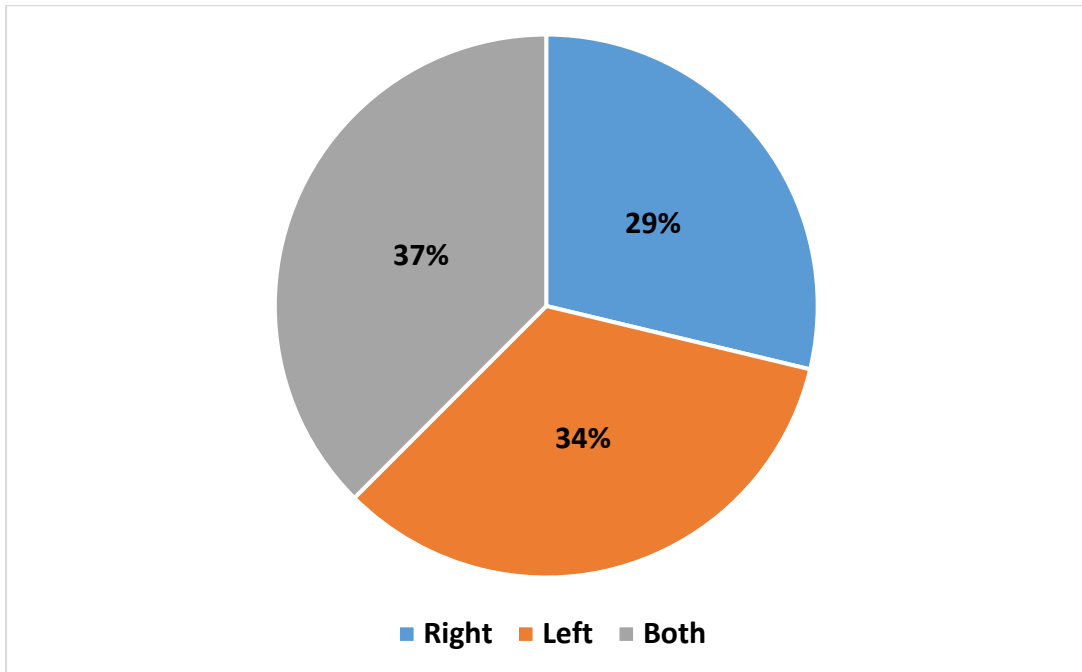
#### 4.2.1 BMI of the participants



**Figure 7: BMI of participants**

Among the 80 participants 13.8% (n=11) were under weight, 41.3% (n=33) were normal weight and rest of the participants were over weight 45% (n=36).

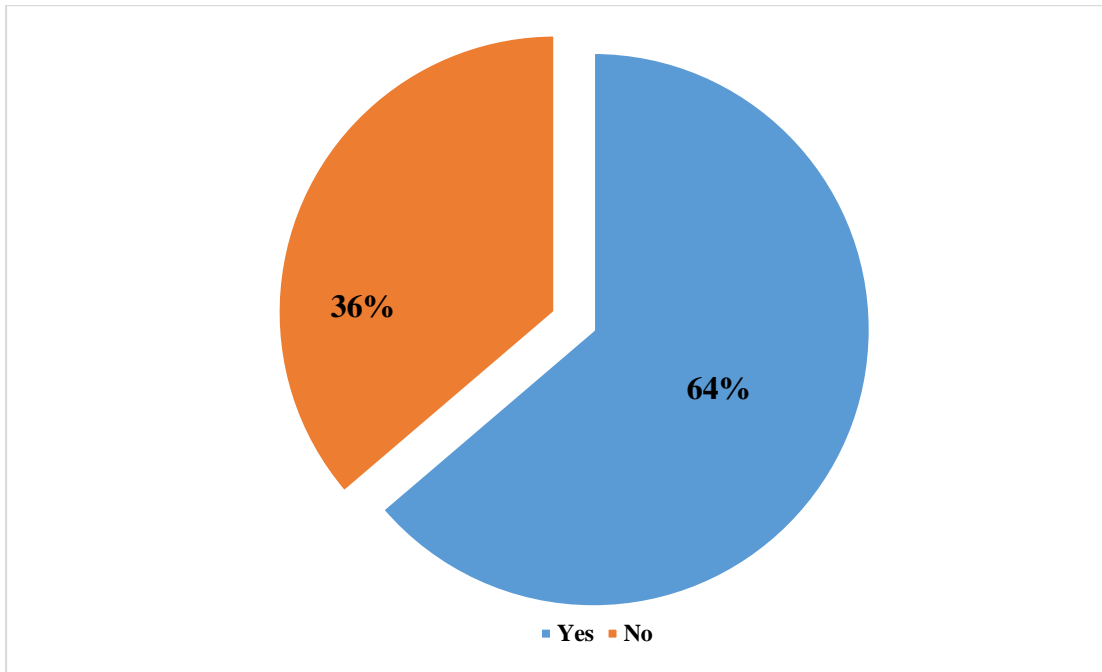
#### 4.2.2 Involvement of knee joint of the participants



**Figure 8: Knee joint involvement of the participants**

Among the 80 participants Right knee joint involvement were 28.7% (n=23), Left knee joint involvement were 33.8% (n=27) and both knee joint involvement were 37.5% (n=30).

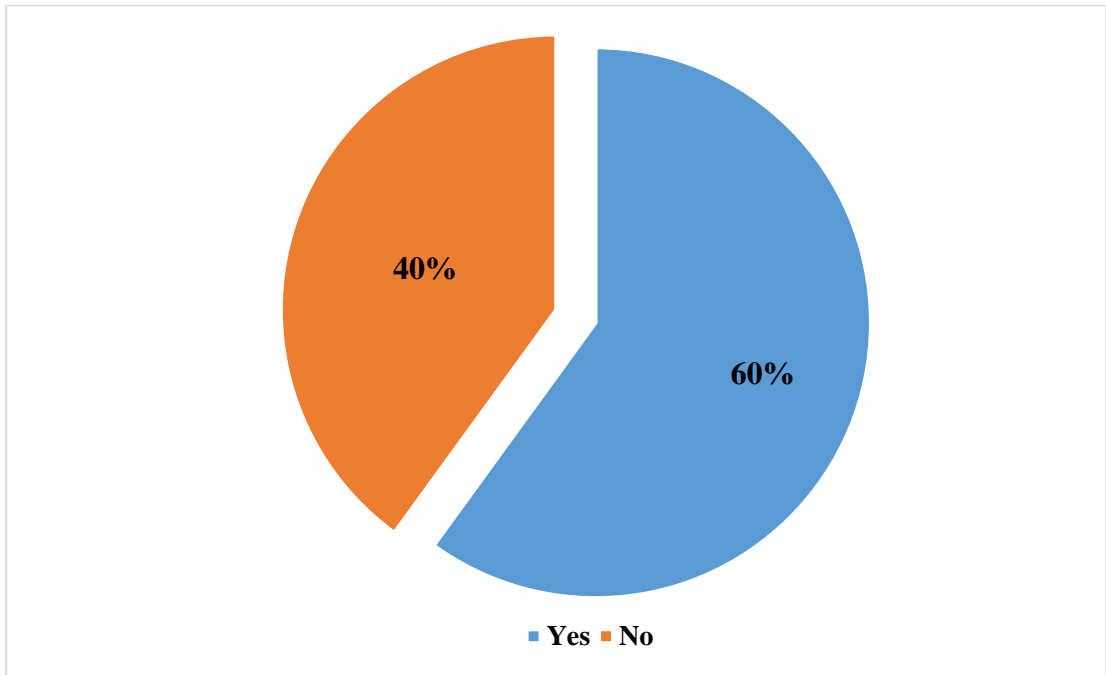
### 4.2.3 Pain during stair climbing



**Figure 9: Pain at stair climbing**

Among 80 participants 64% (n=51) participants feel pain in stair climbing and rest of the participants 36% (n=29) don't feel pain.

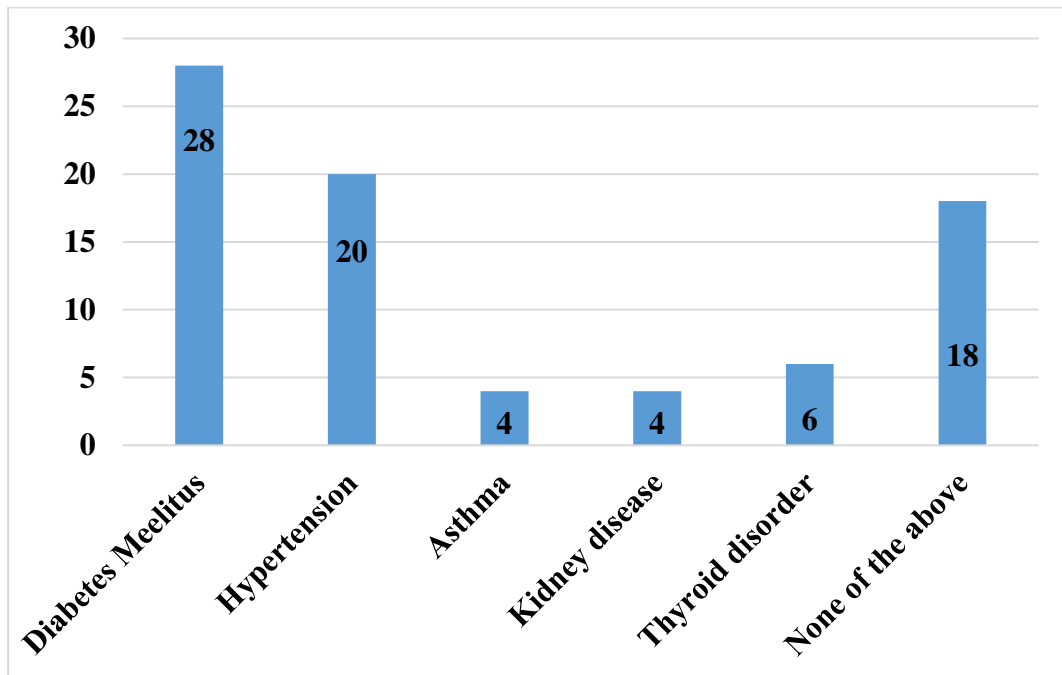
#### 4.2.4 Pain during rest



**Figure 10: Pain at rest of the participants**

Among 80 participants 60% (n=48) participants feel pain at rest and rest of the participants 40% (n=32) don't feel pain.

