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Disability and Quality of Life among the Elderly People Suffering from Knee Osteoarthritis

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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.

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CONTENT

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ACRONYMS

ADL	:	Activity of Daily Living
DU	:	Dhaka University
EQ5D5L	:	EuroQol 5 Dimensions, 5 Levels
ECC	:	Excitation contraction coupling
H.S.C	:	Higher Secondary School Certificate
IRB	:	The Institutional Review Board
NITOR	:	National Institute of Traumatology and Orthopedic Rehabilitation
N	:	Number
OA	:	Osteoarthritis
QOL	:	Quality of Life.
SCMST	:	Saic College of medical Science & Technology.
SD	:	Standard Deviation
SPSS	:	Statistical Package for social Science
SSC	:	Secondary School Certificate.
WHO	:	World Health Organization.
WOMAC	:	Western Ontario and McMaster Universities Osteoarthritis Index
$\chi 2$	:	Chi-Square.
%	:	Percentage

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ABSTRACT

Background: A chronic degenerative disease with numerous etiologies, osteoarthritis is characterized by subchondral sclerosis, a range of biochemical and morphological changes to the synovial membrane and joint capsule, loss of articular cartilage, and hypertrophy of bone at the margins (Pal et al. 2016, p.518). **Aim**: the aim of the study was to determine the level of disability among the elderly people suffering from knee Osteoarthritis**. Methodology:** It was a descriptive type of cross sectional study with 92 participants. Data were collected using semi structure socio-demographic questionnaire, Western Ontario and McMaster universities Osteoarthritis index(WoMac) and EQ5D5L. Descriptive statistical analysis was performing using SPSS software. **Result:** The study showed that frequency distribution of all respondents by disability level. It was found that 5 (5.4%) was level in form of mild, 33(35.9) was level in form of moderate, 40 (43.5%) was level in form of severe and 14 (15.2%) was level in form of extreme. About frequency distribution of the participants by level of quality of life. It was found that 23(25.0%) was better quality of life, 33(35.9%) was moderate quality of life, 20(21.7%) was poor quality of life, 16(17.4%) was worse quality of life. The study showed that frequency distribution of the participants by level of disability and level of quality of life. It was found that association between level of disability and level of quality of life was statistically highly significant, Where $P<0.000$ and *Chi value* 50.068. The present study also found that significant association between educational level and level of quality of life. And also found between educational level and level of disability of the participant. Where $X^2=26.712$, $df=12$, $P=0.008$ and $X^2=22.252$, $df=12$, $P=0.035$ respectively. **Conclusion:** According to study findings the researcher wishes to minimize disability and pain that improve quality of life. This study crucial to develop research based findings about quality of life of knee OA patients.

***Key words**: Osteoarthritis, Quality of life, Disability, Elderly people*

CHAPTER-I INTRODUCTION

1.1: Background:

A chronic degenerative disease with numerous etiologies, osteoarthritis (OA) is characterized by subchondral sclerosis, a range of biochemical and morphological changes to the synovial membrane and joint capsule, loss of articular cartilage, and hypertrophy of bone at the margins (Pal et al. 2016, p. 518). Chronic pain and functional dysfunction are hallmarks of knee osteoarthritis (OA), a prevalent degenerative multifactorial joint condition. Nearly four-fifths of all OA cases globally are caused by knee OA, which rises with age and fat; With the exception of knee arthroplasty, which is thought to be an effective treatment at an advanced stage of the disease but comes with significant health costs, knee OA is currently incurable (Fahmy et al. 2023, p. 148).

Osteoarthritis is the most common form of arthritis. Some people call it degenerative joint disease or "wear and tear" arthritis. It occurs most frequently in the hands, hips, and knees. With OA, the cartilage within a joint begins to break down and the underlying bone begins to change (Pelletier et al. 2016, p. 44). These changes usually develop slowly and get worse over time. OA can cause pain, stiffness and swelling. In some cases, it also causes reduced function and disability; some people are no longer able to do daily tasks or work (Magni et al. 2021, p. 783).

Another study elplained as knee osteoarthritis is a common progressive multifactorial joint disease and is characterized by chronic pain and functional disability (Davis et al. 2020, p.192). Similarly a study brief about knee OA accounts for almost four-fifths of the burden of OA worldwide and increases with obesity and age; Up to now, knee OA is incurable except knee arthroplasty which is considered as an effective treatment at an advanced stage of the disease, however, which is responsible for substantial health costs (Jeanmire et al. 2018, pp.797-804).Osteoarthritis is a slowly progressive, no inflammatory disease of the synovial joint, sometimes called as "wear and tear arthritis." Once the smooth cushion between the bones (cartilage) deteriorates, the joints can become stiff, painful, and swollen. Any joints can be affected by osteoarthritis, but most commonly it occurs in the knees and hips (Pal et al. 2016, p.

518). This disease begins slowly and worsens over time. Osteoarthritis can occur at any age but often begins in the 50s and affects females more as compared to males (Althomali et al. 2023, p. 728). People who are suffering from osteoarthritis will have morning stiffness in their affected joints. Many techniques are available to manage osteoarthritis, prevent and minimize pain, and keep mobile. Some people are never affected by osteoarthritis (Haq and davatchi 2011, pp. 122-129).

The incidence and prevalence of osteoarthritis rise with increasing age, extended life expectancy will result in a greater number of people with the condition. In the United Kingdom (UK) 20% to 30% of elders over 60 years have symptomatic osteoarthritis. In the Middle East, more than one million people suffer from OA in Iraq, Yemen, Saudi Arabia, and Syria (Conrozier and Lohse 2022, pp. 1-9). In Egypt prevalence of OA is 8.5% in the total adult population, approximately 85% of individuals over the age of 75 years of age experience some symptoms of osteoarthritis. 40% of individuals with the disorder experience significant difficulties with daily activities to the point of interfering with work-related or social roles. Also, 29.5% most prevalent diseases among elderly females. This might be due to the postmenopausal osteoporotic changes among females (Shamekh et al. 2022, pp. 687-690).

OA and aging clinically relative of exacerbation of disease frequency leading cause of degenerative changes. According to Althomali et al, (2023) OA begins after 50 years of age and females are more vulnerable. In general the bone of man is stronger than that of women, due to the effect of testosterone hormone which makes the bone denser. Moreover bone loss in women is more severe than in men. In women loss of calcium from bone begins around age 30 and increase with age reaching to 30% of calcium lost form bone (Barrett and Gumber 2018, pp. 625-629). On the other hand, in men, calcium loss begins where they reach age 60. Loss of bone increases the risk of fracture in old people. These change cause pain, stiffness and deformity. The height may decreases and the spine becomes more curvature. Bone loss makes old people prone to teeth loss. It has been thought at that all these changes occur because of the changes in the hormonal balance and the level of activities (Distefano and Goodpaster 2017, pp. 96-105).

Another similar study done by Haq and Davatchi, they identified many leading cause and clinical features that in relation to age of decades. Aging is a gradual, continuous process of natural change that begins in early adulthood. During early middle age, many bodily functions begin to gradually decline (Timalsina et al. 2021, p. 1268). Osteoarthritis is a major cause of severe joint pain, physical disability and quality of life impairment in the aging population across the developed and developing world. Bone, cartilage, and muscle are in close relationship and their functionality is concomitantly affected with aging (Jeanmire et al. 2018, pp. 797-804).
Common conditions in older age include hearing loss, cataracts and refractive errors, back and neck pain and osteoarthritis, chronic obstructive pulmonary disease, diabetes, depression and dementia. As people age, they are more likely to experience several conditions at the same time (Timalsina and Songwathana 2020, pp. 11-22).

