FACTOR RALATED TO OSTEOARTRITIS AT KNEE JOINT OF ELDERLY PEOPLE

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

Factors Related To Osteoarthritis At Knee Joint Of Elderly People

Submitted by **Rodela Jahan Rima** for the partial fulfilment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

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DECLARATION

This work has not previously been accepted in substance for any degree and isn't concurrently submitted in candidature for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of B.Sc. in Physiotherapy.

I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority. I confirm that the electronic copy is identical to the bound copy of the Thesis.

In case of dissemination the finding of this project for future publication, research supervisor will highly concern, it will be duly acknowledged as graduate thesis and consent will consent taken from the physiotherapy department of Bangladesh Health Professions Institute (BHPI).

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Acronyms

SCMST	Saic college of medical science and technology.
SAIC	Student admission information center.
DU	Dhaka University
BHPI	Bangladesh Health Professions Institute
BMI	Body Mass Index
MRI	Magnetic resonance imaging
NSAIDs	Non-steroidal anti-inflammatory drugs
OA	Osteoarthritis
KOA	Knee Osteoarthritis.
ROM	Range of motion
SPSS	Statistical Package for Social Science.
WHO	World Health Organization

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Abstract

Introduction*:* Osteoarthritis (OA) is the most common form of arthritis, affecting an estimated 302 million people worldwide and is a leading cause of disability among older adults. The knees, hips, and hands are the most commonly affected appendicular joints. OA is characterized pathology involving the whole joint, including cartilage degradation, bone remodeling, osteophyte formation, and synovial inflammation, leading to pain, stiffness, swelling, and loss of normal joint function.

Objective: To determine the factors related to Osteoarthritis at the knee joint of elderly people.

Methodology*:* It was a quantitative cross-sectional study of Osteoarthritis at the knee joint. This study involved participant from age 40 to 85 years who were osteoarthritis the knee joint. 120 individuals were involved in the study who full filled the inclusion criteria. The participants were selected using convenience sampling technique data was collected direct interview method and were analyzed with the help of SPSS software. The results were presented by tables, figures and graphs.

Results*:* A total of 120 participants completed the survey questionnaire. The mean and SD of age and family income was 54.96±8.915 and 66558.33± 39927.202 respectively. The association between age and total score of the participants Chi value=3.475 and p=0.324, <0.05 as significant, It no significant relation age and generality felt tired.

Conclusion: One of the main causes of impairment in the US and around the world is knee OA, a degenerative joint condition. It is acknowledged that knee OA has a complex origin, even though disease pathogenesis is still poorly understood and is currently the subject of inquiry. Numerous risk factors for the onset of knee OA are categorized as either modifiable or non-modifiable. Hereditary risk factors (genetic changes that may predispose a person to the development of OA of the knee) and congenital risk factors (inherited abnormalities in the form of the bone that surrounds the knee joint) are examples of risk factors that cannot be changed. Risk factors that can be addressed for therapy (such as obesity) are referred to as modifiable risk factors.

Key word*: Osteoarthritis, knee joint, elderly people.*

CHAPTER – I INTRODUCTION

1.1Background:

Osteoarthritis (OA) is a chronic degenerative disorder composed of multiple etiology characterized by the loss of articular cartilage, hypertrophy of bone at the margins ,subchondral sclerosis, and a variety of biochemical and morphological alterations of the synovial membrane and joint capsule (Pal et al., 2016). In osteoarthritis the most common kind of arthritis ,the hyaline articular cartilage, subchondral bone, ligaments, capsule, synovium, and per articular muscles all exhibit persistent progressive deterioration (Nima., 2020). Osteoarthritis (OA) is endemic throughout the world. An estimated 30.8 million adults in the United States and 300 million individuals worldwide are living with OA. It is the leading cause of disability in older adults and leads to pain, loss of function, and decreased quality of life (QOL). On a societal scale, OA is estimated to cost 303 billion dollars annually in medical costs and lost earnings.5 Continued efforts are needed to reduce the occurrence, pain, and loss of function from this chronic, debilitating disease (Benjamin Abramoff et al., 2019)

Osteoarthritis patients experience typical clinical symptoms such excruciating joint pain, stiffness, and severely impaired mobility, which reduces their productivity and quality of life and places an elevated socioeconomic burden on them and society. The aging population around the world makes osteoarthritis a significant problem because its prevalence rises with age. The only available treatments for osteoarthritis are symptom-relieving medications and**,** in severe cases, complete knee arthroplasty. There are presently no drugs on the market that treat osteoarthritis' underlying biological causes (Sokolove et al., 2013)

In the US, OA is the most prevalent joint condition. Because of population aging and the obesity pandemic, there will probably be a rise in the number of patients with symptomatic knee OA. Medial, lateral, and patellofemoral joints are all affected by knee OA, which typically develops slowly over 10 to 15 years and interferes with daily activities (Roos et al., 2015).

The articular cartilage disease was historically thought to be a "wear-and-tear" condition brought on only by aging and unrelated to inflammation (Berenbaum F et al., 2013).

Even though the pathogenesis of the illness is still poorly understood It is acknowledged that the cause of knee OA is complicated and under investigation. Knee OA is influenced by a variety of factors, including family history, age, obesity, diabetes, sinusitis, systemic inflammatory mediators, innate immunity, lower limb alignment (genu valgum and genu varum), joint shape and dysplasia, trauma, and inflammation by metabolic syndromes, whereas both inflammatory and biomechanical whole-organ disease processes play an important role (Daghestani HN et al., 2015). The prevalence of knee OA is 22% to 39% in India (Pal et al., 2016). In Bangladesh, there are no real statistics. But, one statistic indicates a give a general prevalence of osteoarthritis which is 10,392,681 people who are suffering from osteoarthritis in 2004.

Most of the OA disability burden is attributable to the knees. In fact, OA is the precipitating diagnosis for more than 90% of the increasing number of total hip or knee joint replacement operations being undertaken worldwide (Newman et al., 2009). Many countries in Asia are ageing rapidly. It has been estimated that the percentage of people aged 65 years and over in Asia will more than double in the next two decades, from 6.8% in 2008 to 16.2% in 2040. In most of the developed world, demographic change was a gradual process following steady socioeconomic growth over several decades. In many Asian countries, the change is being compressed into two or three decades. For example, during the period 2008– 2040, it is estimated that Singapore will increase the proportion of people aged 65 and over by 316%, India by 274%, Malaysia by 269%, Bangladesh by 261%, and the Philippines by 256%. In 2008, Japan had the world's oldest population (21.6% aged 65 years and over) and China and India were ranked the top two countries in the absolute number of people aged 65 (Kinsella et al., 2009).

The several modifiable factors include repetitive movement of joints, obesity, infection, and injuries. The occupational physical activities are unchanging motions and great forces such as kneeling, squatting, 18-25 climbing, and heavy weight lifting (Pal et al., 2016). Among various factors, the most important factors for knee OA are obesity, previous knee injury, and family history of OA. For the impact of knee OA, people with symptomatic knee OA may be more motivated to take preventive measures for delaying disease progression than those without radiographic OA. Therefore, investigators and persons suffering from knee OA are especially interested in factors

that are linked with radiographic OA progression because such knowledge will provide valuable guidance for secondary prevention (Felson et al., 2010).

Usually, a medical history and physical exam are enough to make the diagnosis of osteoarthritis. With or without more generalized osteoarthritis (defined as the involvement of the hand and/or at least one major joint), one or both of the knees may be impacted. Women in per menopause or older and men in their 40s or older tend to experience progressive onset of symptoms. The discomfort is frequently dull, may only affect a small portion of the knee, worsens with movement, and goes away with rest. As the illness worsens, discomfort may strike while you're sleeping or at rest. Morning stiffness lasts less than 30 minutes, while daytime inactivity causes stiffness to last just briefly.

OA is the most common joint disorder in the world and one of the most common sources of pain and disability in the elderly (Lawrence et al., 2008). The incidence of OA is predicted to increase as the senior population grows; placing a significant financial burden on healthcare providers and governments OA affects at least 27 million Americans and is the leading cause of disability in the United States. Compared to only 7.6% of those 18 44 years of age and 29.8% of those 45–64 years of age, 50%of individuals older than 65 years are diagnosed with this disease (Cheng et al., 2007-2009).

OA is more commonly frequent in women than men, and the prevalence increases with age. An approximate prevalence of symptomatic OA was found at 18% in females and 9.6% in men. Nearly, 45% of women who are aged over 65 years have symptoms when radiological evidence is seen in 70% of those over 65 years. The studies conducted on females for determining the relationship between estrogen and the prevalence of OA in menopausal age showed opposite results (Pal et al., 2016).

1.2 Rationale

Knee OA affects most adults aged 65 or older, with prevalence in the US of 33.6% (12.4 million). Women have a greater prevalence (42.1%) than do men (31.2%).4 Women with radiographic knee OA are more likely to have symptoms than men, and African Americans generally report more knee and hip symptoms than do whites.

Overweight people had a higher incidence of knee osteoarthritis than non-overweight controls, according to population-based studies of osteoarthritis .Obese women (BMI greater than30, but less than35) had nearly four times the risk of osteoarthritis as women with a BMI under 25 according to data from the first National Health and Nutrition Examination Survey, which was conducted across the United States from 1971 to 19752.OA is a complex illness that affects the entire joint,. Modern Knee osteoarthritis management should be based on an individualized approach that includes not only palliative pharmacological pain relief, but also identifying and managing risk factors that contribute to the patient's condition, resulting in an improvement in the joint's metabolic and biomechanical environment.

The most prevalent kind of arthritis, knee osteoarthritis, will become more prevalent as life expectancy and obesity increases. Approximately 13% of women and 10% of men aged 60 and above have symptomatic knee osteoarthritis, depending on the source. The frequency increases to 40% among people over the age of 70. Males are also less likely than females to have knee osteoarthritis. It's interesting to note that not all people with knee osteoarthritis will have symptoms. Only 15% of patients with radiographic evidence of knee OA were symptomatic, according to one study. Without taking into account age, there are about 240 incidences of symptomatic knee osteoarthritis per year per 100,000 people. The number of persons with knee osteoarthritis is increasing daily as a result of ignorance. It has a devastating impact on a large number of people, making them burdens on themselves and on their families, society, and the entire nation. The development of physiotherapy abilities and the expansion of the sector in this nation can both be facilitated by research in this area. The researcher sought to conduct a study on "factors of developing knee osteoarthritis in elderly" for Bangladeshis as a consequence. Other medical experts will learn the most recent details on what causes osteoarthritis of the knee. A great number of others will also profit from this insight.

1.2 Research Question

What are the factors related to osteoarthritis at the knee joint of elderly people?