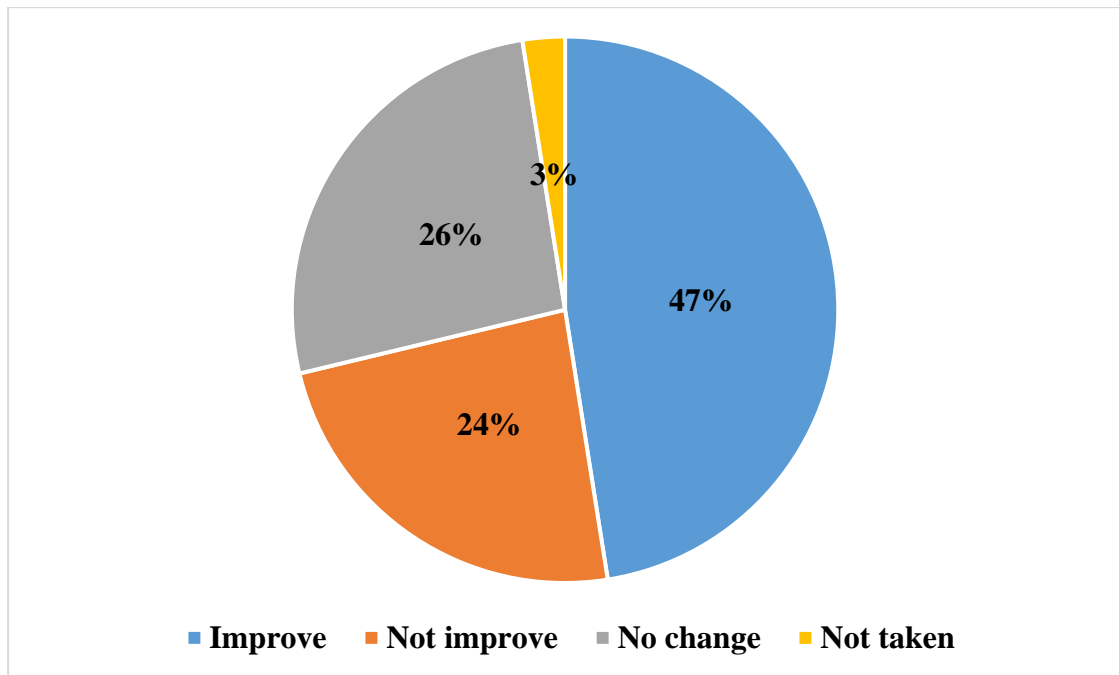
#### 4.2.5 Co-morbidities of the participants



**Figure 11: Co-morbidities of the participants**

Among 80 participants most of the participants had Diabetes mellitus 35% (n=28), Asthma and kidney disease were 5% (n=4) which were the least. Others co-morbidities such as hypertension were 25% (n=20), thyroid disorder were 8% (n=6) and 23% (n=18) had no co-morbidities.

#### 4.2.6 Physiotherapy treatment outcome

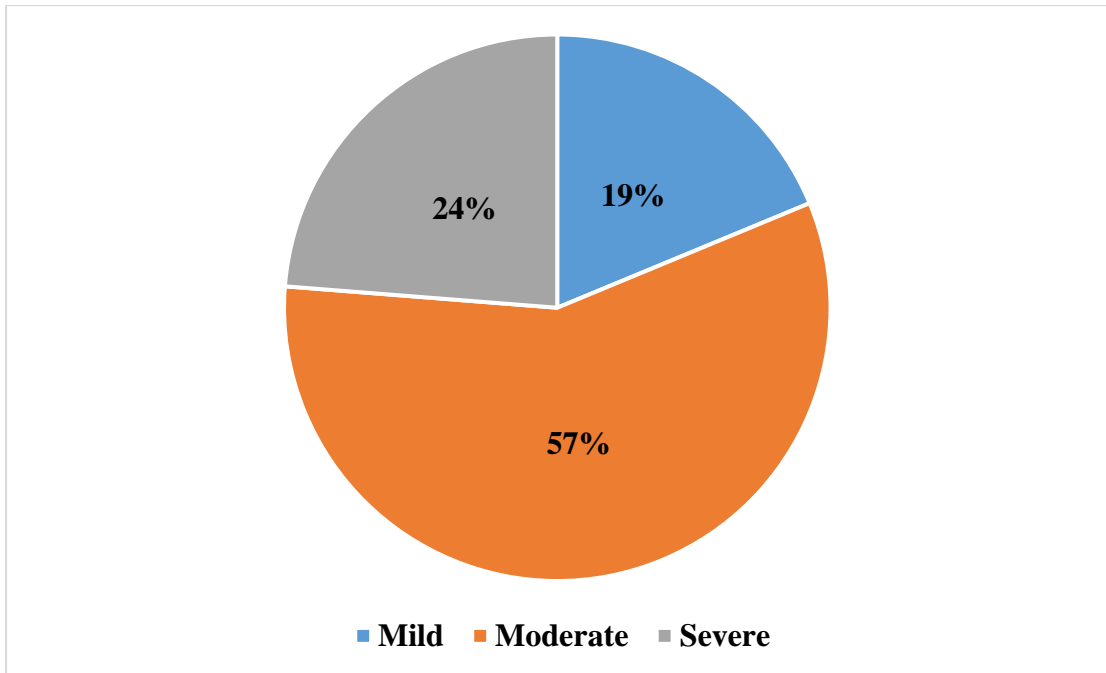


**Figure 12: Outcome of Physiotherapy treatment**

Among 80 participants Physiotherapy treatment outcome was improve 48% (n=38), 24% (n=19) was not improve, 26% (n=21) was no change and 3% (n=2) didn't take physiotherapy treatment.



#### 4.2.7 VAS score of the participants



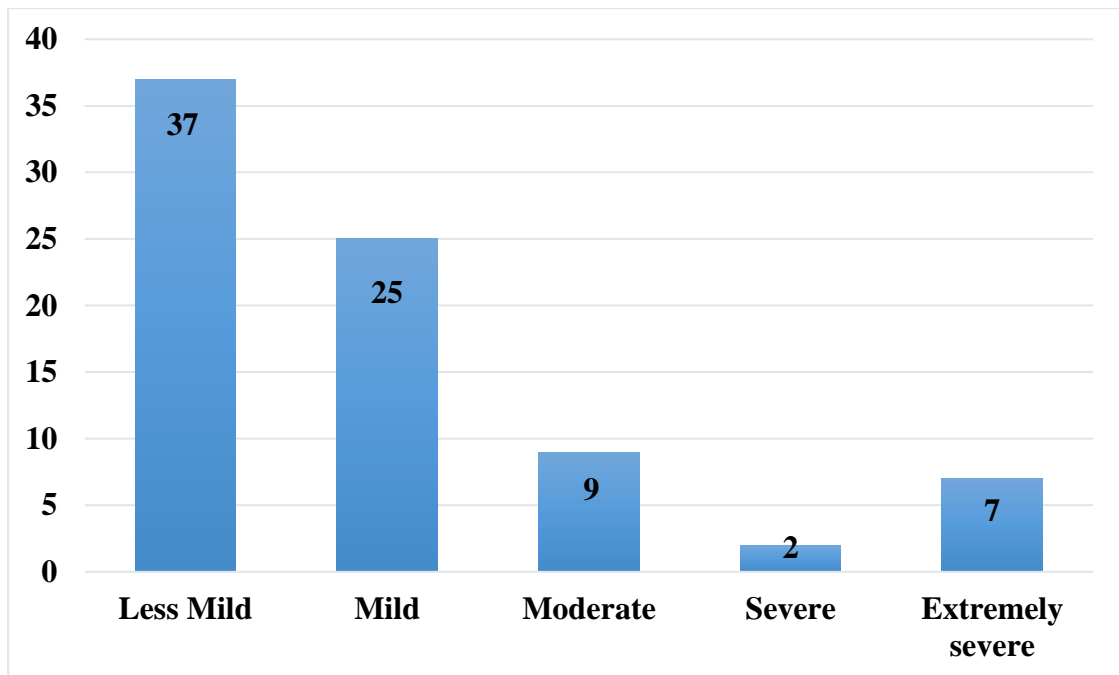
**Figure 13: VAS score of the participants**

Pain severity among 80 participants, 19% (n=15) participants had mild pain, 58% (n=48) participants had mild pain, 24% (n=19) participants had severe pain.

### 4.3 DASS-21 scale

| <b>Variable</b>   | <b>Trait</b>     | <b>Frequency</b> | <b>Percentage (%)</b> |
|-------------------|------------------|------------------|-----------------------|
| <b>Depression</b> | Less mild        | 37               | 46.3                  |
|                   | Mild             | 25               | 31.3                  |
|                   | Moderate         | 9                | 11.3                  |
|                   | Severe           | 2                | 2.5                   |
|                   | Extremely severe | 7                | 8.8                   |
| <b>Anxiety</b>    | Less mild        | 23               | 28.7                  |
|                   | Mild             | 14               | 17.5                  |
|                   | Moderate         | 31               | 38.8                  |
|                   | Severe           | 3                | 3.8                   |
|                   | Extremely severe | 9                | 11.3                  |
| <b>Stress</b>     | Less mild        | 62               | 77.5                  |
|                   | Mild             | 9                | 11.3                  |
|                   | Moderate         | 2                | 2.5                   |
|                   | Severe           | 3                | 3.8                   |
|                   | Extremely severe | 4                | 5.0                   |