The changes in the bone are of the most important effects of age on the body. Both quality and quantity of the bone matrix are influenced by age, therefore bone matrix becomes less strength and less flexible than bone matrix of the young adult (Hassan et al. 2023, p. 39) Furthermore matrix break down by osteoclast occurs at a rate faster than matrix formation by osteoblasts. The most significant change in bone is loss of calcium, which is due to the disturbance in the Ca2+ level regulation by hormones. Cancellous bone is missed because trabeculae become weak and thin. Compact bone begins to lose about age 40 years (Salman 2020, pp. 1011-1020).

In fact the degeneration of the anatomical and physiological processes governing these systems results in impairment in muscle performance. These systems are all influenced by life style, biological and psychological factors the physical activities and nutritional habits are essential life style agents. While the biological factors include: genetic, hormones, inflammatory processes and the psychological factors including: stress, fear, loneliness and self-efficacy are of direct or indirect effect on skeletal muscle functions (Salman 2020, pp. 2011-2020).

Skeletal muscles mass declines with age. It has been reported that decline in muscles mass throughout the life is 0.37% per year in female and 0.47% per year in male. This percentage in the muscles loss increased when people reach 75years of age in both sex (Stammerset al. 2013, p. 843 ; Xu and Van 2021, pp. 96-99). The contractile function

and the excitation-contraction coupling undergo changes. These changes are represented by reduction in the force per unit of area in the skeletal muscle level (Youngcharoen et al. 2017, p.19; Fahmy et al. 2023, p.543). At the myocellular level, the studies showed a significant reduction in the size of muscle fibers. This reduction depends on the type of the muscle fibers .Type II become smaller in size in about 10-40% compared to that in young ,while type I are not affected by age (Montepare et al. 2020, p. 229). As well as the total number of muscle fibers reduces. This observation suggested that muscle atrophy with age could be contributed to muscle fibers loss. The main reason for loss of skeletal muscle is attributed to imbalance between protein synthesis and protein breakdown of the muscle (Barrett and Gumber 2018, pp. 625-629). According to a study explained about OA processing of molecular level which indicated that increased catabolism in the extracellular matrix (ECM) of the articular cartilage is a key factor in the development and progression of OA. The molecular mechanisms leading to an impaired matrix turnover have not been fully clarified, however cellular senescence, increased expression of inflammatory mediators as well as oxidative stress in association with an inherently limited regenerative potential of the tissue, are all important contributors to OA development. All these factors are linked to and tend to be maximized by aging (Rahmati et al. 2017, pp. 20-30).

As person ages the cartilage becomes thinner and wear out. This affects the movements and makes them painful and less flexible. Costal cartilage becomes calcified that resulting in restricted breathing. Fibro cartilage the cartilages that provide cushioning for vertebrae experience loss of water and cells after the age 40, which lead to decline in the level of cushioning (Azzolino et al. 2021, pp. 697-708). The influenced cartilages cause many changes in the joints and synovial joints in a way that may create difficulties and problems to the old people. In addition to the decline in the synovial fluid, elastic and collagen fibers which are responsible for elasticity and flexibility of the tissue (Chan et al. 2021, p.42).The range of the motility decreases due to shortening and reduced flexibility of the ligaments and tendons. Moreover, the decreased activities of old people lead to further reduction in flexible joints and limit of motions (Levitin 2020, pp. 167-170).

Also another similar paper discussed that age-related factors that contribute to osteoarthritis development include reduced muscle mass and increased fat mass alter

joint loading and are associated with an increase in adipokine and cytokine production, resulting in low-grade systemic inflammation, Changes in the extracellular matrix, including accumulation of advanced glycation end-products, reduced aggrecan size, reduced hydration and increased collagen cleavage alter the mechanical properties of cartilage and make it more susceptible to degeneration (Jiang et al. 2021, pp. 301-315).

Patients with osteoarthritis are more likely to experience increased physical limitations, pain and activity impairment as the disease progresses (Gomes et al. 2016, p. 126). As a result, these patients experience progressive increase in the impact on their daily activities, resulting in losses in labor relations, social activities, leisure, and sleeping quality, as well as a significant increase in their disabilities and decrease in their quality of life. Thus, the quality of life and disabilities of patients with osteoarthritis are important outcomes to assess (Sutbeyaz et al. 2017, p. 2071-2076.).

There are not enough community based health centers, occupational therapists, health programs, or a safe environment for elderly patients to exercise and stay fit in India. There is very less information related to the prevalence and impact of osteoarthritis in the Indian communities, as well as policies and the use of public health services by people with osteoarthritis (Palo et al. 2015, p. 44).

Understanding the cause, disability of knee osteoarthritis for Bangladesh is important for managing health among adults, particularly in the elderly population. Several studies investigating the risk factors for knee osteoarthritis have been conducted in the India, Korea, China, US, UK, and other developed countries. Moreover, some studies on KOA have been conducted in cities in Dhaka, Bangladesh. However, considering substantial differences in race, socioeconomic status, environmental factors, and lifestyle patterns, these findings have limited implications for Bangladeshi populations. So, the aim of this study was to determine the level of disability among the elderly people suffering from knee osteoarthritis.

1.2 **Justification of the study:**

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. As life expectancy improves globally, elderly patients with osteoarthritis are also rising in numbers and thus, it is a cause of grave concern in public health.

It impacts a great number of people, making them burdens for themselves and having a destructive impact on their families, society and the entire country. Due to a lack of awareness, the number of people suffering from knee osteoarthritis is on the rise. It is also the cause of activity limitation thus decrease the quality of life.

For that researcher interested to conduct this research to find out new things. If the level of disability of OA patients find out, that means the vulnerable socio-demographic characteristics and individual quality of life. As a Physiotherapist it will help to identify disability level and quality of life of OA patients easily and will give details information to the patient about knee OA so that people can modify their life style regarding OA at knee and we can provide better treatment as well as essential advice to the patients.

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.

1.3. Research question:

What was the level of disability and Quality of life among the elderly people suffering from knee Osteoarthritis?

1.4. Aim of the study:

The aim of the study was to determine the level of disability and quality of life among the elderly people suffering from knee Osteoarthritis**.**