1.3 Objectives of the study

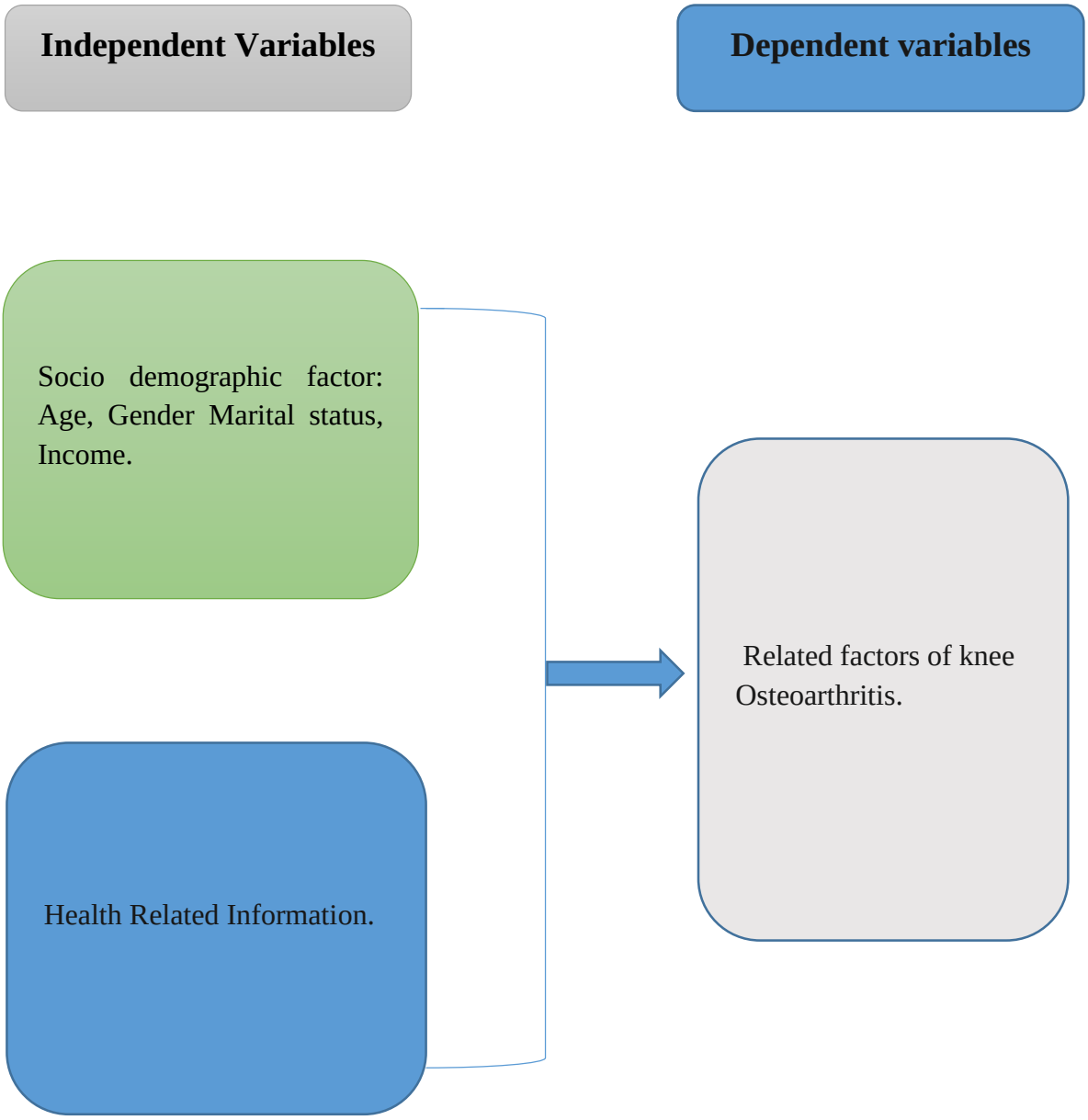
1.4.1 General objective:

- To identify the factors related to osteoarthritis at the knee joint of elderly people**.**

1.4.2 Specific objectives:

- To inquire about comorbidities of the respondents.
- To describe the characteristics of the pain due to osteoarthritis of knee joint.
- To explore socio-demographic characteristics.

1.4 List of variables of the study



1.5 Operational definitions of the variables

Factors related:

Something that raises your risk of contracting an illness is referred to as a factor.This can sometimes be caused by something you do. For instance, smoking raises the risk of colon cancer. As a result, smoking contributes to colon cancer. Occasionally, there is nothing you can do to reduce the risk. It simply is. For instance, colon cancer is more likely to affect adults over 50 than under 50. So, colon cancer risk factors include age.

Knee Osteoarthritis:

Osteoarthritis of the knee is a degenerative joint condition characterized by discomfort in the knee that makes it difficult to conduct everyday tasks adequately, decreased joint range of motion, and difficulty doing daily activities (ADL).

Elderly people:

Knee OA affects most adults aged 65 or older, with prevalence in the US of 33.6% (12.4 million). Women have a greater prevalence (42.1%) than do men (31.2%).4 Women with radiographic knee OA are more likely to have symptoms than men, and African Americans generally report more knee and hip symptoms than do whites.

CHAPTER – II LITERATURE REVIEW

Osteoarthritis (OA) is characterized by focal areas of loss of articular cartilage within synovial joints, which are associated with hypertrophy of bone and thickening of the capsule. Clinically, the condition is characterized by joint pain, tenderness, limitation of movement, crepitus, occasional effusion, and variable degrees of local inflammation. With increasing life expectancy, osteoarthritis is estimated to be the fourth leading cause of disability by the year 2020 (Woolf et al., 2013)

Osteoarthritis (OA) is a condition that affects the joints over time and progresses, causing structural damage to one or more joints. The importance of this health issue is currently under appreciated, with estimates indicating that over 10% of people over 60 in the world have OA (Hunter et al., 2014).

One of the most prevalent musculoskeletal ailments is osteoarthritis (OA), a debilitating and degenerative condition. The development of OA result from the interaction of risk factors such genetics, aging, fat feminine, gender, and injury (Gerner el al., 2013).

Although disease progression is typically gradual, it can eventually result in joint failure, discomfort, and disability. The population is typically most affected by OA of the hips and knees because severe disability frequently results from pain and stiffness in these large weight-bearing joints, necessitating surgical intervention. Any joint can develop OA, but the knees, hips, hands, facet joints, and feet are the ones that are most frequently affected. According to estimates, symptomatic osteoarthritis affects 9.6% of men and 18.0% of women under the age of 60 worldwide, but it might affect anywhere between 14 and 47% of people in India (Ganvir et al., 2013).

Osteoarthritis, particularly knee osteoarthritis, is more common as the world's population ages and the proportion of adults over 60 increases. However, it is believed that the main factor contributing to the increased incidence of knee osteoarthritis is not more than to aging but to the increased incidence of knee osteoarthritis is not more than to aging but to the increased incidence of obesity (Lee and kear., 2012).

In people aged 70 to 74, the prevalence of osteoarthritis of the knee car reach 40%. Adult prevalence is 10% when the diagnosis is made only on the basis of clinical signs and symptoms. Only around 15% of individuals with radio logically proven knee osteoarthritis report experiencing knee pair, despite the typical radiological markers of

the condition being present. According to estimates, 1% of those over 70% have the disorder each year (Michael et al., 2010).

With the present evidence base for the efficacy of exercise in treating sports injuries remaining incomplete, eccentric and strengthening exercise has shown inconsistent result across various studies to treat tendon, ligament, and skeletal muscle injuries. In comparison to hyaluronic acid, other intra-articular injection, and placebo in OA knees, exercise and physiotherapy have shown more consistently beneficial outcomes than in other musculoskeletal tissues (Smith et al., 2014).

The most prevalent type of arthritis is osteoarthritis (OA), a condition affecting the articular joints. In middle –aged and older people, OA is linked to considerable morbidity, death physical impairment, and higher health care costs (Hochberg et al., 2012).

OA is caused by a variety of distinct etiologies, all of which lead to a shared Phenotype that affects and disturbs all of the tissues inside and outside the affected joint (Arden et al.,2013). In order to create new treatments to both prevent and cure painful OA, research is being done to discover risk factors for its onset and progression.

Age, gender, race, genetic and nutritional variables, smoking, low estrogen levels, and bone density are all systemic risk factors for knee OA that affect disease susceptibility. The local elements that affect how the load is distributed across the knee joint include obesity, knee alignment, and proprioception, and laxity, physical activity, per articular muscle weakness, occupational stress, and injury (Vaishya et al., 2016).

Using risk reduction techniques, modifying exposures or behaviors that can result in disease or boosting resistance to the effects of exposure to a disease agent, primary prevention strategies aim to stop the onset of particular diseases. Some tactics that are pertinent to knee OA include preventing knee injuries and adolescent obesity. The identification and treatment of risk factors for progression in people who are already at risk constitute secondary prevention. The detection and monitoring of weight gain, Proprioceptive acuity deficiencies, dynamic joint instability, and muscle function are a few examples that are pertinent to knee OA. Those who have previously suffered a knee injury can then be treated with weight management and focused exercise treatment. OA is a diverse illness that affects a variety (Roos et al., 2016).

Six categories were created from the identified modifiable exposures: 1.Obesity and overweight 2.Co morbidity 3.Occupational factors 4.Physical activity 5.Biomechanical factors, and 6.Food exposure (Georgiev and Angelovs., 2019).

It is possible to estimate the direct, indirect, and intangible costs of OA. The impact of OA or quality of life may be the greatest way to illustrate the intangible cost of OA as the reason for increased mortality in OA patients remains uncertain. The present course of treatment for KOA is palliative, mostly consisting of painkillers and close observation, with total joint replacement as a last resort. Because of this, the illness burden of KOA is rapidly rising. A sizeable portion of the direct cost of KOA goes toward palliative care, and hospital admission fees alone, which are mostly for joint replacement, make up about half of the direct cost (Lee and Kim. Et al., 2015).

The OAI sought out male and female participants of various racial and ethnic backgrounds between the ages of 45 and 79. Male and female participants, 45 to 79 years old, from all ethnic backgrounds, with or at high risk of developing symptoms of knee osteoarthritis, were sought out by the OAI. Participants with inflammatory arthritis, bilateral end-stage osteoarthritis of the knee and conditions that preclude 3.OT MRI scan were disqualification from the study (Ronger et al., 2016).

We can learn more about the likely etiology of knee OA by examining the variations in prevalence, incidence, and risk factors of knee OA according to age, gender, area and other factors.