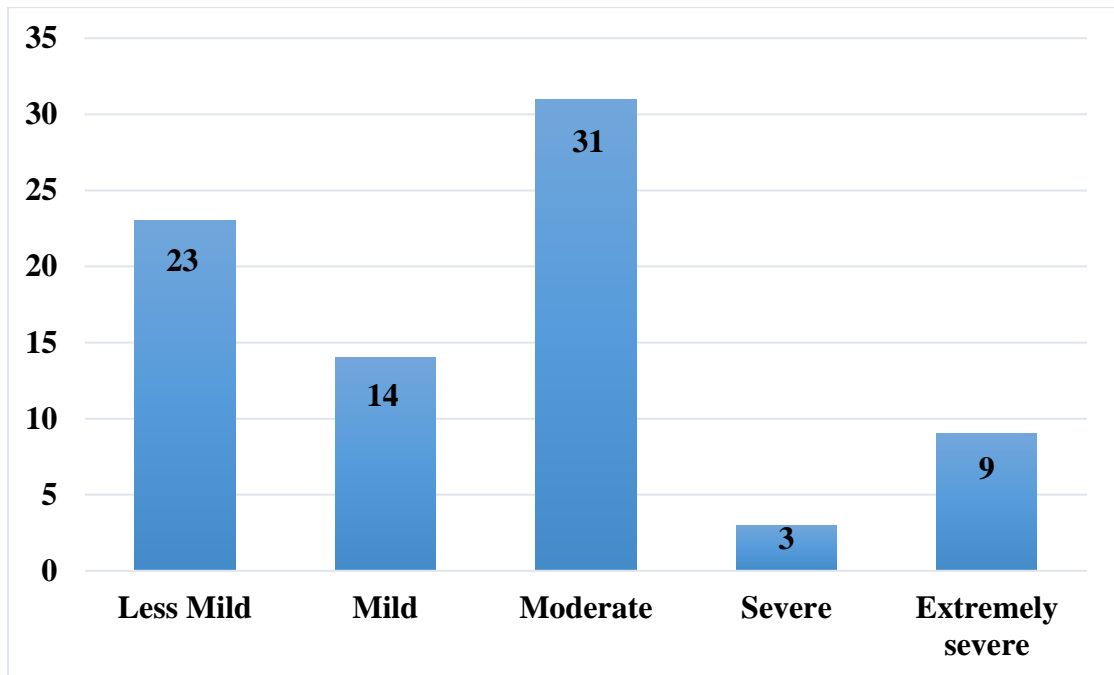
#### 4.3.1 Depression level of the participants



**Figure 14: Depression level of the participants**

Among 80 participants, 46% (n=37) had less mild depression, 31% (n=25) had mild depression, 11% (n=9) had moderate depression, 3% (n=2) had severe depression and extremely depression participants were 9% (n=7).

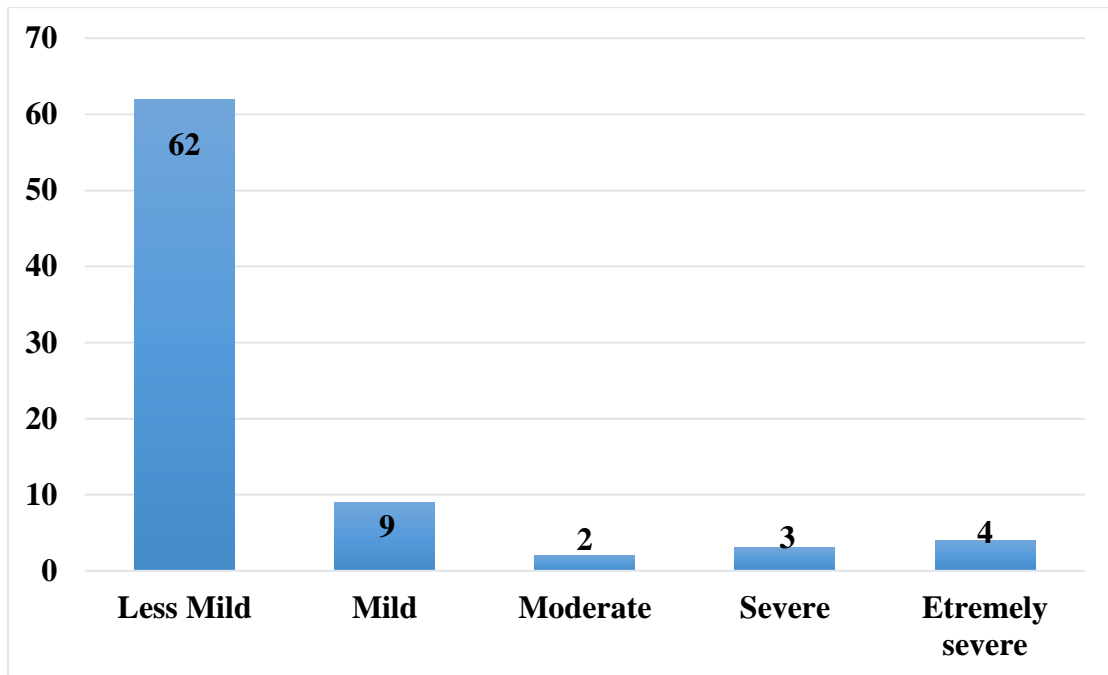
### 4.3.2 Anxiety level of the participants



**Figure 15: Anxiety level of the participants**

Among 80 participants, 29% (n=23) had less mild depression, 18% (n=14) had mild depression, 39% (n=31) had moderate depression, 4% (n=3) had severe depression and extremely depression participants were 11% (n=9).

### 4.3.3 Stress level of the participants



**Figure 16: Stress level of the participants**

Among 80 participants, 77% (n=62) had less mild depression, 11% (n=9) had mild depression, 3% (n=2) had moderate depression, 4% (n=3) had severe depression and extremely depression participants were 5% (n=4).

#### **4.4 Association between depression and socio-demographic and Knee OA related variables of the participants:**

After correlations between depression and socio-demographic and knee OA related variables among the 80 participants P-value of Educational status, Occupation, Family income, Physiotherapy treatment outcome are less than 0.05 which means this are significant with depression. We can say that Educational status, Occupation, Family income, Physiotherapy treatment outcome variables are correlated with depression. And the Age, Gender, Marital status, Family type, Living area, Family member, Earning member, Patients BMI, Number of involvement of knee joint, Pain during stair climbing, Pain at rest, Co-morbidities has P value more than 0.05 which are not significant with depression. That's mean there is no correlation between Age, Gender, Marital status, Family type, Living area, Family member, Earning member, Patients BMI, Number of involvement of knee joint, Pain during stair climbing, Pain at rest, Co-morbidities with Depression.

| <b>Dependent Variable: Depression</b>      |                  |                   |                |                      |
|--|------------------|-------------------|----------------|----------------------|
| <b>Independent Variable</b>                | <b>Test Name</b> | <b>Test Value</b> | <b>p-Value</b> | <b>Significances</b> |
| <b>Age category</b>                        | Chi-square       | 42.304            | 0.330          | Non Significance     |
| <b>Gender</b>                              | Chi-square       | 19.915            | 0.095          | Non Significance     |
| <b>Marital status</b>                      | Chi-square       | 22.580            | 0.657          | Non Significance     |
| <b>Educational status</b>                  | Chi-square Test  | 91.552            | 0.017          | Significance*        |
| <b>Family type</b>                         | Chi-square Test  | 8.344             | 0.820          | Non Significance     |
| <b>Living area</b>                         | Chi-square Test  | 14.565            | 0.335          | Non Significance     |
| <b>Occupation</b>                          | Chi-square Test  | 111.006           | 0.008          | Significance         |
| <b>Earning member</b>                      | Chi-square       | 68.608            | 0.962          | Non Significance     |
| <b>Family income</b>                       | Chi-square Test  | 72.208            | 0.033          | Significance*        |
| <b>Patients BMI</b>                        | Chi-square       | 18.697            | 0.849          | Non Significance     |
| <b>Number of involvement of knee joint</b> | Chi-square       | 27.728            | 0.372          | Non Significance     |
| <b>Pain at stair climbing</b>              | Chi-square       | 17.230            | 0.189          | Non Significance     |
| <b>Pain at rest</b>                        | Chi-square       | 15.644            | 0.269          | Non Significance     |
| <b>Co-morbidities</b>                      | Chi-square Test  | 65.428            | 0.462          | Non Significance     |
| <b>Physiotherapy treatment outcome</b>     | Chi-square test  | 65.784            | 0.496          | Non Significance     |

\* $\leq 0.05$ ; \*\* $\leq 0.01$ ; \*\*\* $\leq 0.001$ ;

**Table 7: Association between Depression and socio-demographic and knee OA related variables of the participants**

#### **4.5 Association between anxiety and socio-demographic and Knee OA related variables of the participants:**

After correlations between Anxiety and socio-demographic and knee OA related variables among the 80 participants P-value of Educational status, Earning member, Family income, are less than 0.05 which means this are significant with Anxiety. We can say that Educational status, Earning member, Family income are correlated with Anxiety. And the Age, Gender, Marital status, Family type, Living area, Occupation, Family member, Patients BMI, Number of involvement of knee joint, Pain during stair climbing, Pain at rest, Physiotherapy treatment outcome, Co-morbidities has P value more than 0.05 which are not significant with Anxiety. That's mean there is no correlation between Age, Gender, Marital status, Family type, Living area, Occupation, Family member, Patients BMI, Number of involvement of knee joint, Pain during stair climbing, Pain at rest, Physiotherapy treatment outcome, Co-morbidities with Anxiety.



| <b>Dependent Variable: Anxiety</b>         |                  |                   |                |                      |
|--|------------------|-------------------|----------------|----------------------|
| <b>Independent Variable</b>                | <b>Test Name</b> | <b>Test Value</b> | <b>p-Value</b> | <b>Significances</b> |
| <b>Age category</b>                        | Chi-square Test  | 31.729            | 0.876          | Non Significance     |
| <b>Gender</b>                              | Chi-square test  | 15.715            | 0.331          | Non Significance     |
| <b>Marital status</b>                      | Chi-square       | 13.905            | 0.988          | Non Significance     |
| <b>Educational status</b>                  | Chi-square Test  | 92.498            | 0.037          | Significance*        |
| <b>Family type</b>                         | Chi-square Test  | 8.708             | 0.849          | Non Significance     |
| <b>Living area</b>                         | Chi-square Test  | 13.272            | 0.505          | Non Significance     |
| <b>Occupation</b>                          | Chi-square Test  | 97.828            | 0.144          | Non Significance     |
| <b>Earning member</b>                      | Chi-square       | 107.389           | 0.243          | Non Significance     |
| <b>Family income</b>                       | Chu-square Test  | 289.163           | 0.000          | Significance**<br>*  |
| <b>Patients BMI</b>                        | Chi-square       | 29.529            | 0.386          | Non Significance     |
| <b>Number of involvement of knee joint</b> | Chi-square       | 37.984            | 0.099          | Non Significance     |
| <b>Pain at stair climbing</b>              | Chi-square       | 13.455            | 0.491          | Non Significance     |
| <b>Pain at rest</b>                        | Chi-square       | 11.255            | 0.666          | Non Significance     |
| <b>Co-morbidities</b>                      | Chi-square Test  | 86.613            | 0.087          | Non Significance     |
| <b>Physiotherapy treatment outcome</b>     | Chi-square       | 41.531            | 0.491          | Non Significance     |