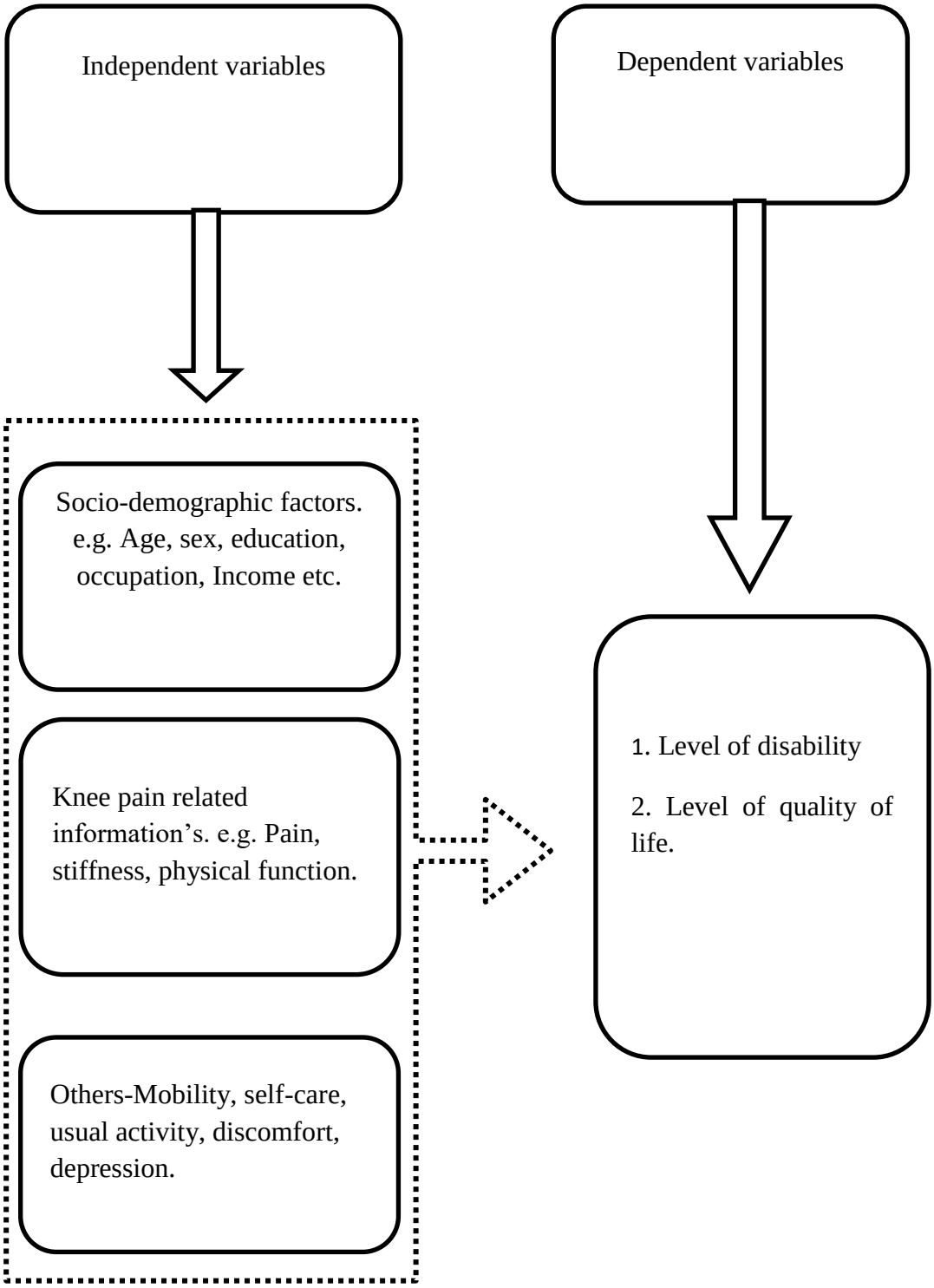
1.4 Objectives of the study:

1.4.1 General objective:

To determine the level of disability and quality of life among the elderly people suffering from knee Osteoarthritis

1. **1.4.2 Specific objective:**
2. To assess the socio-demographic characteristic of the participants by using face to face interviews.
3. To assess the level of disability among the elderly people suffering from knee osteoarthritis patients by using WOMAC scale.
4. To determine the level of quality of life among the elderly people suffering from knee osteoarthritis patients by using EQ5D5L scale.
5. To find out the imaginable health status of the participants by using EQ5d5L VAS score.
6. To explore association between level of disability and level of quality of life of the participants by using chi-square test.

1.5 Conceptual framework:



1.6 Operationalization definition:

Disability:

Any physical or mental ailment (impairment) that makes it harder for the affected individual to perform specific tasks (activity limitation) or engage with their environment is considered a disability.

Osteoarthritis:

Pain that persists for more than 12 weeks without treatment or medication is referred to as chronic or persistent pain.

SPSS:

Statistical Package for the Social Sciences

Osteoarthritis knee:

A chronic degenerative disease with numerous etiologies, osteoarthritis (OA) is characterized by subchondral sclerosis, a range of biochemical and morphological changes to the synovial membrane and joint capsule, loss of articular cartilage, and hypertrophy of bone at the margins

Elderly people:

Elderly people in Bangladesh are generally defined as individuals who are 60 years of age or older.

Quality of life: Quality of life is defined by the World Health Organization as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

CHAPTER-II LITERATURE REVIEW

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, pp.1-2). According to Xie et al, Osteoarthritis is the most common type of arthritis and one of the most disabling diseases. It is a chronic and progressive condition that causes stiffness, joint pain and disability (Xie et al. 2016, pp. 1087-1100).

According to the American College of Rheumatology, “Osteoarthritis is a heterogeneous group of conditions characterized by a wide range of symptoms and joint signs, which in combination with defective articular cartilage integrity and structural changes in the subchondral bone and joint margins, account for the disease's key clinical anatomopathological characteristics (Dinorah et al. 2011, pp. 47-59). OA is a diverse collection of disorders that cause joint symptoms and indicators linked to articular cartilage degradation and accompanying alterations in the underlying bone at the joint borders (Katz et. al. 2021, pp.568-578).The major risk factors for osteoarthritis in weight-bearing joints such as the knees and hips have been identified as age, obesity, and joint damage. Although the exact cause of osteoarthritis is unknown. The most prevalent kind of arthritis is osteoarthritis (OA). Degenerative joint disease or degenerative arthritis is other names for it. One of the main causes of disability in older adults is OA (Brooks 2018, p. 573).

Obesity, infections, traumas and repetitive joint movement are among the many modifiable risk factors. Unchanging motions and high forces, such kneeling, squatting, 18-25 climbing and heavy weight lifting, are part of the occupational physical activity (Pal et al. 2016, pp. 518-522). In addition to pain and functional abilities, osteoarthritis is one of the most common chronic illnesses that impacts a wide range of outcomes, including mental health, sleep, work involvement, and even mortality. A major contributor to functional impairment, activity restriction and a decreased health-related quality of life is knee OA discomfort. It is unknown what specifically causes knee osteoarthritis pain because individuals with OA not only have

hyaline articular cartilage destruction but also bony change. The periosteum, ligament and muscle insertion sites, and the joint capsule are other parts of the knee that are affected by pain fibers. Because it increases the degree of focal stresses, misalignment is the primary risk factor for structural deterioration of the joint, which leads to joint degeneration and ultimately joint collapse. This is a common cause of knee discomfort because local inflammation in the synovium and cartilage can lead to joint degradation and pain. (Solomon et al. 2010).Since OA is the leading cause of long-term disability in those over 70, the World Health Organization has classified it as a "priority disease." One of the top 10 most crippling illnesses in affluent nations is OA (Zamri et al. 2019, pp.19-31) and in Bangladesh, 10.20 percent, respectively. Twenty-eight percent of people in cities and twenty-five percent of people in rural areas suffer from knee osteoarthritis.

In older adults, osteoarthritis (OA) of the knee is the most frequent cause of pain and disability (Wylde et al. 2016, pp.1293-1306). The degeneration of joint cartilage and underlying bone causes osteoarthritis (OA), a form of joint disease (Cyrus et al. 2014). According to Glyn-Jones et al. (2015) osteoarthritis is a leading cause of pain, disability and financial hardship globally.

According to new data from Bangladesh, osteoarthritis and related conditions are very common among the country's elderly population. According to one study, 12.1% of persons 60 and older had symptomatic knee osteoarthritis. Osteoarthritis is more common in wealthy metropolitan communities than in rural slums, where the prevalence is 10.6%, 9.2%, and 7.5%, respectively (Mistry et al. 2022, p. 27).