Epidemiologic data on knee OA in the global population, however, are scarce The Global Burden of Disease (GBP) research from 2017 and recent reviews evaluated the epidemiological aspects of knee OA, although they continued to use information from studies conducted prior to 2000 (James et al., 2017).

Furthermore, determining the impact of OA was the primary goal of the GBD Study. Additionally, due to the discrepancy between radiographic and symptomatic changes, the GBD study of 2017 only included instances of symptomatic knee OA that were radio logically confirmed which tended to collect causes at a rather late stage.

Women are more likely than males to have OA, and as people get older, the prevalence rises. The prevalence of symptomatic OA was reported to be 9.6% in men and 18% in women. In contrast to the 70% of people over 65 who have radiological evidence, about 45% of women in this age group report symptoms. According to research done on women, there is no correlation between estrogen and the prevalence of OA in menopausal age (Pal et al., 2016).

The most common disease and the main source of persistent pair and impairment is osteoarthritis (OA) of the knee (Colbert et al., 2012).

The affected individuals are older than 45. Folks who are 55 years or older. They are responsible for 10% of the occurrence of knee OA.25% of them have significant disabilities (Global et al., 2018).

Around 3.8% of people worldwide had knee OA in 2010 (Cross et al., 2014), around 28% of Americans had knee OA in 2007. Prevalence percentages range from 13.4% to 67.00% throughout Europe, Australia and Canada (Mine K et al., 2018) In India, knee OA affects 22% to 39% of the population (Pal et al., 2016).

In Bangladesh, The COPCORD study found that urban OA prevalence was Higher than rural OA prevalence (Pal et al., 2016).The senior population of the use in anticipated to experience an increase in the societal effects of knee OA impairment (Calbert et al., 2012).

One in Six adults have OA, and by 2030, it is predicted that 20% of people in Europe and the use will have the disease. In several Asian nations, the senior population is quickly expanding. According to projections, Asia's population aged 65 and over will more than double in the next 20 years, rising from 608% in 2008 to 16.2% in 2040. In the majority of the industrialized world, Population shift occurs gradually after decades of consistent socioeconomic expression. In Contrast, many Asian nations experience this shift in a matter of two of three decades.

For Instance, it is predicted that between 2008 and 2040, the population aged 65 and over will rise by 316% in Singapore, 274% in India, 269% in Malaysia.

The most common type of osteoarthritis (OA) in the world is knee osteoarthritis (KOA). It is described as a multifactorial, complicated disease that is characterized by sclerosis of the subchondral bone and progressive deterioration of the articular cartilage. It is a major source of pain and impairment, particularly in the aged population (Loese et al., 2012)

About 25% of adults over the age of 50 report having chronic knee pain, with 6% of those individuals reporting severe knee pain and functional impairment (Jinks et al., 2010). Since age is the primary factor linked to the development of OA, it is anticipated that the burden of KOA on the global health care systems will rise as the population ages (Du et al., 2004). In addition to their discomfort, elderly KOA patients may have a lower quality of life as a result of stiffness, deformity, and a restricted range of motion as well as cognitive-evaluative and affective-motivational components. Numerous brain areas, including the thalamus, sensorimotor cortex, and dorsolateral prefrontal

cortex, are involved in processing pain, according to neuroimaging studies (J. Lorenz et al.,) As a result, KOA pain is a combination of structural and local abnormalities at several neuro axis levels rather than solely being caused by structural injury to the knee (Fingleton et al.,2015)

The relationship between mood disorders and KOA pain has been extensively studied, and it suggests that high levels of psychological distress, such as depression, fear, and anxiety, contribute to pain maintenance and physical limitation in addition to altered peripheral and central nociceptive processes (Scopaz et al., 2009)

After doing a systematic study, Sharma et al. came to the conclusion that anxiety and depression may have a detrimental effect on an individual's health-related quality of life (HRQol) by affecting how they perceive pain and function physically (Sharma. et al., 2016).

There appears to be a reciprocal association between KOA pain and psychological illnesses, as KOA pain can either cause or worsen psychological conditions (Hansen et al., 2009). Consequently, the course of one chronic illness may be adversely affected by the other. Furthermore, in KOA patients, pain intensity and functional deterioration are consistently correlated with pain-related cognitions such as pain catastrophizing and self-efficacy.

Most of the OA disability burden is attributable to the knees. In fact, OA is the precipitating diagnosis for more than 90% of the increasing number of total hip or knee Joint replacement operations being undertaken worldwide (Newman et al., 2009). Many countries in Asia are ageing rapidly. It has been estimated that the percentage of people aged 65 years and over in Asia will more than double in the next two decades, from 6.8% in 2008 to 16.2% in 2040. In most of the developed world, demographic change was a gradual process following steady socioeconomic growth over several decades. In many Asian countries, the change is being compressed into two or three decades. For example, during the period 2008– 2040, it is estimated that Singapore will increase the proportion of people aged 65 and over by 316%, India by 274%, Malaysia by 269%, Bangladesh by 261%, and the Philippines by 256%. In 2008, Japan had the world’s oldest population (21.6% aged 65 years and over) and China and India were ranked the top two countries in the absolute number of people aged 65 (Kinsella et al., 2009).

OA affects one in six adults, and by 2030 it is estimated that 20% of people in Europe and the United States will suffer from OA. The senior population is growing rapidly in many Asian countries. It is estimated that the 65+ population in Asia will more than double in the next two decades, increasing from 6.8% in 2008 to 16.2% in 2040. In most of the developed world demographic change is a gradual progress following the steady socioeconomic growth over several decades. In contrast, this change is compressed into 2-3 decades in many Asian countries. For example, during the period between 2008 and 2040, it is estimated that the 65+ population will increase by 316% in Singapore, 274% in India, 269% in Malaysia, 261% in Bangladesh, and 256% in the Philippines. In 2008, Japan had the world's oldest population (people 65+ represented 21.6% of whole population), and both China and India were ranked top two for the size of 65+ population (106 and 60 million, resp. The high prevalence and heavy impact on working capacity make OA a major social issue. Therefore, healthcare and socioeconomics need to put a high priority to the prevention and treatment of OA (De Bari et al., 2010).

The several modifiable risk factors include repetitive movement of joints, obesity, infection, and injuries. The occupational physical activities are unchanging motions and great forces such as kneeling, squatting, 18-25 climbing, and heavy weight lifting (Pal et al., 2016). Among various risk factors, the most important risk factors for knee OA are obesity, previous knee injury, and family history of OA. For the impact of knee OA, people with symptomatic knee OA may be more motivated to take preventive measures for delaying disease progression than those without radiographic OA. Therefore, investigators and persons suffering from knee OA are especially interested in risk factors that are linked with radiographic OA progression because such knowledge will provide valuable guidance for secondary prevention (Felson et al., 2010).

(Martin et al., 2013) recently published a cohort study that found that BMI is positively associated with knee OA in women and that more active people have a decreased risk of knee OA. Salve et al., 2010 discovered that the prevalence of OA was higher in the lower socioeconomic population than the higher socioeconomic population in a house to-house survey of 260 premenopausal women in South Delhi. Patients with knee OA may be motivated to lose weight if it can be demonstrated that doing so not only relieve pain but also prevents the progression of structural damage (Niu et al., 2009).

The American College of Rheumatology (ACR) criteria for OA of the knee has been published by Altman et al. These classification criteria, used typically as inclusion criteria in clinical trials worldwide, are mostly the combination of clinical and radiographic findings. They include one of the following three findings, age above 50, stiffness less than 30 min, and crepitus, together with structural changes i.e. osteophytes and joint space narrowing (Kellgren II on standardized radiographs). These classification criteria display 91 % sensitivity and 86 % specificity. Recently, in an attempt to harmonize studies addressing the underlying genetic basis of OA (Kerkhof et al. 2011) published recommendations on standardization of OA phenotypes, suggesting that at least one definite osteophyte with possible joints space narrowing is needed to establish the diagnosis of radiological knee OA. Additional issues around the OA knee phenotype have been reported in other publications, highlighting the pitfalls in defining symptomatic and radiological OA (Felson et al., 2011).

Among Japanese people aged 60 years or above, having an occupation involving climbing more than 1 h a day, standing more than 2 h a day, lifting weights of 10 kg or more at least once a week and walking more than 3 km a day were each associated with a 1.4–2.0 increased odds of radiographic knee OA, after adjustment for age, sex and body mass index (BMI) (Muraki et al., 2009).

The Hallym Ageing Study, 28 conducted in Korea among people aged 50 years or over, demonstrated an increased likelihood of radiographic knee OA with reporting a manual occupation in multivariate analysis. It was demonstrated that the prevalence of symptomatic knee OA and knee pain was significantly higher in rural Wuchuan county, compared with urban Beijing among people aged 60 years or over and using identical disease case definitions.

CHAPTER – III METHODOLOGY

3.1 Study design

It was a descriptive type of cross-sectional study carried out with the objective to identify the factors related to osteoarthritis at the knee joint of elderly people**.**

3.2 Study place

The relevant data for the present study were collected from the elderly with osteoarthritis of knee joints attending the National Institute of Traumatology and Orthopedic Rehabilitation and Unique physiotherapy center (Mirpur 11) in Dhaka city.

3.3 Study period

The duration of the study was 12 months from 1st July 2022 to June 2023.

3.4 Study population

The population of this study is osteoarthritis at the knee joint of elderly people.

3.5 Sample size

Sample size for this study was calculated by the following

$n = Z^2 pq/d^2$

Here,

n=sample size

z=1.96

p=prevalence 27.1% (Venkatachalam et al. 2018)

q=1-p

d=0.05

so,

$n = Z^2 pq/d^2$

$$n=\frac{0.2127\times(1-0.2127)\times(1.96)^2}{(0.05)^2}$$

$$n=\frac{0.2127\times0.729\times3.84}{0.0025}$$

$$n=\frac{0.7586}{0.0025}$$

n=310

n=310

So, sample size is 310.

So, I was to focus my study by 310 samples following the calculation above initially. As a student I am not able to collect full number of data due to time limitation. I able to collect 120 samples.

3.6 Sampling technique

Convenience.

3.7 Eligibility criteria

3.7.1 Inclusion criteria

- Osteoarthritis patients.
- Age of 60-85 years (Nakano et al.,2014)
- Both male and female.
- Knee osteoarthritis that was confirmed diagnosed by X-Ray or MRI**.**

3.7.2 Exclusion criteria:

- Patient with knee osteoarthritis and others serious associated diseases.
- Patients who are not interested.
- Patients who did not singed on consent form.