\* $\leq 0.05$ ; \*\* $\leq 0.01$ ; \*\*\* $\leq 0.001$ ;

**Table 8: Association between anxiety and socio-demographic and Knee OA related variables of the participants**

#### **4.5 Association between Stress and socio-demographic and Knee OA related variables of the participants:**

After correlations between Stress and socio-demographic and knee OA related variables among the 80 participants P-value of Gender, Educational status, Occupation, Family member, Earning member, Number of involvement of knee joint, Family income are less than 0.05 which means this are significant with Stress. We can say that Age, Educational status, Occupation, Family member, Earning member, Number of involvement of knee joint, Family income are correlated with stress. And the Age, Marital status, Family type, Living area, Patients BMI, Pain during stair climbing, Pain at rest, Physiotherapy treatment outcome, Co-morbidities has P value more than 0.05 which are not significant with Stress. That's mean there is no correlation between Age, Marital status, Family type, Living area, Patients BMI, Pain during stair climbing, Pain at rest, Physiotherapy treatment outcome, Co-morbidities with Stress.

| <b>Dependent Variable: Stress</b>          |                  |                   |                |                      |
|--|------------------|-------------------|----------------|----------------------|
| <b>Independent Variable</b>                | <b>Test Name</b> | <b>Test Value</b> | <b>p-Value</b> | <b>Significances</b> |
| <b>Age category</b>                        | Chi-square Test  | 35.182            | 0.645          | Non Significance     |
| <b>Gender</b>                              | Chi-square       | 22.268            | 0.051          | Significance         |
| <b>Marital status</b>                      | Chi-square       | 21.019            | 0.741          | Non Significance     |
| <b>Educational status</b>                  | Chi-square Test  | 94.271            | 0.010          | Significance*        |
| <b>Family type</b>                         | Chi-square Test  | 14.366            | 0.349          | Non Significance     |
| <b>Living area</b>                         | Chi-square Test  | 18.8.16           | 0.129          | Non Significance     |
| <b>Occupation</b>                          | Chi- square Test | 100.359           | 0.045          | Significance         |
| <b>Earning member</b>                      | Chi-square       | 89.847            | 0.000          | Significance*<br>**  |
| <b>Family income</b>                       | Chi-square Test  | 210.839           | 0.016          | Significance*        |
| <b>Patients BMI</b>                        | Chi-square       | 22.741            | 0.648          | Non Significance     |
| <b>Number of involvement of knee joint</b> | Chi-square       | 38.799            | 0.051          | Significance         |
| <b>Pain at stair climbing</b>              | Chi-square       | 12.715            | 0.470          | Non Significance     |
| <b>Pain at rest</b>                        | Chi-square       | 14.086            | 0.368          | Non Significance     |
| <b>Co-morbidities</b>                      | Chi-square Test  | 81.918            | 0.077          | Non Significance     |
| <b>Physiotherapy treatment outcome</b>     | Chi-square       | 42.709            | 0.315          | Non Significance     |

\* $\leq 0.05$ ; \*\* $\leq 0.01$ ; \*\*\* $\leq 0.001$ ;

**Table 9: Association between stress and socio-demographic and Knee OA related variables of the participants**

The main goal of the study was to explore the level of psychological distress among the knee OA patients. Psychological distress is a nonspecific mental health issue that is typically characterized by the symptoms of depression and anxiety; however, it can also involve other negative affective states, including anger, guilt, grief, and loneliness.

In this study, the researcher found that male-female ratio of those participants who have received Physiotherapy treatment for osteoarthritis from CRP Musculoskeletal unit of physiotherapy department. This data showed that most of the osteoarthritis patients were female who had come to take physiotherapy at CRP Musculoskeletal unit of physiotherapy department.

According to the findings of research in Bangladesh conducted by Haider et al. (2022, p. 7) the age-standardized prevalence was 7.7 where women had a statistically non-significant higher prevalence (n=74) compared to men (n=60). This study found that females (72.5%) are predominantly higher than males (27.5%). One study mentioned that, female gender is higher prevalence of knee OA occurrence rather than male in females than male. Middle –aged women have decreased estrogen levels. Estrogen deficiency can lead to excessive bone reabsorption followed by inadequate bone formation, resulting in overall bone reabsorption and causing osteoarthritis (Cooper et al. 2013, p. 235).

According to the research in Bangladesh conducted by Haider et al. (2022, p. 7) there was no statistically significant difference between occupational groups. Knee osteoarthritis prevalence did not vary significantly between urban (42.5%) and rural (56.8%) areas. No statistical difference was found between the level of educational achievements, and family income. According to the findings of this research among 80 participants most of the participants were housewife 59% (n=47). And educational qualification were primary level 47% (n=37).

Fransen et al. (2011, p. 114) examined the prevalence of OA across different countries in Asia and found that OA disproportionately affects communities based on geography and affluence. In India, Bangladesh and China, the prevalence of knee pain was significantly higher in rural communities than in urban settings. According to the

findings of this research among 80 participants about 53% participants were from rural area and 48% participants were from urban area.

A population-based study in Spain by Reyes et al. (2016, p. 1868) found an association between overweight and obesity with clinically diagnosed knee osteoarthritis. According to the findings of this research there is strong correlation between knee osteoarthritis and Diabetes mellitus. Among 80 participants 35% (n=28) participants had diabetes mellitus. A study conducted in North Carolina; USA by Murphy et al. (2008, p. 1210) found that the lifetime risk of knee osteoarthritis increased with increasing BMI. A systematic review with 14 studies by Zheng and Chen (2015, p. 4) found that overweight and obesity increased the risk of knee osteoarthritis. Mechanical stress is the key risk factor in obesity-related pathology (Chen et al. 2020, p. 68). According to findings of these research 45% (n=36) had obesity along with knee OA.

Patients with depressive symptoms might find it harder to find effective ways of coping and adapting to their disease, which might lead to limitation in daily living. Additionally, it was found that a lack of social and recreational activities could contribute to depression. A study conducted by Filardo et al. (2017, p. 3420) found that only depressive symptoms and not anxiety was related to function. According to the findings of this study anxiety was more related to social-demographic status rather than depression with social-demographic status.

One-fourth of our patients with knee OA had moderate to severe disability and around one-fifth had work loss of various duration. Work loss was significantly associated with knee osteoarthritis when adjusted with age and sex. In a study in the UK one-quarter of the patients with knee OA were severely disabled. In Canada 90% of patients with osteoarthritis had higher risk hazard ratio 1.90 of work loss due to illness or disability compared with their matched non-OA individuals after adjusting for socio-demographic, health, and work-related status (Sharif et al. 2016, p. 865).

The economic impact of OA, which includes direct and indirect (time) costs, is also substantial, ranging from 1 to 2.5% of gross national products (GNP) in countries with established market economies. In regions around the world, the average annual cost of OA for an individual is estimated between (2019 USD). Safiri et al. (2020, p. 820) examined trends in OA prevalence across the globe by Socio-demographic Index (SDI), a measure of a region's socio-demographic development based on average income per

person, educational attainment, and total fertility rate. According to the findings of this research there is significant association of depression, anxiety and stress with family income (P-value <0.05).

A study conducted by Stubbs et al. (2016, p. 230) found that the prevalence of anxiety symptoms across seven studies among people with osteoarthritis was 21.3% and the prevalence of anxiety symptoms across four studies including 665 individuals with isolated knee osteoarthritis was 15.8%. The prevalence of anxiety was 28.2% among 315 people with lower limb osteoarthritis. The findings of this research among 80 participants the severity of anxiety; 39% (n=31) had moderate anxiety, 11% (n=9) had extreme level of anxiety 18% (n=14) had mild anxiety.

In the study among 80 participants the mean (standard deviation) age of individuals with knee osteoarthritis was 52.31 (7.127) years. Among all the participants n=47 (58.8%) patients were housewife that means housewife are mostly affected by knee OA, these may be due to long time activity in knee bending position according to our culture. In this study, among the 80 participants who had knee OA, n=23 (28.7%) was involved by right knee OA, n=27 (33.8%) was involved by left knee OA and n=30 (37.5%) patients was involved by both knee OA. 63.7 (n=51) participants had pain in stair climbing and 60% (n=32) participants had pain at rest. Gait pattern variation and functional limitation occurs due to severity of knee pain or pain status. In these study, n=15 (19%) patients felt mild pain, n=46 (58%) patients felt moderate pain and n=19 (24%) patients felt severe pain on VAS score.

A case-control study of hospitalized hip or knee OA patients conducted in Hong Kong demonstrated that a history of joint injury, frequent stair-climbing (15 or more flights per day) or frequent lifting of heavy weights (10 kg or more) were all associated with knee OA. Somewhat in contrast, another study in China by So et al. (2023. P. 441) reported that people aged 35–64 years living in multistoreyed buildings without elevators had a significantly higher prevalence of knee pain compared with those living in single-storey home and they found no correlation between knee OA and climbing stairs. According to the findings of this research there is no correlation between depression, anxiety and stress with pain at stair climbing.

The pain severity of osteoarthritis patients showed that 19% of patients had the least severe, 24% of patients had severe symptoms, and 58% of all patients had a risk of moderate depression. Because most of the patients had treatment with medication. This

osteoarthritis was not very severe. As a result, the severity of the disease was less and the patient had no anxiety from the disease. Most patients had a moderate and good level of QoL in all aspects physical, mental, social, and environmental.