A study estimates that it is 5.78 percent in India and Pakistan (Haque 2015, p.76) Knee Osteoarthritis (KOA) is a degenerative joint disease with a global prevalence of 16% and an incidence of 203 per 10,000 person-years (Lozano-Meca et al. 2024, p.481-490). Knee OA affects more than 9.3 million people in the United States (Gohal et al. 2018, pp. 50-51). The global prevalence of knee OA is approximately 3.8% in 2010 (Cross et al. 2014). In 2007, roughly 28% of knees in the United States had osteoarthritis. Additionally, prevalence rates are high in Europe, Australia, and Canada, ranging from 13.4% to 67.00%. (Mine K et al. 2018, p.789).

According to the National Health Portal (NHP) of India, OA is the second most frequent rheumatologic disease and also the most common joint disease, with 22% to 39% prevalence ranging in India (Nhpgovin 2017). The prevalence of OA is expected to increase by about 40%, making OA the fourth most common cause of disability worldwide in 2020. In 2010, the global age-standardized prevalence of knee OA was 3.8%, In China, the prevalence of KOA in China was 21.51% (Ji et al., 2023, p. 266). According to Javanshir et al. (2023) stated that the prevalence about symptomatic KOA is reported to be 13.1% -71.1% in various Asian countries. A few studies in Iran found that the prevalence of KOA in the general population ranged from15.5 to 47.7 by age.

Around the world, the prevalence of knee OA was 16·0% in people over 15 and 22·9% in people over 40. In addition, the prevalence of knee OA was 19% in Asia, 13% in Europe, 15% in North America, 4% in South America, 3% in Oceania, and 21% in Africa in 2020, with approximately 654·1 million people (40 years and older) affected globally (Cui et al. 2020, p.100587). The most prevalent rheumatic condition and a leading contributor to disability is osteoarthritis (OA). Osteoarthritis (OA) is the fourth most common cause of disability in the US (Jahan et al. 2017, pp. 1-5).

The prevalence of symptomatic osteoarthritis in women over 60 is 18% in women and 9.6% in men worldwide. Most people (80%) with osteoarthritis in their knees have trouble moving and 25% are unable to carry out their primary daily tasks (Neogi 2013) The prevalence of knee osteoarthritis was 22.9% in those over 40 and 16% in people over 15 worldwide. In 2020, it equated to around 654.1 million people (40 years of age and older) with osteoarthritis in their knees globally (Cui et al 2020). In Bangladesh, knee osteoarthritis affects 10% of the population (Radha & Gangadhar 2015, p. 3316-3320). About 17% of adults over 45 and 5% of those over 26 have symptomatic knee osteoarthritis (OA), which can increase the risk of disability and cause disability itself because of unusual physical conditions (Plotnikoff et al. 2015, p.1195). Approximately 250 million (3.6% of the population) people worldwide have had knee Osteoarthritis knee

The prevalence of knee OA is estimated to be 37% among Americans over 60 (Zhang & Jordan, 2010) Worldwide estimation reported over 100 million people globally

suffer from OA, which is one of the most common causes of disability (cross et al. 2014, p.1323-1330). As per the WHO reported on disability in 2011 that the prevalence of moderate and severe disability due to OA in high-income countries was 1.9 and 8.1 in the age group of 0-59 and above 60 years, respectively. In the low- and middle-income countries, these figures were 14.1 and 19.4 **(**World Health Organization, 2011). The prevalence of knee OA is increasing daily as the average age of the general population rises. A number of pathogenic variables, including as cytokines and leptin, are prevalent risk factors for knee OA, along with age, weight, and joint damage from repetitive movements in a specific joint. Two significant risk factors include the existence of a walking handicap and a history of diabetes, cancer, or cardiovascular disease (Berteau 2022, p. 3252).

The most frequently involved appendicular joints are the hips, knees, and hands. Pathologies of the joint that result in pain, stiffness, swelling, and loss of normal joint function include osteophyte formation, bone remodeling, cartilage loss, and synovial inflammation (Kolasinski et al. 2020, pp. 220-233).

Patients with KOA are usually affected by pain and functional limitation, a fact that entails lower capacity to perform daily living or mobility activities, amongst others (Lozano-Meca et al. 2024, pp.481-490). Walking is a common utilitarian activity in daily life. The pain characteristics of patients with knee OA are usefully revealed by this investigation. Since social contact and community reintegration require independent walking in addition to minimizing impairment, the patient's ability to walk is a critical factor in determining whether or not he will resume his prior level of activity (Connelly et al. 2015, pp. 241-248).

Osteoarthritis (OA) is characterized by a number of morphological and physiological alterations in joint tissues, including as bone remodeling, osteophyte formation, and cartilage degradation. These alterations lead to pain, stiffness, swelling, and limitations in joint function. Patients with osteoarthritis seem to experience pain and impairment symptoms due to a complex interaction of factors, including structural damage, peripheral and central pain processing mechanisms, obesity, culture, demographics, and psychosocial factors (Helminen et al. 2020, pp. 404-415).

Most people (80%) with osteoarthritis in their knees have trouble moving, and 25% are unable to carry out their main daily tasks, Knee involvement is more common among osteoarthritis patients Adjusted Life Years and Disability Years The worldwide burden of disease study from 2010 placed OA as the eleventh most common cause of years spent handicapped globally. Secondary OA is brought on by injuries received while kneeling or squatting, whereas primary OA has no known etiology and is typically brought on by age. Although the hands and feet may also be impacted, the most commonly affected joints are the fingers, hips, lower spine, and knees. Common complaints include restricted range of motion, joint pain and swelling, and grating sounds when moving joints. Often, people only seek medical attention when their ability to exercise is restricted, and the only symptom that typically motivates people to do so is pain (Bala et al. 2020, pp. 5282-5287).

The knee joint is usually affected by osteoarthritis, and 10% of persons over 60 are thought to have signs of the condition, which can cause severe pain and physical incapacity. Exercise therapy has been demonstrated to help patients with osteoarthritis in their knees with their pain and physical function without the typical and frequently harmful side effects of medication and surgery (Chang et al. 2015, p. 8442). Psychology is also impacted by chronic illness. It has a number of negative effects, including making it harder to walk, climb stairs, and do other activities because of structural abnormalities in the knee joint. These alterations also raise the mortality risk and lower quality of life. The primary cause of disability in the US is arthritis, which frequently results in economic loss for persons with the condition (Siripongpan and Sindhupakorn 2022, p. 354).

One possible reason for obesity is the weakening of the quadriceps in relation to body mass. Compared to non-obese people, obese people have lower levels of limb strength and power measurements per unit of body weight. The quadriceps muscle plays a crucial function in knee shock absorption, and if it is weak, it may put more strain on the articular cartilage, which could cause the joint to gradually degenerate (Segal et al. 2011). Knee OA significantly restricts ADL tasks due to its chronic pain and compromised joint function. As a result, these individuals have a lower quality of life in relation to their health and are more likely to experience depression than the general population. According to estimates, depression may affect as many as 20% of

people with knee OA (Nowinka et al. 2022, p. 36). Most people (80%) with osteoarthritis in their knees have trouble moving, and 25% are unable to carry out their main daily tasks. Knee involvement is more common among osteoarthritis patients (Safiri et al. 2020, p. 228).