3.8 Method of data collection

Data were collected through the face to face interviews with participants using the pretested questionnaire**.**

3.9 Instrument and tools of data collection

- Self-developed structured questionnaire.
- A structured questionnaire was used to collect socio-demographic information

3.10. Procedure of data collection

Before collecting the data from the participants, the researcher obtained permission from the concerned authority of National Institute of Traumatology and Orthopedic Rehabilitation and Unique physiotherapy center (Mirpur 11) in Dhaka city. Then the patients with osteoarthritis at knee joint were approached by the researcher herself and explained the aims and objectives of the study in details. The patients who agreed to participate were included for the study. Obtaining written informed consent, the researcher started interview with the individual participant using self-developed

structured questionnaire to elicit information. After completing the interview the researcher thanked the respondents.

3.11. Data management:

At the end of the day the collected questionnaires were checked for any error or inconsistency. Necessary corrections were done accordingly.

3.11.1: Data analysis

Analysis of data was carried out according to the objectives. Descriptive statistics included frequency, percentage, mean and SD were used to describe factor related to osteoarthritis.

3.13 Ethical consideration

The investigator obtained written permission from ethical review board (SCMST). Ethical review board informed by written document about aims and objectives of the study and that the patients of the study would not be harmed or the clients name, address and personal information would be kept confidential by the investigator and the dates would not be shared with others.

The present study was a descriptive one. No invasive technique was used in this research. Only interview technique was applied to collect information from the participants.

CHAPTER – IV RESULTS

The objective of the study was to identify the factors related to osteoarthritis at the knee joint of elderly people. Data were collected through the face to face interviews with participants using a pretested questionnaire and Self-developed structured questionnaire**.** The data were analyzed with the Microsoft Office Excel 2010 with SPSS 25 version software program. In this study the researcher used frequency tables, bar chart, figure, pie chart and description of the variables to present the result of the study.

Table no.1 Frequency distribution of the respondents by age.

Age group in years	**Frequency**	
	N	**%**
40 – 50	39	32.5
51 – 60	51	42.5
61 – 70	25	20.8
71 – 80	5	4.2
Total	120	100
Mean ± SD	54.96±8.915	

It was revealed in the study that 39 (32.5%) participants belonged to the age group of 40 - 50 years. It was also found that 51 (42.5%) participants were in the age group 51 – 60 years, 25 (20.8%) participants belonged to the age group 61-70 years and 5 (4.2%) participants belonged to the 71 – 80 years age groups. The mean age and SD was 1.39 years and 6.89 respectively (Table no 1).

Table No 2: Educational level of the participants.

Educational level	Frequency	
	N	%
No formal schooling	5	4.2
Less than primary	5	4.2
Primary	11	9.2
SSC	37	30.8
HSC	36	30.0
Bachelor	14	11.7
Masters	9	7.5
Others	3	2.5
Total	120	100

About educational status of the participants, the study showed that 37 (30.8%) participants had SSC level of education, 36 (30.0%) participants passed HSC level, 14 (11.7%) participants were passed bachelor degree and 9 (7.5%) participants were passed master degree (Table no.2).

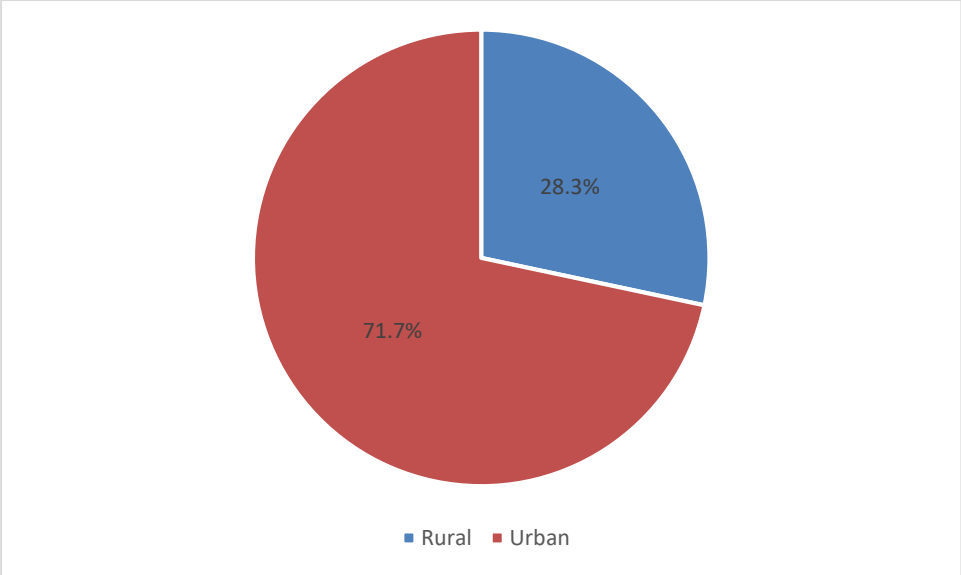


Figure No: 1 Living area of the participants

Regarding living area, it was found that 86 (71.7%) participants lived in urban area and 34 (28.3%) participants lived in rural area (Figure no.1).

Table No:3 Frequency distribution of the participants by monthly income

Taka	Frequency	
	N	**%**
Less than Taka 50000	58	48.3
50000 - 100000 Taka	57	47.5
100001-150000 Taka	1	3.3
More than 150000 Taka	4	8.00
Mean ± SD	66558.3±39937.2	

It was revealed that out of 120 participants, 58 (48.3%) participants monthly income was less than Taka 50000, 57(47.5%) participants monthly income were 50000-100000 Taka, 1 (3.3%) participants monthly income 100001-150000 Taka, and 4 (8.0%) participants monthly income more than Taka 150000. The mean of the participant's income was 66558.3 and standard deviation was 39937.2 (Table no 4).

Past experience knee injury:

Among total 120 participant, 40 respondents yes whose were 33.3%, and 80 respondents whose were 66.7%.

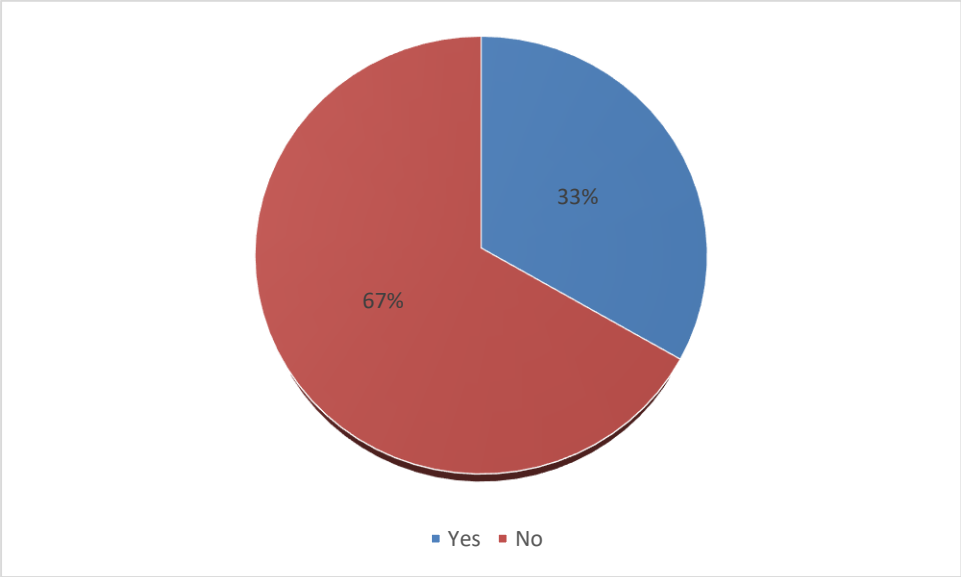


Figure 2: Past experience knee injury of the participants.

Past experience knee swelling:

Among total 120 participant, 64 respondents yes whose were 53.3%, and 56 respondent whose were 46.7%.

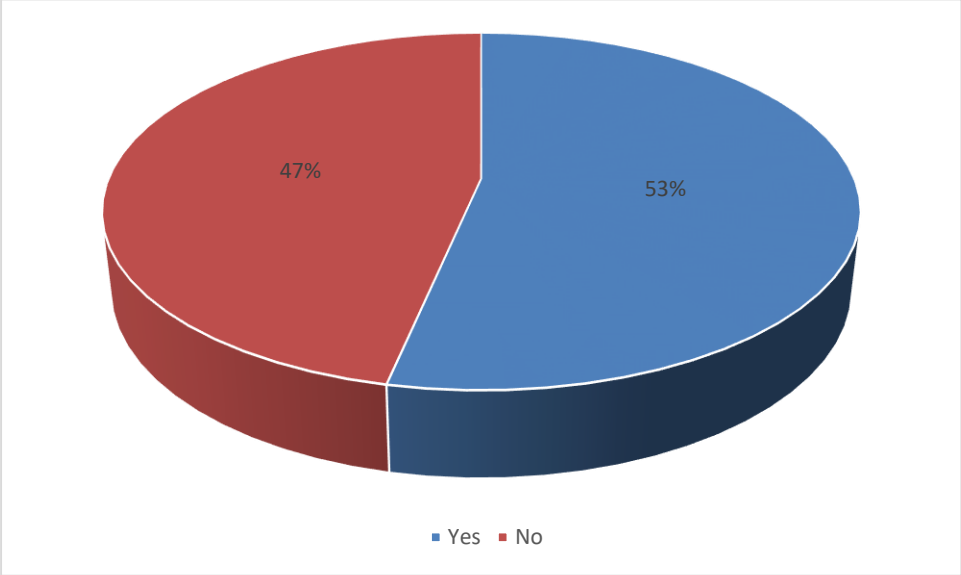


Figure 3: Past experience knee swelling of the participants

Knee pain affect my sleep of the participants

Among total 120 participant, 27 respondents never whose were 22.5%, 73 sometimes 60.8% and 20 respondent whose were 16.7%.

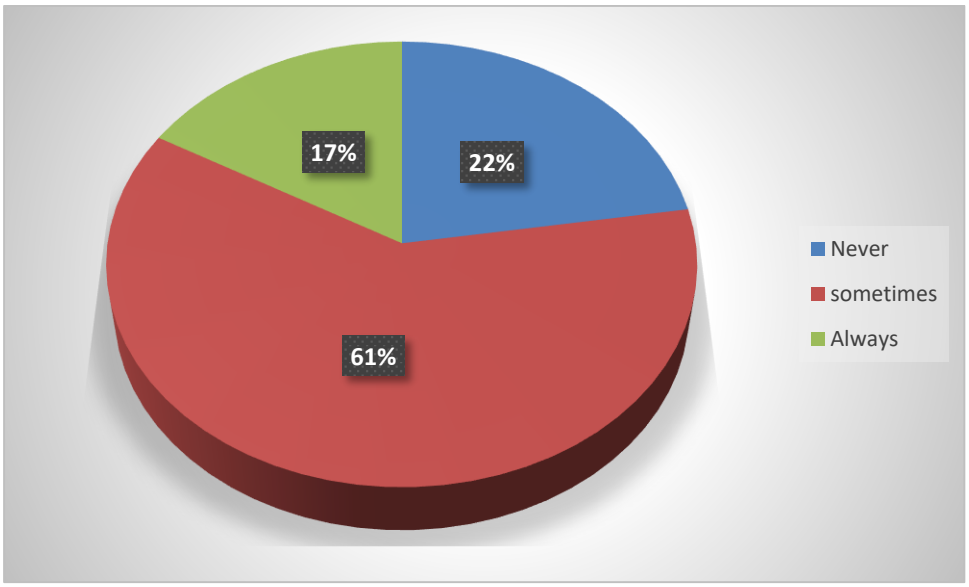


Figure: Knee pain affect my sleep of the participants.