These results did not find any direct evidence to support an increase in anxiety and depression in people with osteoarthritis. The prevalence of these psychiatric morbidities is important in osteoarthritis since depressive symptoms may be a better predictor of disability than radiographic evidence of degenerative joint changes in people with osteoarthritis. Secondly, depression is associated with heightened pain and increased functional disability. Thirdly, depressive symptoms are associated with a drastically reduced quality of life and are potential barriers to physical activity and social participation. Fourthly, depression is associated with a marked increased risk of falls in older people, which remain a leading cause of morbidity, admission to long-term care facilities and mortality. Finally, individuals with osteoarthritis perceived as a disability appear more strongly related to depressive symptoms than actual functional performance. Accordingly clinicians should be mindful of the importance of detection and multidisciplinary treatment of depression and anxiety in people with osteoarthritis (Stubbs et al. 2016).

In any research some limitation may exist, 100% accuracy will not be possible. Regarding this study, there were some limitations or barriers to consider the result of the study as below: The first limitation of this study was small sample size. It was taken only 80 samples. This study has provided for the first time data on psychological distress among the knee osteoarthritis patients. No research has been done before on this topic. So there was little evidence to support the result of this project in the context in Bangladesh. Another major limitation was time. The time period was very limited to conduct the research project on this topic. The questionnaires took approximately 20 to 25 minutes to complete. Time taken to complete the questionnaires was affected by factors such as explanation, asking relevant questions, there are brief explanations etc. As the study period was short so the adequate number of sample could not arrange for the study.

## **Limitation**

In any research some limitation may exist, 100% accuracy will not be possible. Regarding this study, there were some limitations or barriers to consider the result of the study as below:

1. The first limitation of this study was small sample size. It was taken only 80 samples.
2. This study has provided for the first time data on the level of psychological stress among the knee osteoarthritis patients. No research has been done before on this topic. So there was little evidence to support the result of this project in the context in Bangladesh.
3. Another major limitation was time. The time period was very limited to conduct the research project on this topic. The questionnaires took approximately 20 to 25 minutes to complete. Time taken to complete the questionnaires was affected by factors such as explanation, asking relevant questions, there are brief explanations etc. As the study period was short so the adequate number of sample could not arrange for the study.



## **6.1 Conclusion**

Knee osteoarthritis is a common musculoskeletal disorder in Bangladeshi adults. Increasing age, low educational level, and overweight were independent risk factors for knee osteoarthritis. Osteoarthritis of the knee was significantly associated with substantial work loss in our populations. Future studies should use radiological investigations to get a more accurate burden estimate of knee osteoarthritis. Interventions should focus on healthy aging, overweight, and education of the people in general.

Osteoarthritis is more prevalent among women than among men at all ages. These gender differences are most prominent when OA affects the knee. Gender differences and effect of bilateral or unilateral or both knees OA that depends on patients individuals. In study, there found that more responded women than men in report of knee pain. From the study it can be concluded that the most vulnerable age range is 50 to 65 for knee OA. This study has characterized by the feature of pain severity of knee OA patients. Health care provision in Bangladesh is still to be realistic in terms of ensure benefit for the people suffering from non-communicable disease including OA. If the patients receive physiotherapy regularly and maintain therapeutic activities at their home then 80% symptoms will be subsided.

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. Clearly we need programs aimed at decreasing or minimizing pain contributing factors that helps to prevent knee osteoarthritis and also helps to reduce pain in knee OA patients and controlling the musculoskeletal disorder.

The purpose of this study was to find out the level of Psychological stress among knee OA patients. The study, like earlier studies, discovered a significant prevalence of depression and anxiety among knee OA patients and that a variety of causes were responsible for psychological stress among knee OA patients. The study also discovered

that during this crisis, a higher degree of depression and anxiety was substantially associated to age, gender, educational status, living area and monthly family income and knee OA joint involvement and family members.

People with osteoarthritis experience high levels of depressive symptoms and anxiety. This appears to be higher than the general population of a similar age. This is of high relevance as both have the potential to have a severe and deleterious impact on an individual's health and increase health-service utilization (Stubbs et al. 2016).

Clinicians should be mindful of these disorders in the management of people with osteoarthritis since they have the potential to exacerbate symptoms and have a detrimental effect on the quality of life and prognosis of this growing patient population. However, further research with better designed comparative studies of age, gender and medical morbidity matched cohorts are needed in community cohorts before recommendations are made for targeted screening and interventions for people with osteoarthritis. Indeed routine assessment of depression and anxiety could be argued to be part of the assessment of all people presenting with a chronic health conditions. Given the possible bi-directional nature of association and impact between physical and mental health, it would require to explore whether detecting and treating these mental health issues or better management of associated physical co-morbidities in these patients have significant benefits for patients.

## **6.2 Recommendation**

Knee osteoarthritis patients are likely to be an upcoming burden for Bangladesh, as like other countries. For this reason, it is important to develop evidence based research of physiotherapy practice in this area. Physiotherapist's practice which is evidence based in all aspect of health care. There are few studies on musculoskeletal area in the knee region. These cannot cover all aspect of the vast area. So, it is recommended that the next generation of physiotherapy members will continue study regarding this area with large sample size and participants from different districts of Bangladesh. Conduct research on other musculoskeletal problems on knee area where physiotherapist can work. So it is very important to conduct such type research in this area. The duration of the study was short, so in future wider time would be taken for conducting the study.

- A large proportion of Knee OA patients should be a focus of future research.
- Researchers may conduct research throughout Bangladesh to better serve persons with Knee OA.
- The research period was short, it should be repeated over a longer length of time in the future.
- In the future, the sample size should be increased to obtain more reliable and relevant results

Alkan, B.M, Fidan, F, Tosun, A & Ardiçoğlu, Ö 2014, 'Quality of life and self-reported disability in patients with knee osteoarthritis', *Modern rheumatology*, vol. 24, no. 1, pp.166-171.

Andrianakos, A.A, Kontelis, L.K, Karamitsos, D.G, Aslanidis, S.I, Georgountzos, A.I, Kaziolas, G.O, Pantelidou, K.V, Vafiadou, E.V, Dantis, P.C & ESORDIG Study Group 2006, 'Prevalence of symptomatic knee, hand, and hip osteoarthritis in Greece: The ESORDIG study', *The Journal of rheumatology*, vol. 33, no. 12, pp.2507-2513.

**Blagojevic**, M, Jinks, C, Jeffery, A & Jordan, J 2010, 'Risk factors for onset of osteoarthritis of the knee in older adults: a systematic review and meta-analysis', *Osteoarthritis and cartilage*, vol. 18, no. 1, pp.24-33.

Carotti, M, Salaffi, F, Di Carlo, M & Giovagnoni, A 2017, 'Relationship between magnetic resonance imaging findings, radiological grading, psychological distress and pain in patients with symptomatic knee osteoarthritis', *La radiologia medica*, vol. 122, pp.934-943.

Chen, L, Zheng, J.J.Y, Li, G, Yuan, J, Ebert, J.R, Li, H, Papadimitriou, J, Wang, Q, Wood, D, Jones, C.W & Zheng, M 2020, 'Pathogenesis and clinical management of obesity-related knee osteoarthritis: impact of mechanical loading', *Journal of orthopaedic translation*, vol. 24, pp.66-75.

Cooper, A.P, Basheer, S.Z, Maheshwari, R, Regan, L & Madan, S.S 2013, 'Outcomes of hip arthroscopy. A prospective analysis and comparison between patients under 25 and over 25 years of age', *British Journal of Sports Medicine*, vol. 47, no. 4, pp.234-238.

Cui, A, Li, H, Wang, D, Zhong, J, Chen, Y & Lu, H 2020, 'Global, regional prevalence, incidence and risk factors of knee osteoarthritis in population-based studies', *EClinicalMedicine*, vol. 29, pp.1-13.

Cui, A, Li, H, Wang, D, Zhong, J, Chen, Y & Lu, H, 2020, 'Global, regional prevalence, incidence and risk factors of knee osteoarthritis in population-based studies', *EClinicalMedicine*, vol.29, pp.1-13.

Dogra, D.K, Sukla, A & Bhattacharjee, D 2022, 'Effect Of Exercise Intervention On Selected Psychological Variables: A Systematic Review', *Journal of Positive School Psychology*, pp.2351-2367.

Filardo, G, Merli, G, Roffi, A, Marcacci, T, Berti Ceroni, F, Raboni, D, Bortolotti, B, Kon, E & Marcacci, M 2017, 'Kinesiophobia and depression affect total knee arthroplasty outcome in a multivariate analysis of psychological and physical factors on 200 patients', *Knee Surgery, Sports Traumatology, Arthroscopy*, vol. 25, pp.3417-3423.

Fransen, M, Bridgett, L, March, L, Hoy, D, Penserga, E & Brooks, P 2011, 'The epidemiology of osteoarthritis in Asia', *International journal of rheumatic diseases*, vol. 14, no. 2, pp.113-121.

Gleicher, Y, Croxford, R, Hochman, J & Hawker, G 2011, 'A prospective study of mental health care for comorbid depressed mood in older adults with painful osteoarthritic', *BMC psychiatry*, vol. 11, pp.1-10.

Haider, M.Z, Bhuiyan, R, Ahmed, S, Zahid-Al-Quadir, A, Choudhury, M.R, Haq, S.A & Zaman, M.M 2022, 'Risk factors of knee osteoarthritis in Bangladeshi adults: a national survey', *BMC Musculoskeletal Disorders*, vol. 23, no. 1, pp.1-9.

Hayami, T.A.D.A.S.H.I 2008, 'Osteoarthritis of the knee joint as a cause of musculoskeletal ambulation disability symptom complex (MADS)', *Clinical calcium*, vol. 18, no. 11, pp.1574-1580.

Heidari, B 2011, 'Knee osteoarthritis prevalence, risk factors, pathogenesis and features: Part I', *Caspian journal of internal medicine*, vol. 2, no.2, p.205.

Helminen, E.E, Arokoski, J.P, Selander, T.A & Sinikallio, S.H 2020, 'Multiple psychological factors predict pain and disability among community-dwelling knee osteoarthritis patients: a five-year prospective study', *Clinical rehabilitation*, vol. 34, no. 3, pp.404-415.

Hunter, D.J, March, L & Chew, M 2020, 'Osteoarthritis in 2020 and beyond: a Lancet Commission', *The Lancet*, vol. 396, no. 10264, pp.1711-1712.