Females are more likely than males to have osteoarthritis. Nearly half of all women above the age of 65 experience symptoms and 70% have radiological evidence of the condition (Nhp.gov.in 2017). One chronic degenerative joint condition that affects millions of people worldwide, especially those over 60, is knee osteoarthritis (OA). A person's quality of life may be affected, and it is a major source of impairment (Sajaan et al. 2023, pp. 125-141).

Women outnumber men and comprise the majority of the elderly population, with their share of the population growing as they age. There are 82 men for every 100 women between the ages of 65 and 74. In the 65–74 age range, there are 65 males for every 100 women, whereas in the 75–84 age range, there are 41 men for every 100 women. Women currently live 4.8 years longer than males. Globally, it is anticipated that women over 65 would live an additional 18 years, while males of the same age will live an additional 16 years on average. According to projections, women will make up 54% of the world's population 65 and older by 2050 (Hassan et al. 2021, pp. 234-243).

The most common of the chronic rheumatic illnesses, osteoarthritis (OA) is a major source of pain and impairment in the majority of the world's nations. OA is more common in women than in males, and its prevalence rises with age (Yahaya et al. 2021, p.1221-1231). Approximately 10% of males and 13% of women over 60 have symptomatic knee OA. Due to population aging and the prevalence of obesity and overweight in general, the percentage of patients with symptomatic knee OA is expected to rise people (Heideri 2011, p. 205).

The age of the people affected is more than 45 people aged 55 years and older. They represent 10% of the incidence of being affected in knee OA, While 25% of them are severely disabled (Gohal et al. 2018, p. 50-51). As the population ages, the prevalence of osteoarthritis increases and its consequences have a significant impact on society. It

is a disease manifested by pain and inflammation due to the involvement of the articular cartilage, soft tissues and bone. Older people with this disease also experience depression, poor quality of life and financial hardship (Blixen and kippes., 1999, p. 221-226).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. 1149). 16.4% of people in South Asia, 15.7% in East Asia and the Pacific, and 14.2% in Sub-Saharan Africa had OA. The shift is being crammed into two or three decades in many Asian nations. The prevalence of the population over 65 years and older is predicted to rise by 316% in Singapore, 274% in India, 269% in Malaysia, 261% in Bangladesh and 256% in the Philippines between 2008 and 2040. Japan's population was the oldest in the world in 2008, with 21.6% of people 65 and over (Kinsella et al. 2009, p. 13).

Studies show that 13.6 percent of Chinese adults have osteoarthritis in their knees. In India, it is estimated to be 5.78 percent. As people get older, OA becomes more common, and women are more likely to be impacted than men (Haque et al. 2015, p. 76). One of the major public health issue is arthritis and 10% of the world's population aged 60 years and above with health problems that could be assigned to OA. Osteoarthritis commonly affects the knees, hands, hips, and feet, and it can also occasionally impact the shoulder and spine joints. It is characterized by joint pain, stiffness, and functional impairment (Yahaya et al. 2021, pp.1221-1231).

Aging is a gradual, continuous process of natural change that begins in early adulthood. During early middle age, many bodily functions begin to gradually decline. Common conditions in older age include hearing loss, cataracts and refractive errors, back and neck pain and osteoarthritis, chronic obstructive pulmonary disease, diabetes, depression and dementia. As people age, they are more likely to experience several conditions at the same time (Timalsina et al. 2020, p. 11-22). Age increases the rate of bone growth loss. Slow protein synthesis affecting the collagen fibers that give the bone its strength and flexibility is another reason that could lead to bone loss. Men's bones are generally stronger than women's. Because of the action of human endocrine system as the testosterone and other releasing hormones. Women's bone calcium loss starts at age 30 and increases with age, eventually accounting for 30% of

bone calcium loss (Barrett and Gumber 2018). Conversely, men start to lose calcium at the age of 60. In older adults, bone loss raises the risk of fracture. Pain, stiffness, and deformity are the results of these changes. On the other hand, males begin to lose calcium at age 60. Bone loss increases the risk of fracture in elderly persons. These alterations lead to deformity, pain, and stiffness. Both height and spine may deteriorate (Jeanmaire et al. 2018, pp. 797-804).

Although the density of chondrocytes in cartilage declines with age, chondrocyte "clusters" that form during the course of OA close to tissue injury sites may be an indication of changed cellular signaling or an effort at healing. Extracellular matrix gene expression and synthesis are lower in aged chondrocytes, but during OA, chondrocytes become extremely active with increases in both anabolic processes, such as matrix synthesis, and catabolic pathways, such as those brought on by inflammatory cytokines (Biver et al. 2019, pp.189-195). According to the Global Burden of Disease Study 2017 knee osteoarthritis was a major public health issue (Safiri et al. 2020, p. 819-828). According to the results of the first nationwide survey on musculoskeletal disorders and associated disabilities in adult Bangladeshis, 30.4% of adults in the country have musculoskeletal disorders, 7.3% have knee arthritis, and 24.4% of those adults have a disability of some kind (Mistry et al. 2022, p 272).

Knee osteoarthritis is a significant burden on both individuals and society. It is estimated that knee osteoarthritis affects more than 10% of people over the age of 60. The societal burden is comprised of various costs, such as sickness benefits, joint replacement surgeries and disability pensions (Xie et al. 2016, pp. 1087-1100). It is possible to calculate the costs of OA in terms of direct, indirect, and intangible expenses. The effect of OA on quality of life may be the best way to describe the intangible cost of the disease because it is unclear what causes the higher mortality rate in OA patients. The current palliative treatment for KOA consists mostly of painkillers and careful observation, with complete joint replacement in the last stages. Because of this, the illness burden of KOA is rapidly rising. A significant portion of the direct expenditures of KOA are related to palliative care, and about half of the costs are related to hospital admissions, mostly for joint replacement (Lee & Kim 2017, pp. 809-817). According to estimates, OA, one of the leading causes of

disability, affects approximately 100 million individuals worldwide.(Heiden et al. 2009, p. 807-815).

As OA worsens, patients experience excruciating joint pain that limits their physical activity. The involvement of the hip or knee accounts for the majority of this impairment burden. OA is closely related to aging, and the Asian region is getting older. Additionally, OA has been linked to a high degree of physical occupational activity, which is necessary for many people living in rural areas of developing nations (Jahan et al. 2017, pp. 2161-1149).

The most frequent causes of balance and gait problems, which drastically lower quality of life, are immobility and falls (Jahn et al. 2010). According to Alexander et al. (2005, p. 586), at least 20% of elderly people need assistance from someone else or specific walking equipment since walking impairments worsen with age. The most common type of osteoarthritis in the lower limbs, according to data released in 2019, is knee osteoarthritis. A significant change in the burden of disease from communicable to non-communicable diseases (NCDs) is occurring in low- and middle-income countries (LMICs). Globally, NCDs accounted for 70% of fatalities in 2016 and their incidence is still rising. Approximately 20% more disability adjusted life years (DALYs) were caused by NCDs in 2016 (61% of all DALYs worldwide), with the largest increase seen in LMICs. An important percentage of NCDs that cause DALYs are musculoskeletal disorders, with osteoarthritis (OA) bearing the largest burden (Yahaya et al. 2022, p. 1221-1231)

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However, there was a correlation between the residential area and sadness, age, and the degree of osteoarthritis. The patient's quality of life was the same because they lived in a semi-urban rural neighborhood with a good utilities infrastructure. Prior studies indicated that the intensity and quality of life were the same in every residential neighborhood. However, there were gender disparities, with women experiencing pain that is more severe and intense (Alkan et al. 2014, p.166-171).