I generally felt tired of the participants

Among total 120 participant, 77 respondents yes whose were 64.2%, and 43 respondent whose were 35.8%.

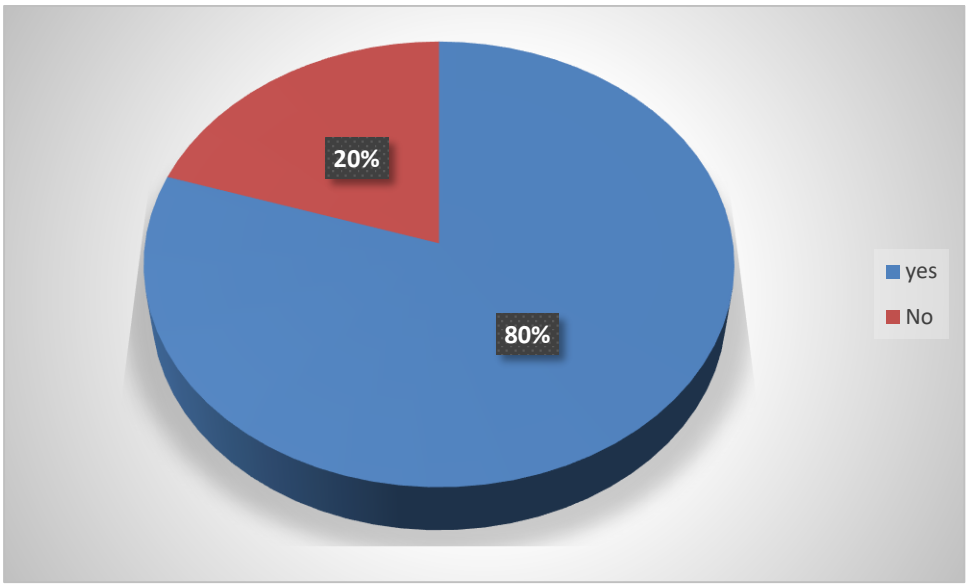


Figure: **I generally felt tired of the participants**

Comorbidities of the participants

Among total 120 participant, 47 respondents Diabetes whose were 39.2%, 36 Depression 30.0% and 37 Cardiovascular disease whose were 30.8%.

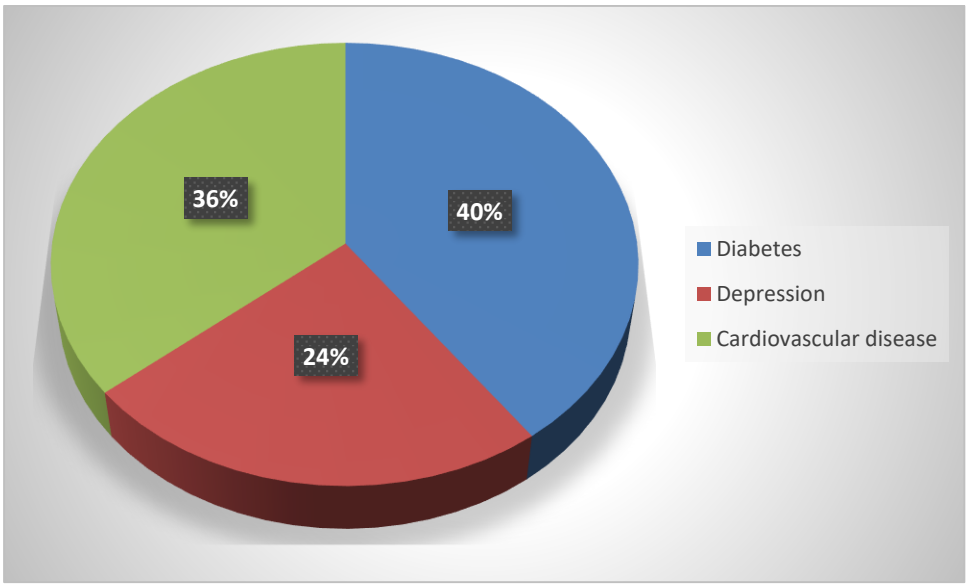


Figure: Comorbidities of the participants

BMI of the participants

Among total 120 participant, 38 respondents normal whose were 31.7%, 57 overweight 47.5% and 25 0besity whose were 20.8%.

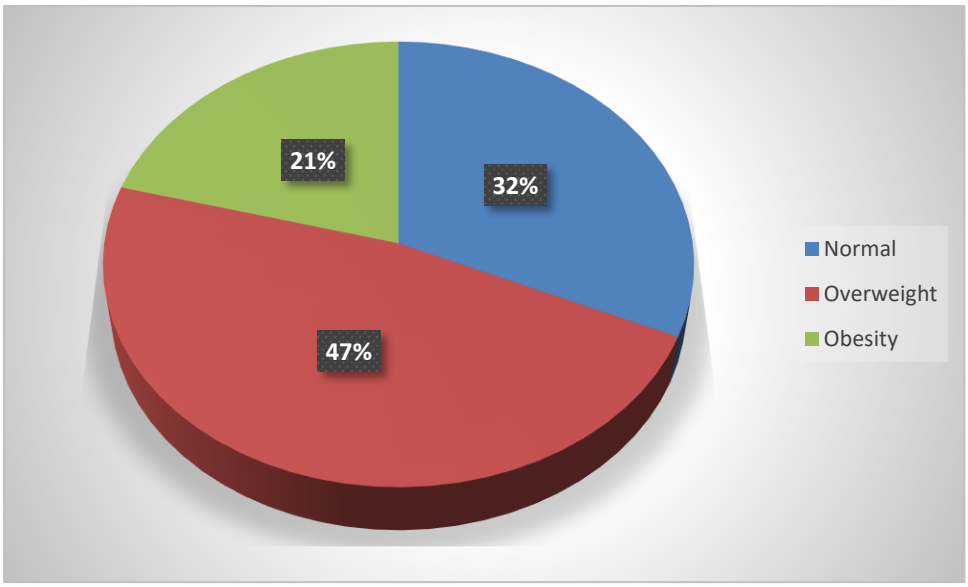


Figure: BMI of the participants

Occupation of the participants

Among total 120 participant, 64 respondents Government job whose were 53.3%, 4 Teaching 3.3% and 1 Health worker whose were 8%.15 Businessman 12.5%, 36 other 30.0%.

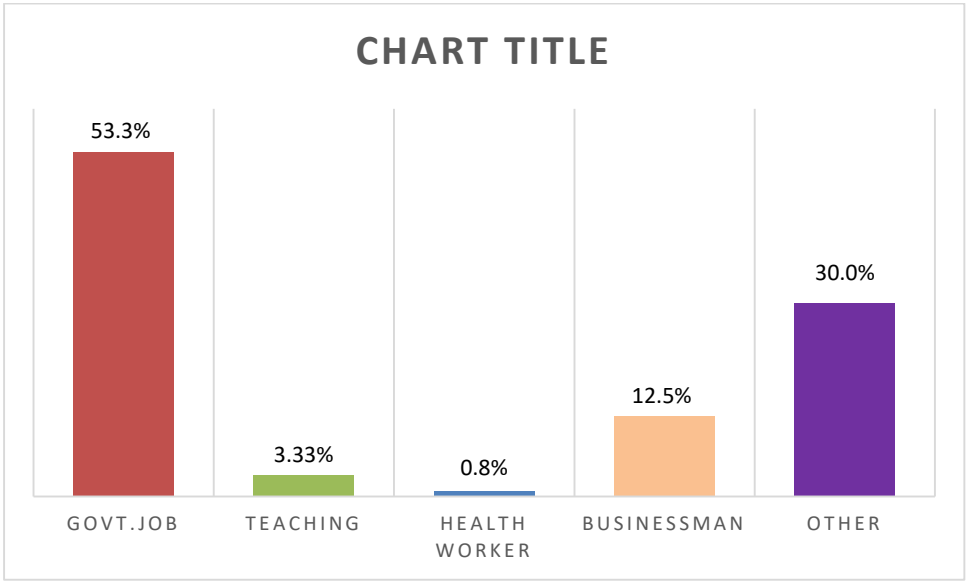


Figure: Occupation of the participants

Sustained knee bending of the participants

Among total 120 participant, 29 respondents yes whose were 24.2%, 91 respondents no whose were 75.8%.

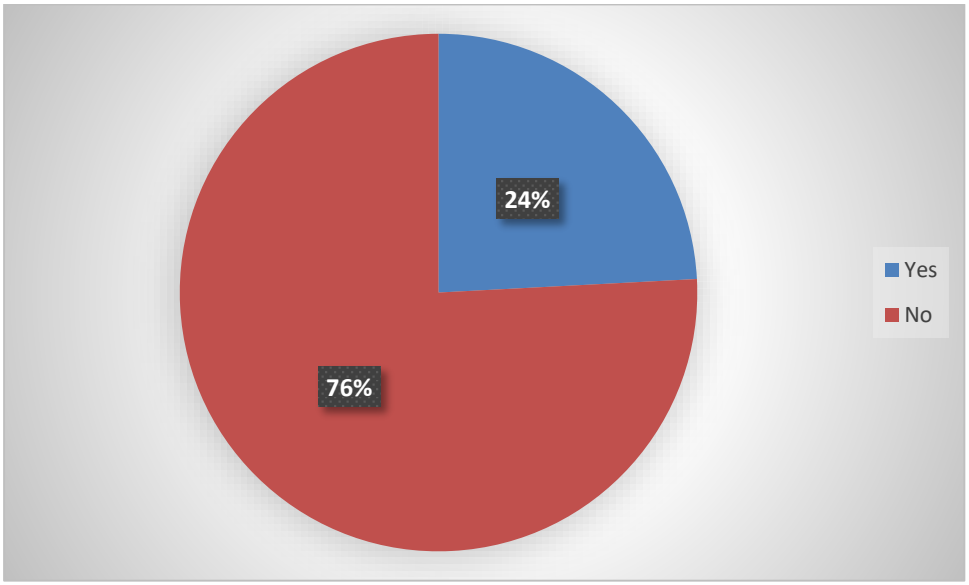


Figure: Sustained knee bending

Stair climbing of the participants

Among total 120 participant, 64 respondents yes whose were 56.8%, 52 respondents no whose were 42.5%.