Iijima, H, Aoyama, T, Fukutani, N, Isho, T, Yamamoto, Y, Hiraoka, M, Miyanobu, K, Jinnouchi, M, Kaneda, E, Kuroki, H & Matsuda, S 2018, 'Psychological health is

associated with knee pain and physical function in patients with knee osteoarthritis: an exploratory cross-sectional study', *BMC psychology*, vol. 6, pp.1-10.

Jahan, I, Sima, S.H, Khalil, M, Sohel, M.D & Kawsar, M.H, 2017, 'Survey on prevalence, risk factors and treatment pattern of osteoarthritis in Bangladesh: retrospective study', *Rheumatology (Sunnyvale)*, vol. 7, no. 230, pp.2161-1149.

Jakiela, J.T, Waugh, E.J & White, D.K 2021, 'Walk at least 10 minutes a day for adults with knee osteoarthritis: recommendation for minimal activity during the COVID-19 pandemic', *The Journal of Rheumatology*, vol. 28, no. 2, pp.157-159.

Mahboobi, M, Najafi, A, Nakhostin-Ansari, A, Kazerooni, P.A, Bazargani, M, Navaiian, F & Akbarpour, S 2020, 'Depression, sleep quality and condom use amongst Iranian people living with human immunodeficiency virus', *Southern African Journal of HIV Medicine*, vol. 21, no. 1.

Mistry, S.K, Ali, A.M, Yadav, U.N, Huda, M.N & Mitra, D.K 2022, 'A tale of osteoarthritis among older adults during the COVID-19 pandemic in Bangladesh: A repeated cross-sectional study', *Plos one*, vol. 17, no. 9, viewed on 20 june 2023, <<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0274838>>

Murphy, L, Schwartz, T.A, Helmick, C.G, Renner, J.B, Tudor, G, Koch, Dragomir, A, Kalsbeek, W.D, Luta, G & Jordan, J.M 2008, 'Lifetime risk of symptomatic knee osteoarthritis', *Arthritis Care & Research: Official Journal of the American College of Rheumatology*, vol. 59, no. 9, pp.1207-1213.

Nowinka, Z, Alagha, M.A, Mahmoud, K & Jones, G.G 2022, 'Predicting Depression in Patients With Knee Osteoarthritis Using Machine Learning: Model Development and Validation Study', *JMIR Formative Research*, vol.6, no. 9, viewed on 2 july, <<https://formative.jmir.org/2022/9/e36130/>>.

Rathbun, A.M, Shardell, M.D, Stuart, E.A, Yau, M.S, Gallo, J.J, Schuler, M.S & Hochberg, M.C 2018, 'Pain severity as a mediator of the association between depressive symptoms and physical performance in knee osteoarthritis', *Osteoarthritis and cartilage*, vol. 26, no. 11, pp.1453-1460.

Reyes, C, Leyland, K.M, Peat, G, Cooper, C, Arden, N.K & Prieto-Alhambra, D 2016, 'Association between overweight and obesity and risk of clinically diagnosed knee, hip,

and hand osteoarthritis: a population-based cohort study', *Arthritis & Rheumatology*, vol. 68, no. 6, pp.1869-1875.

Rodda, J, Walker, Z & Carter, J 2011, 'Depression in older adults', *Bmj*, vol. 343. Pp. 683-687.

Roy Davis Altman, M.D 2010, 'Early management of osteoarthritis', *Am J Manag Care*, vol. 16, pp.S41-S47.

Safiri, S, Kolahi, A.A, Smith, E, Hill, C, Bettampadi, D, Mansournia, M.A, Hoy, D, Ashrafi-Asgarabad, A, Sepidarkish, M, Almasi-Hashiani, A & Collins, G 2020, 'Global, regional and national burden of osteoarthritis 1990-2017: a systematic analysis of the Global Burden of Disease Study 2017', *Annals of the rheumatic diseases*, vol. 79, no. 6, pp.819-828.

**Sajaan** Almansour, S.H, Singh, R, Hadrami Alyami, S.M, Sharma, N, Reshan, A, Saleh, M, Gupta, S, Mahdi Alyami, M.F & Shaikh, A 2023, 'A Convolution Neural Network Design for Knee Osteoarthritis Diagnosis Using X-ray Images', *International Journal of Online & Biomedical Engineering*, vol. 19, no. 7, pp. 125-141.

Sharif, B, Garner, R, Sanmartin, C, Flanagan, W.M, Hennessy, D & Marshall, D.A 2016, 'Risk of work loss due to illness or disability in patients with osteoarthritis: a population-based cohort study', *Rheumatology*, vol. 55, no. 5, pp.861-868.

Siripongpan, A & Sindhupakorn, B 2022, 'A Comparative study of osteoarthritic knee patients between urban and rural areas in knee severity and quality of life', *Health Psychology Research*, vol. 10, no. 3, viewed on june 2023, < <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9239395/>> .

Smith, P.J & Merwin, R.M 2021, 'The role of exercise in management of mental health disorders: an integrative review', *Annual review of medicine*, vol. 72, pp.45-62.

So, B.C, Kwok, M.M, Lee, N.W, Lam, A.W, Lau, A.L, Lam, A.S, Chan, P.W & Ng, S.S, 2023, 'Lower Limb Muscles' Activation during Ascending and Descending a Single Step-Up Movement: Comparison between In water and On land Exercise at Different Step Cadences in Young Injury-Free Adults', In *Healthcare*, Vol. 11, No. 3, p. 441.

- Solmi, M, Radua, J, Olivola, M, Croce, E, Soardo, L, Salazar de Pablo, G, Il Shin, Kirkbride, J.B, Jones, P, Kim, J.H & Kim, J.Y 2022, 'Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies', *Molecular psychiatry*, vol. 27, no. 1, pp.281-295.
- Somers, T, Keefe, F, Godiwala, N & Hoyler, G 2009, 'Psychosocial factors and the pain experience of osteoarthritis patients: new findings and new directions', *Curr Opin Rheumatol*, vol. 21, no. 5, pp.501–506.
- Stubbs, B, Aluko, Y, Myint, P.K & Smith, T.O 2016, 'Prevalence of depressive symptoms and anxiety in osteoarthritis: a systematic review and meta-analysis', *Age and ageing*, vol. 45, no. 2, pp.228-235.
- Stubbs, B, Aluko, Y, Myint, P.K & Smith, T.O 2016, 'Prevalence of depressive symptoms and anxiety in osteoarthritis: a systematic review and meta-analysis', *Age and ageing*, vol. 45, no. 2, pp.228-235.
- Tanchev, P 2017, 'Osteoarthritis or osteoarthrosis: Commentary on misuse of terms', *Reconstructive review*, vol. 7, no. 1, pp.1-2.
- Teo, P.L**, Bennell, K.L, Lawford, B, Egerton, T, Dziedzic, K & Hinman, R.S 2021, 'Patient experiences with physiotherapy for knee osteoarthritis in Australia—a qualitative study', *BMJ open*, vol. 11, no. 3, pp.1-14.
- Urquhart, D.M, Phyomaung, P.P, Dubowitz, J, Fernando, S, Wluka, A.E, Raajmaakers, P, Wang, Y & Cicuttini, F.M 2015, 'Are cognitive and behavioural factors associated with knee pain? A systematic review', In *Seminars in arthritis and rheumatism*, Vol. 44, No. 4, pp. 445-454.
- Vos, T, Flaxman, A.D, Naghavi, M, Lozano, R, Michaud, C, Ezzati, M, Shibuya, K, Salomon, J.A, Abdalla, S, Aboyans, V & Abraham, J 2012, 'Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the Global Burden of Disease Study', *The lancet*, vol. 380, no. 9859, pp.2163-2196.
- Wilkie, R, Blagojevic-Bucknall, M, Jordan, K.P, Lacey, R & McBeth, J 2013, 'Reasons why multimorbidity increases the risk of participation restriction in older adults with



lower extremity osteoarthritis: a prospective cohort study in primary care', *Arthritis care & research*, vol. 65, np. 6, pp.910-919.

Wylde, V, Palmer, S, Learmonth, I.D & Dieppe, P 2013, 'The association between pre-operative pain sensitisation and chronic pain after knee replacement: an exploratory study', *Osteoarthritis and cartilage*, vol. 21, no. 9, pp.1253-1256.

Yahaya, I, Wright, T, Babatunde, O.O, Corp, N, Helliwell, T, Dikomitis, L & Mallen, C.D 2021, 'Prevalence of osteoarthritis in lower middle-and low-income countries: a systematic review and meta-analysis', *Rheumatology international*, vol. 4, no.7, pp.1221-1231.

**Zhang**, Y & Jordan, J.M 2010, 'Epidemiology of osteoarthritis', *Clinics in geriatric medicine*, vol. 26, no. 3, pp.355-369.

Zheng, H & Chen, C 2015, 'Body mass index and risk of knee osteoarthritis: systematic review and meta-analysis of prospective studies', *BMJ open*, vol. 5, no. 12, pp.1-8.

Zheng, S, Tu, L, Cicuttini, F, Zhu, Z, Han, W, Antony, B, Wluka, A.E, Winzenberg, T, Aitken, D, Blizzard, L & Jones, G 2021, 'Depression in patients with knee osteoarthritis: risk factors and associations with joint symptoms', *BMC musculoskeletal disorders*, vol. 22, no. 1, pp.1-10.

**APPENDIX**

**Informed Consent Form**

(Please read out to the participants )

This informed consent form is for men and women who are knee osteoarthritis 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 “The Level of psychological stress among knee OA patients attended at CRP.” I am Afsana Mimi, 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. Knee osteoarthritis is the most common in the elderly person. The intensity of the clinical symptoms may vary from each individual. Many psychological characteristics influence the quality of life of knee osteoarthritis patients. There is lacking of research to find out the level of psychological stress of knee OA patients. This research will help the researcher to find out the level of psychological characteristics among them. It will also help to modify rehabilitation set up and improve overall health function. And so I want to evaluate the physical and psychological characteristics of knee OA patients.

I am inviting all men and women with knee Osteoarthritis 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.....