Over 80% of the total burden of the disease is caused by knee OA, which affects at least 19% of Americans 45 and older. Efforts to prevent and treat knee OA are hampered by the lack of knowledge and research into the deeper underlying reasons of the disease's high occurrence, despite strong evidence that inflammation and

mechanical loads encourage joint tissue breakdown. Two current trends in public health, however, are frequently seen as significant contributors. First, because knee OA is more common as people age, it is believed that the United States' increased life expectancy since the early 20th century has led to high rates of knee OA among the elderly. This is because it is assumed that as people age, their senescing joint tissues experience increased loading-induced wear and tear. Second, obesity is a well-known risk factor for knee OA and has escalated in the United States in recent decades (Wallace et al. 2017, p. 9332). Many studies have been done on pain and physical disability in osteoarthritis and there is a great interest in measuring the impact of such diseases on QoL, mainly KOA in the elderly. To our knowledge, this is the first study to assess health-related QoL in the elderly with KOA in Iran (Javanshir et al. 2023, pp. 3-12).

Physiotherapists are more frequently referred to by general practitioners than other allied health professionals for non-surgical treatment of knee OA. Furthermore, most patients believe that physiotherapists are crucial in helping them manage their OA and recommend activities. Physiotherapists said that their treatment methods were generally in line with the quality care standard, but they felt that advise regarding weight loss, medication, and surgery was outside of their area of expertise (Teo et al. 2021, p.1-14).

There are not enough community based health centers, occupational therapists, health programs, or a safe environment for elderly patients to exercise and stay fit in India. There is very less information related to the prevalence and impact of osteoarthritis in the Indian communities, as well as policies and the use of public health services by people with osteoarthritis (Palo et al. 2015, p. 44).

Understanding the cause, disability of knee osteoarthritis for Bangladesh is important for managing health among adults, particularly in the elderly population. Several studies investigating the risk factors for knee osteoarthritis have been conducted in the India, Korea, China, US, UK, and other developed countries. Moreover, some studies on KOA have been conducted in cities in Dhaka, Bangladesh. However, considering substantial differences in race, socioeconomic status, environmental factors, and lifestyle patterns, these findings have limited implications for Bangladeshi populations. So, the aim of this study was to determine the level of disability among the elderly people suffering from knee osteoarthritis

CHAPTER-III METHODOLOGY

3.1 Study design:

This was a descriptive type of cross-sectional study. Because cross sectional study is helpful to determine the level of Disability among the Elderly People Suffering from Knee Osteoarthritis For this reason, cross sectional design has been selected.

3.2 Study area:

Relevant data for this study were collected from patients at the National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), with additional information gathered from other hospital settings.

3.3 Study place:

The study was conducted at SAIC College of Medical Science and Technology (SCMST), Mirpur in Dhaka. But data was collected from National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), with additional information gathered from other hospital settings.

3.4 Study period:

The period of the study was one year extending from 1st June 2024 to July 2025.

3.5 Study population;

Patients attending at National Institute of Traumatology and Orthopedic Rehabilitation (NITOR) constituted the study population for the present study

3.6 Sample size:

The sample size of the study was calculated by the following statistical formula.

We know that –

$$n = \frac{z^2\, pq}{d^2}$$

$$= \frac{(1.96)^2\, p(1-p)}{(0.05)^2}$$

$$= \frac{3.8416 \times 0.1 \times 0.9}{0.0025}$$

=139

Here,

n = required sample size

Z= confidence level at 95% (standard value of 1.96)

P = P is the prevalence taken as 10% (Kumar et al., 2023, p.81).

d = margin of error at 5% (standard value of 0.05)

So, sample size is139.

So, the researcher aims to focus his study by 139 samples following the calculation above initially.

3.7 Inclusion criteria:

- Age 60 or older(Kumar et al., 2023, p.81).
- Confirmed diagnosis of knee osteoarthritis (clinical or radiographic)
- Willingness to participate (informed consent and follow-up)
- Ability to communicate (with or without a caregiver/translator)
- No severe cognitive impairment

3.8 Exclusion criteria:

- Other major joint diseases (e.g., rheumatoid arthritis, hip osteoarthritis)
- Severe systemic conditions (e.g., heart failure, uncontrolled diabetes)
- Recent knee surgery **(**within 6 months, including knee replacement)
- Pregnancy

3.9 Sampling technique:

Convenience sampling technique was adopted.

3.10 Method of data collection:

3.10.1 Techniques of data collection

The technique of data collection was face to face formal interview with the participants.

3.10.2 Instrument of data collection:

The organized meterials were “WOMAC and EQ5D5L scale”questionnaire, consent form, pen, paper was used as data collection tools in this study. The questionnaire was designed to conduct the interviews.

3.11 Procedure of data collection;

The researcher obtained permission from the Ethical Review Board of SAIC College of Medical Science and Technology to carry out the study. A written permission was also taken from the concerned authority of National Institute of Traumatology and Orthopedic Rehabilitation (NITOR). After that the researcher approached the patients and the aim and objectives of the study was explained in details to them. Interested patients were included in the study. Participants were asked to fill up written consent form with their signature to ensure volunteer participation. They were informed about the privacy and confidentiality of the information. Then the researcher started interview with the participants by using the pretested questionnaire. The interview was in a cordial environment. At the end of the interview, the researcher thanked the participants.

3.12 Data management

3.12.1 Editing of data:

The questionnaires were reviewed after data collection to identify any mistakes or inconsistencies. Necessary corrections were done as required. All responses were adequately coded for analysis.

3.12.2 Entry of data:

The coded data were entered into a computer based on the variables of the study.

3.12.3 Analysis of data:

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) program. Descriptive statistics, such as frequency, distribution, range, mean, and

percentage were performed. For inferential statistics the relationship between independent and dependent variables were analyzed accordingly.

3.13. Result:

The findings of the study are presented in the result section of the thesis, including tables, charts, graphs, and descriptions of the variables.

3.14 Ethical consideration:

The researcher submitted a study protocol to the Ethical Review Board of Saic College of medical science and technology (SCMST). The ERB of SCMST approved the research protocol on time. The researcher also obtained permission from the authority of National Institute of Traumatology and Orthopedic Rehabilitation (NITOR). All participants were provided with detailed information about the study's purpose, procedures, benefits, and risks. Written informed consent was obtained from all participants before their inclusion in the study. Personal and medical information of the participants were kept strictly confidential. Data were analyzed by assigning unique identification codes, and only the researcher had access to the data. Participation in the research was entirely voluntary, and participants had the right to withdraw from the study at any time without any negative consequences or loss of benefits. There was minimum risk to participants, as it involved only non-invasive data collection methods (e.g., interviews and medical record reviews). No experimental treatments or procedures were administered. The study's findings might help improve understanding and management of preventive measures and protection, potentially benefiting patients in the long term. Data collected will be used solely for research purposes and will not be shared with unauthorized individuals or entities.

CHAPTER-IV RESULTS

The aim of this study was to determine the level of disability among the elderly people suffering from knee Osteoarthritis. It was a descriptive type of cross sectional study carried out with the objectives. The data were collected from a sample of 92 knee Osteoarthritis patients. The collected data were analyzed by SPSS and result showed via various table, graph and charts in following sections.