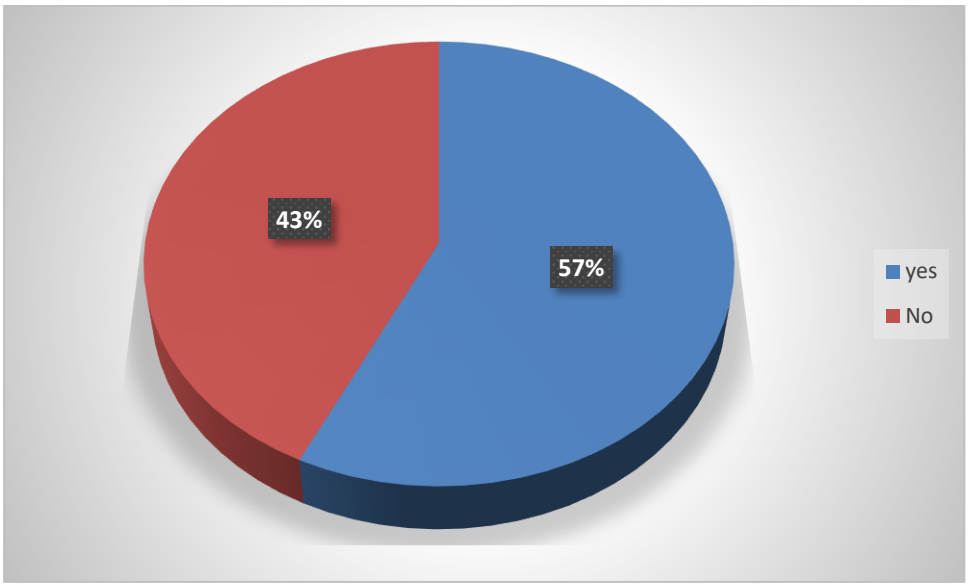


Figure: Stair climbing

Duration of daily physical activities of the participants

Among total 120 participant, 15 respondents less than four hours 12.5% whose16 more than four hours 13.3%, 89 respondents other 74.2%.

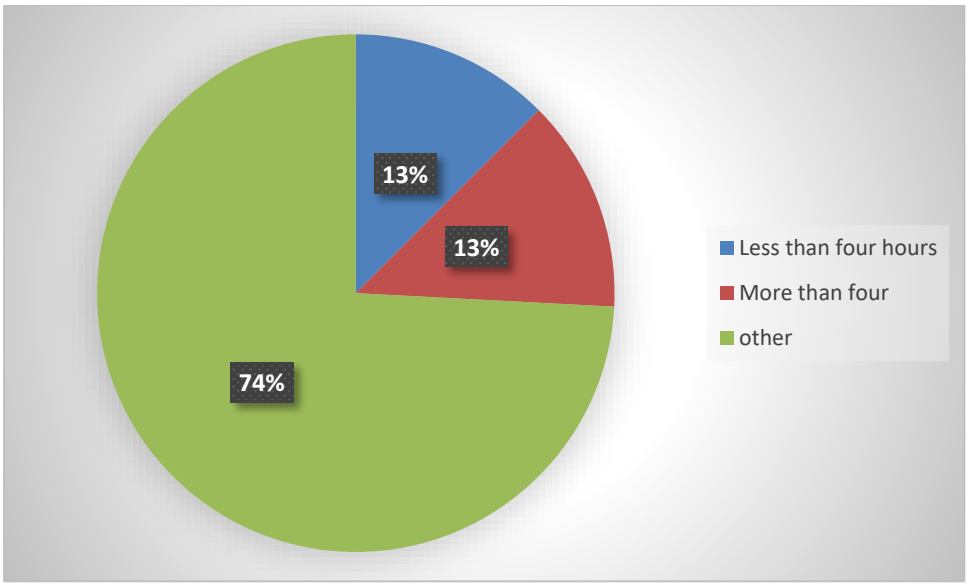


Figure: Duration of daily physical activities

Prolong standing of the participants

Among total 120 participant, 24 respondents yes whose were 20.0%, 96 respondents no whose were 80.0%.

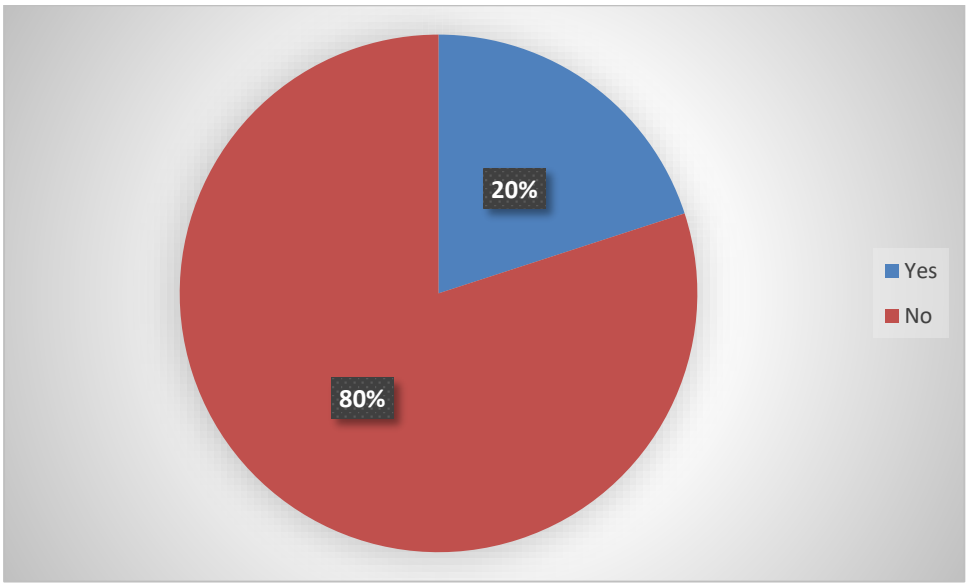


Figure: Prolong standing

Barefoot walking of the participants

Among total 120 participant, 13 respondents yes whose were 10.8%, 107 respondents no whose were 89.2%.

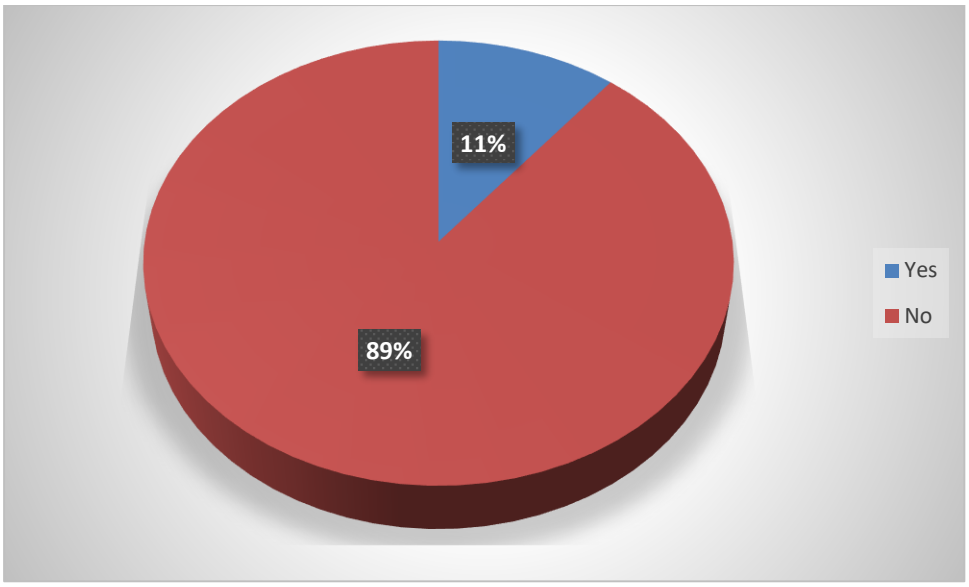


Figure: Barefoot walking

Use of high heeled shoes of the participants

Among total 120 participant, 06 respondents yes whose were 5.0%, 114 respondents no whose were 95.0%.

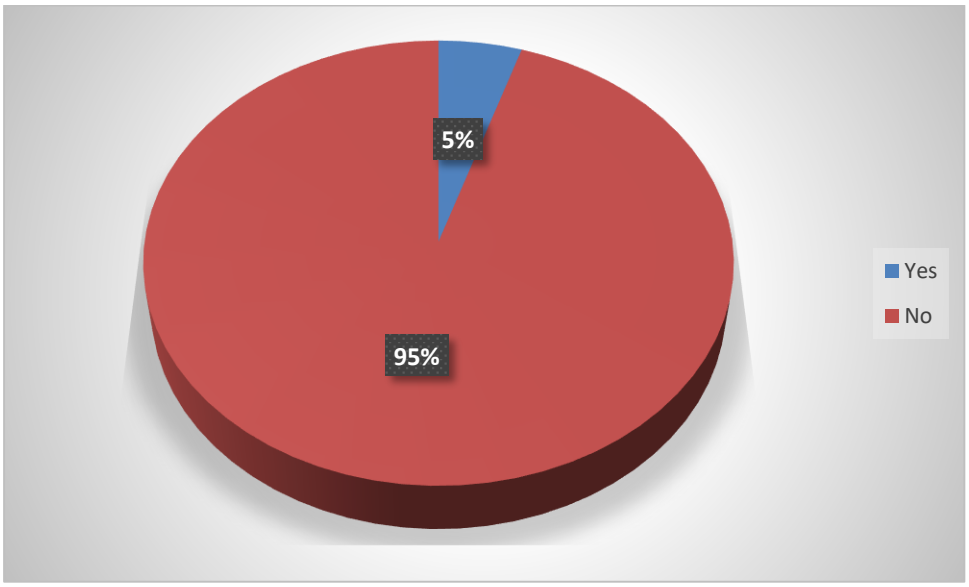


Figure: Use of high heeled shoes

Heavy weight bearing of the participants

Among total 120 participant, 10 respondents yes whose were 8.3%, 110 respondents no whose were 91.7%.