## Questionnaire

( English )

### 1. Socio-demographic information:

| Question              | Answer  |
|-----------------------|---|
| 1. Patients name      |   |
| 2. Patients Id number |   |
| 3. Address            |   |
| 4. Telephone number   |   |
| 5. Age                |   |
| 6. Gender             | Male<br>Female  |
| 7. Marital status     | Unmarried<br>Married<br>Divorced<br>Widow                                 |
| 8. Educational status | Illiterate<br>Primary<br>S.S.C.<br>H.S.C.<br>Honours<br>Masters and above |
| 9. Family type        | Nuclear family<br>Extended family   |
| 10. Living area       | Rural<br>Urban  |
| 11. Occupation        | Office worker<br>Labourer<br>Driver<br>Housewife<br>Unemployed            |

|                                  |                    |
|----------------------------------|--------------------|
|                                  | Retired<br>Student |
| 12. Family member                |                    |
| 13. Earning member in the family |                    |
| 14. Family income                |                    |

## 2. Knee OA related information

|   |  |
|---|--|
| 1. Patients BMI                         | Under weight<br>Normal weight<br>Over weight/ Obesity  |
| 2. Number of involvement of knee joint  | Right<br>Left<br>Both  |
| 3. Have you felt pain in stair climbing | Yes<br>No  |
| 4. Have you feel pain at rest           | Yes<br>No  |
| 5. Co-morbidities                       | Diabetes Mellitus<br>Hypertension<br>Asthma<br>Kidney disease<br>Thyroid disorder<br>None of the above |
| 6. Outcome of physiotherapy treatment   | Improve<br>Not improve<br>No change<br>Not taken   |

### 3. DASS-21 scale:

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree or a good part of time
- 3 Applied to me very much or most of the time

|           |   |   |   |   |   |
|-----------|---|---|---|---|---|
| <b>1</b>  | I found it hard to wind down  | 0 | 1 | 2 | 3 |
| <b>2</b>  | I was aware of dryness of my mouth  | 0 | 1 | 2 | 3 |
| <b>3</b>  | I couldn't seem to experience any positive feeling at all   | 0 | 1 | 2 | 3 |
| <b>4</b>  | I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion) | 0 | 1 | 2 | 3 |
| <b>5</b>  | I found it difficult to work up the initiative to do things   | 0 | 1 | 2 | 3 |
| <b>6</b>  | I tended to over-react to situations  | 0 | 1 | 2 | 3 |
| <b>7</b>  | I experienced trembling (e.g. in the hands)   | 0 | 1 | 2 | 3 |
| <b>8</b>  | I felt that I was using a lot of nervous energy   | 0 | 1 | 2 | 3 |
| <b>9</b>  | I was worried about situations in which I might panic and make a fool of myself   | 0 | 1 | 2 | 3 |
| <b>10</b> | I felt that I had nothing to look forward to  | 0 | 1 | 2 | 3 |
| <b>11</b> | I found myself getting agitated   | 0 | 1 | 2 | 3 |
| <b>12</b> | I found it difficult to relax   | 0 | 1 | 2 | 3 |
| <b>13</b> | I felt down-hearted and blue  | 0 | 1 | 2 | 3 |
| <b>14</b> | I was intolerant of anything that kept me from getting on with what I was doing   | 0 | 1 | 2 | 3 |
| <b>15</b> | I felt I was close to panic   | 0 | 1 | 2 | 3 |
| <b>16</b> | I was unable to become enthusiastic about anything  | 0 | 1 | 2 | 3 |
| <b>17</b> | I felt I wasn't worth much as a person  | 0 | 1 | 2 | 3 |
| <b>18</b> | I felt that I was rather touchy   | 0 | 1 | 2 | 3 |

|           |   |   |   |   |   |
|-----------|---|---|---|---|---|
| <b>19</b> | I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat) | 0 | 1 | 2 | 3 |
| <b>20</b> | I felt scared without any good reason   | 0 | 1 | 2 | 3 |
| <b>21</b> | I felt that life was meaningless  | 0 | 1 | 2 | 3 |

The DASS-21 should not be used to replace a face-to-face clinical interview. If you are experiencing significant emotional difficulties you should contact your GP for a referral to a qualified professional.

Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are as follows:

|                         | <b>Depression</b> | <b>Anxiety</b> | <b>Stress</b> |
|-------------------------|-------------------|----------------|---------------|
| <b>Normal</b>           | 0-9               | 0-7            | 0-14          |
| <b>Mild</b>             | 10-13             | 8-9            | 15-18         |
| <b>Moderate</b>         | 14-20             | 10-14          | 19-25         |
| <b>Severe</b>           | 21-27             | 15-19          | 26-33         |
| <b>Extremely Severe</b> | 28+               | 20+            | 34+           |

## অনুমতি পত্র

(অংশগ্রহণকারীকে পড়ার জন্য অনুরোধ করা হলো)

আসসালামু আলাইকুম্

আমি আফসানা মিমি, ঢাকা বিশ্ববিদ্যালয় এর চিকিৎসা অনুযায়িত অন্তর্ভুক্ত বাংলাদেশ হেথথ প্রফেশন ইন্সটিটিউট এর বিএসসি ইন ফিজিওথেরাপি কোর্সের ২০১৭-২০১৮ সেশনের শিক্ষার্থী। বিএসসি ইন ফিজিওথেরাপি ডিগ্রী অর্জনের জন্য আমাকে একটি গবেষণা সম্পূর্ণ করতে হবে। আমার গবেষণাটির শিরোনাম হল " সি.আর.পিতে আসা হাঁটুর অস্টিও আর্থ্রাইটিসে আক্রান্ত রোগীদের মধ্যে মানসিক চাপের পরিমাণ "। এই গবেষণাটি অধ্যয়নের মূল লক্ষ্য হচ্ছে হাঁটুর অস্টিও আর্থ্রাইটিসে আক্রান্ত রোগীদের কি ধরনের মানসিক পরিবর্তন হচ্ছে তা নিরূপণ করা। এই গবেষণা সম্পূর্ণ করার জন্য আমি আপনাকে আপনার সামাজিক অবস্থা সম্পর্কিত কিছু প্রশ্ন করব। আপনাকে আশস্ত করছি, আমার ও আমার প্রশ্নের দ্বারা আপনার কোনরূপ ক্ষতি হবে না। আপনার দেওয়া তথ্য গোপন রাখা হবে এবং শুধুমাত্র খিসিসের উদ্দেশ্য ব্যবহার করা হবে। যে কোন সময় খিসিসে আপনার অংশগ্রহণ বন্ধ করার অধিকার রয়েছে। পাশাপাশি আপনি যদি কোন প্রশ্নের উত্তর দিতে অস্বস্তি বোধ করেন তবে আপনি সেই প্রশ্নটি এড়িয়ে যেতে পারেন। প্রশ্নাবলী পূরণ করতে ১৫ মিনিট থেকে ২০ মিনিট সময় লাগবে। অনুগ্রহ করে আমাকে প্রশ্নগুলির সঠিক উত্তর দিন এবং আপনার স্বাস্থ্যের মূল্যায়ন করতে ডেটা সংগ্রহকারীকে যথাসাধ্য সহযোগিতা করুন। আপনার কোন প্রশ্ন থাকলে আমার সুপারভাইজারের সাথে যোগাযোগ করতে পারেন। সজল কুমার দাস, বিএইচপিআই এর প্রভাষক, ফিজিওথেরাপি ডিপার্টমেন্ট, বিএইচপিআই, সিআরপি। আপনি যদি অনুগ্রহপূর্বক আপনার সম্মতি দেন, তবে আমরা শুরু করতে পারি।

হ্যাঁ

না

ধন্যবাদ আপনার অংশগ্রহণের পাশাপাশি প্রশ্নগুলোর যথাযথ উত্তর দিয়ে সহযোগিতা করার জন্য।

অংশগ্রহণকারীর স্বাক্ষর .....

তারিখ .....

তথ্য সংগ্রহকারীর স্বাক্ষর .....

তারিখ .....

গবেষকের স্বাক্ষর .....

তারিখ .....

প্রশ্নপত্র  
বাংলা

১. সামাজিক জনসংখ্যা সংক্রান্ত তথ্য

| প্রশ্ন                | উত্তর  |
|-----------------------|--|
| ১. রোগির নাম          |  |
| ২. রোগির আইডি নাম্বার |  |
| ৩. ঠিকানা             |  |
| ৪. টেলিফোন নাম্বার    |  |
| ৫. বয়স               |  |
| ৬. লিঙ্গ:             | পুরুষ<br>মহিলা   |
| ৭. বৈবাহিক অবস্থা     | অবিবাহিত<br>বিবাহিত<br>তালকপ্রাপ্ত<br>বিধবা                                      |
| ৮.                    | নিরক্ষর<br>প্রাথমিক<br>এস.এস.সি<br>এইচ.এস.সি<br>স্নাতক<br>মাস্টার্স এবং তার উপরে |
| ৯. পরিবারের ধরন       | একক পরিবার<br>যৌথ পরিবার   |



|                                |  |
|--------------------------------|--|
| ১০. বসবাসের জায়গা:            | গ্রাম<br>শহর   |
| ১১. পেশা                       | অফিস কর্মী<br>শ্রমিক<br>গাড়ি চালক<br>গৃহিণী<br>বেকার<br>অবসরপ্রাপ্ত<br>শিক্ষার্থী |
| ১২. পরিবারের সদস্য             |  |
| ১৩. পরিবারের উপার্জনকারী সদস্য |  |
| ১৪. পারিবারিক আয়              |  |

## ২. হাঁটুর অস্টিওআর্থ্রাইটিস সম্পর্কিত তথ্য

|   |                                     |
|---|-------------------------------------|
| ১. রোগীর বি. এম.আই.                                 | কম ওজন<br>স্বাভাবিক ওজন<br>বেশি ওজন |
| ২. হাঁটু জয়েন্ট জড়িত সংখ্যা                       | বাম<br>ডান<br>উভয়                  |
| ৩. আপনি কি সিঁড়ি দিয়ে উঠার সময় ব্যথা অনুভব করেন? | হ্যাঁ<br>না                         |

|   |  |
|---|--|
|   |  |
| ৪. আপনি কি বিশ্রামের সময় ব্যথা অনুভব করেন? | হ্যাঁ<br>না  |
| ৫. রোগসমূহ                                  | ডায়াবেটিস মেলিটাস<br>হাইপারটেনশন<br>হাঁপানি<br>কিডনি রোগ<br>থাইরয়েড রোগ<br>উপরের কোনোটিই নয় |
| ৬. ফিজিওথেরাপি চিকিৎসার ফলাফল               | উন্নতি<br>উন্নতি নয়<br>কোনো পরিবর্তন হয়নি<br>নেওয়া হয়নি                                    |