Table no.1: Frequency distribution of the participants by Socio-demographic information's

Socio-demographic variables	Domain of variables	Frequency		Mean	St.Deviation
		N	%		
Age groups	60 years or lower	23	25.0	64.728	5.606
	61-75 years	65	70.7		
	76-90 years	4	4.3		
Gender	Male	41	44.6		
	Femal	51	55.4		
Marital status	Unmarrid	2	2.2		
	Marrid	84	91.3		
	Widow	3	3.3		
	Divorse	3	3.3		
Educational level	Illitarate	24	26.1		
	Primary	27	29.3		
	Ssc	12	13.0		
	Hsc	8	8.7		
	Honors or above	21	22.8		
Family type	Nuclear	52	56.5		
	Join family	40	43.5		
Occupation	Office worker	20	21.7		
	Driver	3	3.3		
	Labour	9	9.8		
	House wife	32	34.8		
	Unemplyement	2	2.2		
	Retired	17	18.5		
	Others	9	9.8		
Monthly family income	Lower class or more	2	2.2	33869.565	30523.7134
	Lower middle class	30	32.6		
	Middle class	49	53.3		
	Upper middle class	9	9.8		
	Upper class	2	2.2		

The study showed that age frequency of the participants. It was found that majority of the participants 65 (70.7%) were belonged to the age group of 61-75 years. The mean age of the participants was 64.72 years and Standard deviation was 5.60.

The study had both male and female participants. About gender of the participants 44.6% was male and 55.4% was female. It was indicated that male and female participants approximate equal.

The study displayed that frequency of marital status of the participants. It was found that most of the participants 84 (91.3%) was married.

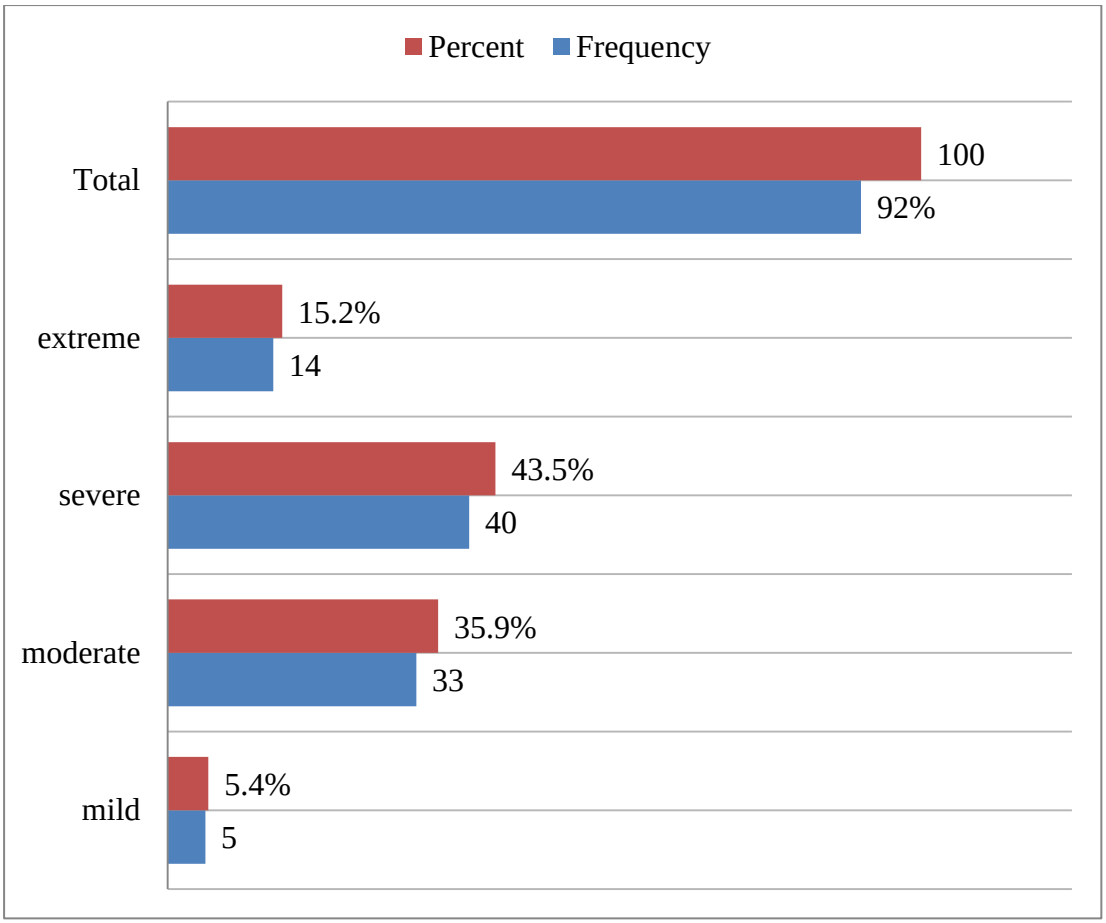
The recent theses displayed via table-1 among the entire participants 24(26.1%) was illiterate, 27(29.3%) was primary, 12 (13.0%) was S.sc, 8 (8.7%) was H.sc, 21 (22.8%) was honors or above educational level.

The current study showed that frequency distribution of all participants by family status. It was released that 56.5% was nuclear and 43.5% was join family.

The present paper showed that frequency distribution of the total participants by occupational status. It was found that majority of the participants 32(34.8%) was house wife.

The study found that majority of the participants 49(53.3%) was middle class according to their family income BDT. All about 92 participants had different level income range that includes the current study. In this present study indicated that average income of the participants was 33870 BDT and SD was 30523.

Figure no.1: Frequency distribution of the participants by level of disability



The study showed that frequency distribution of all respondents by disability level. It was found that 5 (5.4%) was level in form of mild, 33(35.9) was level in form of moderate, 40(43.5%) was level in form of severe and 14(15.2%) was level in form of extreme level disability.

Figure no.2: Frequency distribution of the participants by level of quality of life