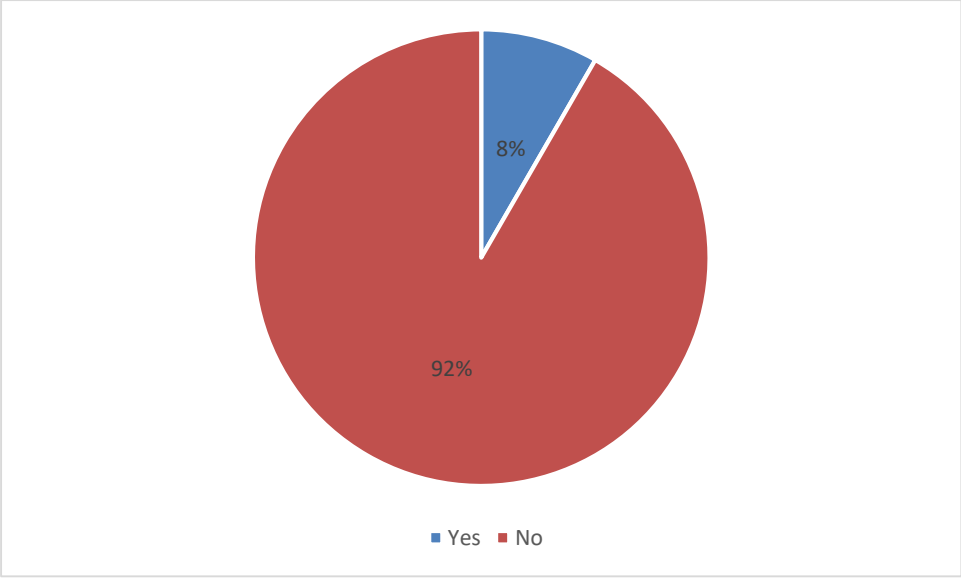


Figure: Heavy weight bearing

Sitting on the floor for home of the participants

Among total 120 participant, 42 respondents yes whose were 35.0%, 78 respondents no whose were 65.0%.

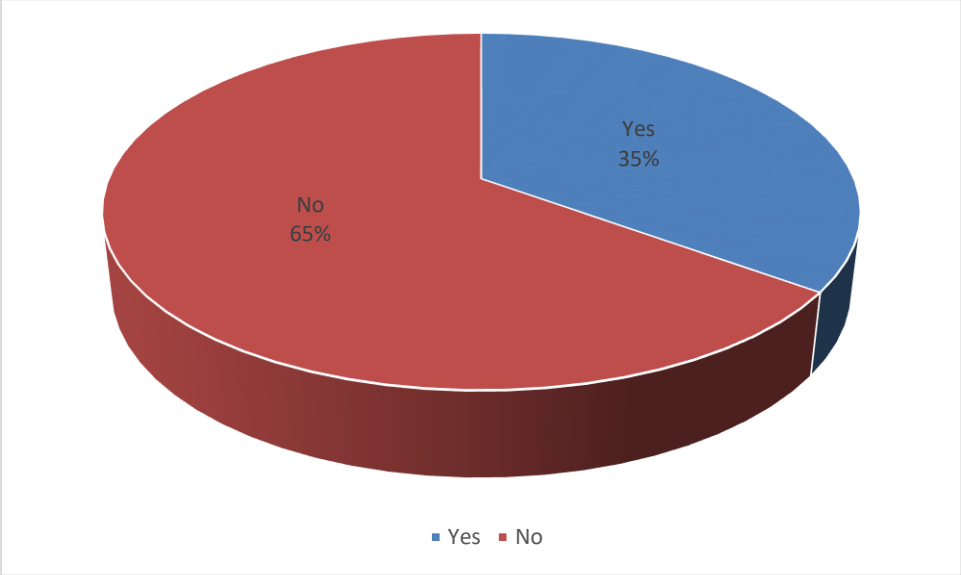


Figure: Sitting on the floor for home

Association:

Association between age and generally felt tired:

Age group	**Generally felt tired**		P value	**C square test**
	Yes	No		
40-50 years	23	16	0.324	3.475
51-60 years	31	20		
61-70 years	20	5		
71-80 years	3	2		

The Chi- square test was performed between the socio-demographic factors with among the 120 participants. Association between age and generally felt tired Chi value =3.475 and P=0.324, <0.05 as significant, It no significant relation age and generality felt tired.

Association between family income and heavy weight bearing:

Family income	Heavy weight bearing		P value	Chi square test
	Yes	No		
Less than 50000	5	53	0.924	0.475
50000-100000	5	52		
100001-150000	0	1		
More than 150000	0	4		

The Chi- square test was performed between the socio-demographic factors with among the 120 participants. Association between family income and heavy weight bearing value=0.475 and p=0.924, <0.05 as significant, It no significant relation family income and heavy weight bearing.

CHAPTER – V DISCUSSION

The present study was carried out with the objective to assess the factors related to osteoarthritis at knee joint of elderly people in different areas of Bangladesh. The collected data were analyzed with the Microsoft Office Excel 2010 with SPSS 25 version software program. The discussion of the result has been presented in the following section.

In this study there were 120 numbers of the participants was hospital based unmatched setting. Intention of this study was to determine the factors of osteoarthritis at knee joint for the elderly people attended. With considering the variables like socio-demographic variables, using high heeled shoe, past history of a major or acute knee injury, past history of a painful swelling of knee joint, positive family history of knee joint injury, BMI, sustained knee bending, stair climbing, prolonged standing, barefoot walking, sitting on the floor for home activity, regular weight bearing, duration of physical activity.

This study claimed that, association between age and generally felt tired the Chi- square test was performed between the socio-demographic factors with among the 120 participants .Association between age and generally felt tired Chi value =3.475 and P=0.324,<0.05 as significant, It no significant relation age and generality felt tired.

Osteoarthritis is the most prevalent of the rheumatic diseases, affects more than 40% of western world adults with the knee being one of the most commonly afflicted joints (Markset al., 2000). In United Kingdom an estimated 34% of populations have radiographic osteoarthritis of the knees whilst 19% have radiographic osteoarthritis of the hips. Up to two-third of those with knee Osteoarthritis and one-third of those wit hip Osteoarthritis (Bulstrod et al., 2002).

About distribution of the participants by age group in years, it was revealed 39% Osteoarthritis belonged to the age group of 40-50 years. It was also found that 51% firefighters were in the age group of 51-60 years. The mean age of the participants was 54.93 and SD was 8.915 (Table no.1). And all the participants were elderly people in this study.

Dulay et al., (2015), founded his study mean age of population was 40.54 years about, 19.4% participants were in the age group of 40-50 years, 44.4% participant age 51-60 years . But in this study 120 participants were Osteoarthritis patient.

Felson (1996) stated that, the stress and amount of force on the weight-bearing joints are increased in overweight subjects. This additional physical load could cause cartilage breakdown leading to knee OA. In a study in London Solomon et al., (2001) mentioned that, in the majority of cases the precipitating causes of knee OA is increasing mechanical stress in some part of the articular surface.

Felson et al., (1997) found that, greater body mass index (BMI) and increased body weight have been associated with greater risk of developing osteoarthritis. Revealed distribution of the participants by BMI, 31.7% Normal, 47.5% of Over weight and 20.8% Obesity.

Shakoor et al., (2010) stated that without footwear or walking in barefoot makes the different load in the knee joint and it is a factor of knee osteoarthritis. In this study barefoot walking 13 yes 10.8% and 107 no 89.2%. And all the participants Osteoarthritis at knee joint of elderly people.

LIMITATION

As a student, this study was conducted by my found, so there might have some limitations of finical aspect in this study. The most easily accessible participants were collection from the different areas at Dhaka division and it is not covering all the osteoarthritis population. Few researchers had done this before on this topic area. So, there was little evidence to support the result of the study. The interview scheduled survey and interviewing skills were not adequate to get deeper information from the participants, as it was the first attempt for the researcher.

CHAPTER – VII CONCLUSION AND RECOMMENDATION

6.1 Conclusion

One of the main causes of impairment in the US and around the world is knee OA, a degenerative joint condition. It is acknowledged that knee OA has a complex origin, even though disease pathogenesis is still poorly understood and is currently the subject of inquiry. Numerous risk factors for the onset of knee OA are categorized as either modifiable or non-modifiable. Hereditary factors (genetic changes that may predispose a person to the development of OA of the knee) and congenital risk factors (inherited abnormalities in the form of the bone that surrounds the knee joint) are examples of risk factors that cannot be changed. Risk factors that can be addressed for therapy (such as obesity) are referred to as modifiable risk factors. The risk factors of developing osteoarthritis with considering the variables like socio- demographic and socio-economic variables, using high heeled shoe, past history of painful knee swelling, bare foot walking, BMI, occupation, heavy activity more than four-hour, stair climbing, sitting on the floor for home activity, prolong standing, positive family history of knee or other joint diseases, regular weight bearing and sustained knee bending. The investigator found the strong positive association of the knee osteoarthritis using high heeled shoe, past history of painful knee swelling, bare foot walking, BMI, occupation, heavy activity more than four-hour, stair climbing, sitting on the floor for home activity, prolong standing, positive family history of knee or other joint diseases, regular weight bearing and sustained knee bending. The important way for prevention of knee osteoarthritis including the modification daily activity for reduces risk factors.

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Appendix - A

Institutional Review Board (IRB) Permission Letter

SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY

Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Ref :
Ref.No: *SCMST/PT/ERB-2017-18/1-2023/14*

Date : .....

22th February'2023

To

1. The Managing Director, Pain Paralysis Specialized and General Hospital, Manikgonj.
2. The Chairman, Unique Pain and Paralysis Centre, Mirpur-11,Dhaka-1216.
3. The Incharge, Saic Physiotherapy and Rehabilitation services,Mirpur-14,Dhaka-1216

Sub: Permission to collect data.

Dear Sir/Mam,

Ethical review board (ERB) of SCMST pleased to inform you that Rodela Jahan Rima of final year B.Sc. in Physiotherapy student from Saic College of Medical Science and Technology doing a thesis entitle of "Possible Risk Factors of Osteoarthritis of Knee Joint Among Elderly People" which has been reviewed by ERB of SCMST and we are giving permission to her to conduct this study. So she wants to take data from your department.

I hope you will give kind permission to her to collect data to complete her study successfully and oblige thereby.

Thanking You,

22/02/2023
Head of ERB
Ethical Review Board
Saic College of Medical Science and Technology

22.02.23
Principal
Saic College of Medical Science and Technology
Mirpur-14, Dhaka-1216

Approved
22/2/23

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1206. Mobile: 01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

Appendix - B

Permission letter for data collection

SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY
Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Ref : *Date :* .....