### ৩. DASS-21 scale

অনুগ্রহ করে নিচের প্রতিটি বিবৃতি পড়ুন এবং ০, ১, ২, ৩ এর মধ্যে গত সপ্তাহ ব্যাপী আপনার জন্য প্রযোজ্য যে কোন একটি সংখ্যায় গোল চিহ্ন দিন। এখানে কোন সঠিক বা ভুল উত্তর নেই। কোন বিবৃতির জন্য বেশি সময় ব্যয় করবেন না।

০= আমার জন্য একেবারেই প্রযোজ্য নয়

১= অল্পমাত্রায় বা কখনো কখনো

২= বেশ কিছুমাত্রায় বা বেশ খানিকটা সময়ের জন্য

৩= খুব বেশি বা বেশিরভাগ

(আপনার উত্তরে √ রাখুন)

|    |   |   |   |   |   |
|----|---|---|---|---|---|
| ১  | কোন উৎকর্ষা বা উত্তেজনামূলক কাজের পর আরামদায়ক অবস্থায় ফিরে আসা আমার জন্য কঠিন ছিল।  | ০ | ১ | ২ | ৩ |
| ২  | আমি বুঝতে পারতাম যে আমার গলা শুকিয়ে আসছে   | ০ | ১ | ২ | ৩ |
| ৩  | ইতিবাচক কোন অনুভূতি আমার মধ্যে কাজ করত না।  | ০ | ১ | ২ | ৩ |
| ৪  | আমার শ্বাসকষ্টের অনুভূতি হত যেমন অতিদ্রুত শ্বাসপ্রশ্বাস, শারীরিক পরিশ্রম ছাড়াই নিশ্বাস বন্ধ হয়ে আসা।<br>(আপনার উত্তরে √ রাখুন)                  | ০ | ১ | ২ | ৩ |
| ৫  | নিজে উদ্যোগী হয়ে কোন কাজ শুরু করা আমার জন্য কঠিন হত।   | ০ | ১ | ২ | ৩ |
| ৬  | আমার মধ্যে বিভিন্ন পরিস্থিতিকে অতিরিক্ত প্রতিক্রিয়া করার প্রবণতা ছিল।  | ০ | ১ | ২ | ৩ |
| ৭  | আমার শরির কাপার অভিজ্ঞতা হয়েছিল যেমন হাত কাপা।   | ০ | ১ | ২ | ৩ |
| ৮  | আমার মনে হত যে আমি খুব বেশি স্নায়ু চাপে ভুগছি।   | ০ | ১ | ২ | ৩ |
| ৯  | আমি এমন পরিস্থিতি সম্পর্কে দুশ্চিন্তাগ্রস্ত ছিলাম যেখানে আমি তীব্রভাবে আতংকিত হতে পারি এবং এমন কোন কাজ করতে পারি যাতে অন্যরা আমাকে বোকা মনে করবে। | ০ | ১ | ২ | ৩ |
| ১০ | আমার মনে হচ্ছিল, ভবিষ্যৎ এ আমার ভালো কিছুই আশা নাই।   | ০ | ১ | ২ | ৩ |
| ১১ | আমি অনুভব করতাম যে আমি খুব অস্থির হয়ে যাচ্ছি।  | ০ | ১ | ২ | ৩ |
| ১২ | আরাম বোধ করা আমার জন্য কঠিন হত।   | ০ | ১ | ২ | ৩ |
| ১৩ | আমি মনমরা এবং বিষন্ন অনুভব করতাম।   | ০ | ১ | ২ | ৩ |
| ১৪ | আমার কাজে বাধা হয় এমন যে কোন জিনিসই আমার কাছে অসহ্য লাগত।  | ০ | ১ | ২ | ৩ |
| ১৫ | আমার মনে হত এই বুঝি আমি হঠাৎ তীব্রভাবে হচ্ছি।   | ০ | ১ | ২ | ৩ |
| ১৬ | কোন কিছুতেই আমি বেশি আগ্রহী হতে পারতাম না।  | ০ | ১ | ২ | ৩ |
| ১৭ | আমি অনুভব করতাম ব্যক্তি হিসেবে আমার বিশেষ কোন মূল্য নেই।  | ০ | ১ | ২ | ৩ |
| ১৮ | আমি অনুভব করতাম আমি একটুতেই মনে ব্যথা পাই।  | ০ | ১ | ২ | ৩ |
| ১৯ | শারীরিক পরিশ্রম না করলে ও আমি হৃদপিণ্ডের কাজ করা বুঝতে পারতাম।  | ০ | ১ | ২ | ৩ |
| ২০ | যথাযথ কারণ ছাড়াই আমি ভীত সন্ত্রস্ত বোধ করতাম।  | ০ | ১ | ২ | ৩ |

|    |                            |   |   |   |   |
|----|----------------------------|---|---|---|---|
| ২১ | জীবনটা অর্থহীন বলে মনে হত। | ০ | ১ | ২ | ৩ |
|----|----------------------------|---|---|---|---|

ক্লিনিকাল ইন্টারভিউ এর বিকল্প হিসেবে DASS-21 ব্যবহার করা উচিত নয়। আপনি যদি উল্লেখযোগ্য মানসিক সমস্যার সম্মুখীন হন তবে একজন যোগ্যতাসম্পন্ন পেশাজীবির কাছে রেফারেলের জন্য আপনার জেনেরাল প্রাকটিশনার এর সাথে যোগাযোগ করা উচিত।

|              | স্কোর | ক্রম | মাত্রা |
|--------------|-------|------|--------|
| বিষন্নতা (D) |       |      |        |
| উদ্বেগ (A)   |       |      |        |
| চাপ (S)      |       |      |        |

| ক্রম | মাত্রা    | বিষন্নতা (D) | উদ্বেগ (A) | চাপ (S) |
|------|-----------|--------------|------------|---------|
| ১    | সাধারণ    | ০-৯          | ০-৭        | ০-১৪    |
| ২    | মৃদু      | ১০-১৩        | ৮-৯        | ১৫-১৮   |
| ৩    | মধ্যম     | ১৪-২০        | ১০-১৪      | ১৯-২৫   |
| ৪    | অতি তীব্র | ২১-২৭        | ১৫-১৯      | ২৬-৩৩   |
| ৫    | তীব্র     | ২৮+          | ২০+        | ৩৪+     |

Date: 12<sup>th</sup> February 2023  
The Chairman  
Institutional Review Board (IRB)  
Bangladesh Health Professions Institute (BHPI), CRP  
Savar, Dhaka-1343. Bangladesh

Subject: Application for review and ethical approval.

Dear sir,

With due respect, I am Afsana Mimi is a student in the B.Sc. in physiotherapy program at Bangladesh Health Professions Institute (BHPI) the academic institute of the Centre for the Rehabilitation of the Paralyzed (CRP) under the Faculty of Medicine, University of Dhaka. As per the course curriculum, I have to conduct a dissertation entitled "**The Level of psychological stress among knee osteoarthritis patients attended at CRP**" under the supervision of Shazal Kumar Das, Lecturer, Department of Physiotherapy, BHPI.

The purpose of the study is to find out the psychological stress of knee osteoarthritis patients. The study involves a face-to-face interview using a semi-structured questionnaire to explore the characteristics of knee OA patients at the Centre for the Rehabilitation of the Paralyzed (CRP) that may take 20 to 30 minutes to fill in the questionnaire and there is no likelihood of any harm to the participants. Related information will be collected from the patients. Data collectors will receive informed consent from all participants and the collected data will be kept confidential.

Therefore, I look forward to having your kind approval for the dissertation proposal and to starting data collection. I can also assure you that I will maintain all the requirements for the study.

Sincerely,

*Afsana Mimi*

Afsana Mimi  
4<sup>th</sup> Year B.Sc. in Physiotherapy  
Session: 2017-2018 Student ID: 112170408  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Recommendation from the dissertation supervisor

*Skdh*  
Shazal Kumar Das  
Lecturer  
Department of Physiotherapy, BHPI.

Dissertation presentation date: 9<sup>th</sup> January 2023

*Shofiq*

Head, Department of Physiotherapy, BHPI

**Md. Shofiqui Islam**  
Associate Professor & Head  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapain Savar, Dhaka-1343

March 29, 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 **Afsana Mimi**, student of 4<sup>th</sup> Professional B.Sc in Physiotherapy at Bangladesh Health Professions Institute (BHPI). According to the course curriculum, we have to conduct research for the partial fulfillment of our degree. My research project entitled "The level of psychological stress among knee OA patients attended at CRP" under the supervision of **Shazal Kumar Das**, Lecturer, Department of Physiotherapy, BHPI, CRP. So I need to take permission to collect data for my research project from the Musculoskeletal Unit of the Physiotherapy 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

*Afsana Mimi*

Afsana Mimi

4<sup>th</sup> Professional B.Sc in Physiotherapy

Roll: 17, Session 2017-2018

Bangladesh Health Professions Institute (BHPI)

*Forward  
SKH  
29/3/23*

*Recommended  
Shofiq*

*29.03.2023*

*Approved  
Ahsan  
29/3/23*  
Dr. Mohammad Anwar Hossain, PhD  
Senior Consultant & Head  
Physiotherapy Department  
Associate Professor, BHPI  
CRP, Savar, Dhaka-1343

**Md. Shofiqul Islam**  
Associate Professor & Head  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapain, Savar, Dhaka-1343



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

Ref: CRP/BHPI/03/2023/698

Date: 13/03/2023

To  
Afsana Mimi  
B.Sc. in Physiotherapy,  
Session: 2017-2018, DU Reg. No: 8637  
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

**Subject:** Approval of the dissertation proposal “The Level of Psychological Stress among Knee Osteoarthritis Patients Attended at CRP”- by ethics committee.

Congratulations

Dear

Afsana Mimi,

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 Shazal Lumar Das, Lecturer, Department of Physiotherapy 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 psychological stress among Knee OA patients. 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 20-25 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, 34<sup>th</sup> IRBMeeting.

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, Bangladesh