Ref.No: *SCMST/PT/ERB-2017-18/1-2023/14*

3rd January'2023

To

Rodela Jahan Rima

4th Professional B.Sc. in Physiotherapy

Saic College of Medical Science and Technology (SCMST)

Mirpur-14, Dhaka-1216.

Sub: Permission to collect data

Dear Rima,

Ethical review board (ERB) of SCMST pleased to inform you that your proposal has been reviewed by ERB of SCMST and we are giving you the permission to conduct study entitled "Possible risk factors of osteoarthritis of knee joint among elderly people" and for successful completion of this study you can start data collection from now.

Wishing you all the best.

Thanking You,

11.01.'23

Head of ERB
Ethical Review Board
Saic College of Medical Science and Technology

11.01.23

Principal
Saic College of Medical Science and Technology
Mirpur-14, Dhaka-1216

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1216.Mobile:01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

Appendix - C

সম্মতিপত্র

আসসালামু আলাইকুম / নমস্কার,

আমি রোদেলা জাহান রিমা, সাইক কলেজ অব মেডিকেল সাইন্স অ্যান্ড টেকনোলজি এর বিএসসি ইন ফিজিওথেরাপি বিভাগে শেষ বর্ষের ছাত্রী । আমি আমার বর্ষের পড়াশুনা শেষ করার জন্য একটি গবেষনা করছি যার শিরোনাম হচ্ছে **"বয়স্ক ব্যক্তিদের হাঁটু জয়েন্টে অস্টিওআর্থারাইটিসের সম্ভাব্য ঝুকির কারন "** ।

এটা আমার অধ্যয়নের একটি অংশ। উল্লেখ্য অধ্যয়ন পরিচালনার জন্য প্রয়োজনীয় কিছু প্রশ্নের তালিকা নিচে দেওয়া আছে। আপনাকে আমার গবেষনার জন্য নির্বাচন করা হয়েছে। এই গবেষনার জন্য আপনাকে কিছু প্রশ্ন করা হবে। যা ১৫-২০ মিনিটের মতো লাগবে । আমার গবেষনার বিষয় হচ্ছে **"বয়স্ক ব্যক্তিদের হাঁটু জয়েন্ট অস্টিওআর্থারাইটিসের সম্ভাব্যঝুকির কারন "** ।

সাক্ষাৎকার নেওয়ার সময় যদি আপনি কোন মানসিক অশান্তি সামাজিক ও অর্থনৈতিক ঝুঁকি অথবা অন্যকোন শারীরিক সমস্যা বোধ করেন তাহলে আমাকে বলবেন, আমি তাৎক্ষনিক সাক্ষাৎকার বন্ধ করে দিবো। আমি প্রতিশ্রুতি দিচ্ছি যে এইটা আপনার জন্য কোন ক্ষতি বা ঝুঁকির কারন হবে না। এই সাক্ষাৎকারে আপনার অংশ গ্রহন হচ্ছে আপনার নিজের ইচ্ছায় এবং আপনি যে কোন সময় চাইলে বন্ধ করে দিতে পরবেন। সাক্ষাৎকার চলাকালীন সময় যদি আপনার কোন প্রশ্নের উত্তর দিতে ইচ্ছা না করে তাহলে আপনি সেটা বাদ দিতে পারবেন। সাক্ষাৎকার বিষয়ে আপনার কোন কিছু জানার থাকলে আপনি আমার সুপারভাইজার কুতুব উদ্দিন এর সাথে যোগাযোগ করতে পারবেন মিরপুর, ঢাকা। সাক্ষাৎকার শুরু করার আগে কি আপনার কোন প্রশ্ন আছে ?

হ্যাঁ ☐ না ☐

গবেষকের স্বাক্ষর:..... তারিখ:.....

অংশগ্রহণকারীর স্বাক্ষর:..... তারিখ:.....

মোবাইল নম্বর:.....

স্বাক্ষীর স্বাক্ষর:..... তারিখ:.....

স্বাক্ষীর মোবাইল নম্বর:.....

প্রশ্নাবলী

শিরোনাম: বয়স্ক ব্যাক্তিদের হাঁটু জয়েন্টে অস্টিওআর্থারাইটিসের সম্ভাব্য ঝুঁকির কারণঃ

ব্যাক্তিগত তথ্যঃ

কোড: | | | |

আইডেন্টিফিকেশন নম্বর:
মোবাইল নম্বর:
ঠিকানা:

শাখা ১ : জনসংখ্যা তাত্ত্বিক প্রশ্ন ঃ

প্রশ্ন নং	প্রশ্ন সমূহ	উত্তর
১.	বয়স	বছর.....
২.	শিক্ষাগত যোগ্যতা	১. প্রাতিষ্ঠানিক শিক্ষা নাই ☐ ২. প্রাথমিকের নিচে ☐ ৩. প্রাথমিক সম্পন্ন ☐ ৪. মাধ্যমিক ☐ ৫. উচ্চ মাধ্যমিক ☐ ৬. স্নাতক ☐ ৭. স্নাতকোত্তর অথবা অধিক ☐ ৮. অন্যান্য ☐
৩.	আবাসিক এলাকা	১. গ্রাম ☐ ২. নগরত্ত ☐
৪.	পারিবারিক মাসিক আয়	.....

শাখা ২ ঃ রোগ এবং পারিবারিক ইতিহাস

প্রশ্ন নং	প্রশ্ন সমূহ	উত্তর
১.	অতীতে গুরুত্বর হাঁটুর আঘাতের অভিজ্ঞতা কি ছিলো ?	১. হ্যাঁ ২. না
২.	অতীতে যন্ত্রনাদায়ক ব্যথার কারনে হাঁটু ফুলে যাওয়ার অভিজ্ঞতা কি ছিল ?	১. হ্যাঁ ২. না
৩.	আপনার পরিবারে অন্য কারো হাঁটু বা জোড়ার রোগ আছে বা ছিল ?	১. হ্যাঁ ২. না
৪.	আপনার হাঁটু ব্যথার কারনে ঘুমানোর সমস্যা হয় ?	১. কখনো না ২. মাঝে মাঝে ৩. সবসময়
৫.	আপনি সাধারণত ক্লান্তি অনুভব করেন ?	১. হ্যাঁ ২. না
৬.	অন্যান্য রোগ	১. ডায়াবেটিস ২. ডিপ্রেশন ৩. কার্ডিওভাস্কুলার
৭.	ওজন	.....কেজি
৮.	উচ্চতা	.....সে.মি
৯.	বিএমআই	.....কেজি/মিটার

শাখা ৩ ঃ পেশাগত কার্যকলাপ

প্রশ্ন নং	প্রশ্ন সমূহ	উত্তর
১.	পেশা	১. গৃহিনী ২. শিক্ষিকা ৩. স্বাস্থ্যকর্মী ৪. পোশাক কর্মী ৫. ব্যবসায়ী ৬. বেকার ৭. অন্যান্য (নির্দিষ্ট)

শাখা ৪ ঃ অবসর ও শারীরিক কার্যকলাপ।

প্রশ্ন নং	প্রশ্ন সমূহ	উত্তর
১.	পেশা	১. হ্যাঁ ২. না
২.	আপনি কি সিঁড়ি দিয়ে উঠানামা করেন ?	১. হ্যাঁ ২. না
৩.	ভারী পরিশ্রমের সময়কাল ?	১. চার ঘন্টার কম ২. চার ঘন্টার বেশি ৩. অন্যান্য (নির্দিষ্ট)
৪.	আপনাকে কি দীর্ঘসময় দাঁড়িয়ে থাকতে হয়?	১. হ্যাঁ ২. না
৫.	আপনি কি খালি পায়ে হাঁটেন ?	১. হ্যাঁ ২. না
৬.	আপনি কি উঁচু গোঁড়ালির জুতো পরেন ?	১. হ্যাঁ ২. না
৭.	আপনি কি প্রতিদিন ভারী বস্ত বহন করেন ?	১. হ্যাঁ ২. না
৮.	আপনি কি মেঝেতে বসে ঘরের কাজ করেন ?	১. হ্যাঁ ২. না

Consent Form (English)

Assalamualaikum / Namaskar,

I am Rodela Jahan Rima, Student of B.Sc. In physiotherapy program in the department of saic college of medical ience and technology, which is affiliated Dhaka University. I am conducting a study entailed **"Possible risk factors of osteoarthritis of knee joint among elderly people"** It is part of my B.Sc. in physiotherapy degree. Note that the following is a list of question paper required to conduct the study. This list has been selected to give you information about this study. I would like to give you a description of this study and answer any of your questions. It is about 15-20 minutes. My project is **"Possible risk factors of osteoarthritis of knee joint among elderly people"** During the interview period if you fell any emotional disturbance special and economic risk and any other discomfort physical risk please tell me, I will stop the interview risk immediately. I am committed that the study will not harmful or risk for you. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview. If you have any weary about the study or your right as a participant, you may contact with me or my supervisor Asst. prof. Kutub Uddin, Mirpur, Dhaka. Do you have you have any question before I start?

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

YES …… NO……

Signature of the researcher…… Date……

Present Address:

Identification number:
Mobile number:
Address:

"Questionnaire"

Section 1: Demographic Questions

QN	Questions and filters	Responses	Code
01	Age (in a year):		
02	Educational status	No formal schooling	01
		Less than Primary…… Primary …..... S.S.C …..... H.S.C ..... Bachelor ..... Masters ..... Others	 02 03 04 05 06 07 08
03	Residential area	Rural…… Urban…….	 01 02
04	Average monthly family income	……(Taka)	01

Section 2: Disease and Family history

QN	Questions and filters	Responses	Code
05	Past history of a major or acute knee injury	Yes……... No……	 01 02
06	Past history of painful swelling of the knee	Yes……..... No……	 01 02
07	Positive Family history of knee or other joint disease	Yes……..... No…….....	 01 02
08	Comorbidities	Diabetes……. Depression……. Cardiovascular disease……...	01 02 03
09	Weight	……. Kilogram	01
10	Height	……. Centimeter	01
11	BMI	……. Kilogram per Meter square	01

Section 3: Occupational Activity

QN	Questions and filters	Responses	Code
12	Occupation	Housewife……. Teaching…….... Health worker…….... Garment worker……. Businesswoman……. Unemployment……. Others (Specify)…….	01 02 03 04 05 06 07

Section 4: Leisure and Physical activities

QN	Questions and filters	Responses	Code
13	Sustained knee bending	Yes……. No…….....	01 02
14	Stair climbing	Yes…… No……...	01 02
15	Duration of daily physical activities	Less than four hours…... More than four hours…. Others (Specify)…… ….	01 02 03

16	Prolong standing	Yes……. No……...	01 02
17	Barefoot walking	Yes……. No……...	01 02
18	Use of high heeled shoes	Yes…….	01