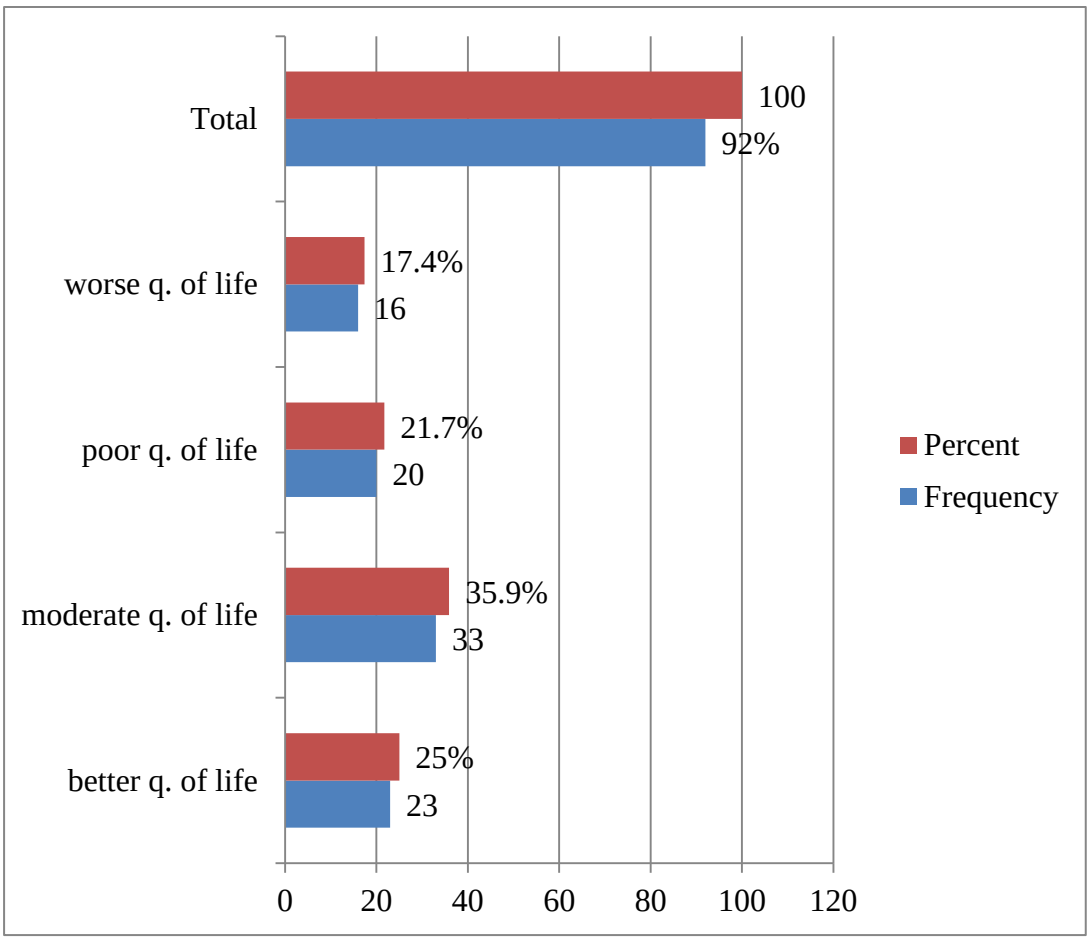


Figure no.2: Frequency distribution of the participants by level of quality of life.

About frequency distribution of the respondents by level of quality of life. It was found that 23(25.0%) was better quality of life, 33(35.9%) was moderate quality of life, 20(21.7%) was poor quality of life, 16(17.4%) was worse quality of life.

Table-2: Frequency distribution of the participants by Imaginable Health status level

Imaginable Health status level	Frequency	
	N	%
Better Imaginable Health status level	20	21.7
Moderate Imaginable Health status level	27	29.3
Poor Imaginable Health status level	34	37.0
Worse Imaginable Health status level	11	12.0
Total	92	100.0

The study found that 20(21.7%) was better Imaginable Health, 27(29.3%) was moderate Imaginable Health, 34(37.9%) was poor Imaginable Health, 11(12.0%) was worse Imaginable Health. (Table-2).

Table-3: Frequency distribution of the participants by level of disability and level of quality of life.

Level of disability	Level of quality of life				
	better q. of life	moderate q. of life	poor q. of life	worse q. of life	Total
Mild	3 (13.04%)	2 (6.06%)	0	0	5 (5.43%)
Moderate	14 (60.86)	17 (51.51%)	2 (10%)	0	33 (35.86%)
Severe	5 (21.73%)	13 (39.39%)	15 (75%)	7 (43.75%)	40 (43.47%)
Extreme	1 (4.34%)	1 (3.03%)	3 (15%)	9 (56.25)	14 (15.21)
Total	23 (25%)	33 (35.86%)	20 (21.73)	16 (17.39%)	92 (92%)

***X^2*=50.068, *df*=9, *P*=0.000**

The study showed that frequency distribution of the participants by level of disability and level of quality of life. It was found that association between level of disability and level of quality of life was statistically highly significant, Where *P*<0.000 and *Chi value* 50.068 (Table-3).

Table no. 4: Association between socio-demographic variables and level of quality of life of the participants.

Variables		Level of quality of life			
	Domain	***Chi-value***	***P-value***	***df***	Significance
Socio-demographic variables	Age group	4.624	0.593	6	No
	Gender	3.425	0.331	3	No
	Marital status	9.732	0.373	9	No
	Educational level	26.712	0.008	12	YES
	Family type	2.479	0.479	3	No
	Occupation	14.056	0.692	18	No
	Monthly family Income	6.072	0.912	12	No

The study showed that association between socio-demographic variables and level of quality of life of the participants. It was found that strong significant association between educational level of the participants and Level of quality of life of the participants. Where X^2=26.712, *df*=12, *P*=0.008

Table no. 5: Association between socio-demographic variables and level of disability of the participants.

Variables		Level of disability			
	Domains	*Chi-value*	*P-value*	*df*	Significance
Socio-demographic variables	Age group	5.624	0.467	6	No
	Gender	4.915	0.178	3	No
	Marital status	6.145	0.725	9	No
	Educational level	22.252	0.035	12	YES
	Family type	0.89	0.994	3	No
	Occupation	15.457	0.630	18	No
	Monthly family Income	12.051	0.442	12	No

Table no. 5 showed that association between socio-demographic variables and level of disability of the participants. It was found that strong significant association between educational level of the participants and level of disability of the participants. Where X^2=22.252, *df*=12, *P*=0.035.

CHAPTER-V DISCUSSION

OA is a serious disease. It causes substantial, persistent morbidity from pain, fatigue, sleep disturbance, depression and disability, which has an enormous burden on people's day-to day functioning and quality of life. The economic burden is substantial and growing. OA poses a major barrier to people's mobility (walking) and thus to achieving sufficient physical activity.

This was a cross sectional study. The aim of current study was to disability among the elderly People suffering from knee osteoarthritis. Convenience sampling was done to select samples. Total 92 data were collected from the knee OA patients by using a structured questionnaire including socio-demographic related questions, disability related questions and quality of life related questions. The collected data were analyzed by SPSS 25 program. The discussion part of the research has been presented in the following section.

The Present study revealed that age frequency of the participants. It was found that majority of the participants 65 (70.7%) were belonged to the age group of 61-75 years. The mean age of the participants was 64.72 years and Standard deviation was 560. The study had both male and female participants. About gender of the participants 44.6% was male and 55.4% was female. It was indicated that male and female participants approximate equal.

A similar study found that, more than half (60.7%) of studied elderly women had ages ranged from 65 <70 year (Fahmy et al. 2023, p. 148-166). Another Bangladeshi study found that most participants was attended from 41-50 age group 35.7% (n=41) and the Mean ± SD was 49.22±11.610 (Islam 2022, p.1-121).

The present study had total 92 participants including both male and female participants. Regarding gender of the participants 44.6% was male and 55.4% was female. The female participants were higher than the male. Study findings were in the same line with Ali et al., (2013) who revealed that 63.99% of the respondents were female and 36.01% were male. An Indian study indicated that females are more likely than males to have osteoarthritis. Another study explained that Out of 36 participants 19 (52.8%) were female and 17 (47.2%) were male. The study showed that female participants were more vulnerable than male participants (Barua 2013, p.

113).Another similar study found that the majority of the subjects was females 87.0%, males constituted 13.0%. In this study data showed that 53.0 %(n=61) was female and 47%(n=54) was male. Female were predominantly higher than male. Out of 71 respondent, 41(57.7%) were female and 30(42.3%) were males (Akhter and Khanum 2021, p. 26).The research showed that frequency of marital status of the participants.

It was found that most of the participants 84 (91.3%) was married, unmarried 2 (2.2%), divorse 3 (3.3%), widow 3 (3.3%) Otherhand a similar study found that 88.7 %(n=102) were married, 5.2%(n=6) were unmarried, 6.1%(n=7) were widow. (Islam 2022, p.1-121), Liu et al. (2020) found that 88.7%(n=102) were married, 5.2%(n=6) were unmarried, 6.1%(n=7) were widow. Among the entire participants 24(26.1%) was illiterate, 27(29.3%) was primary, 12(13.0%) was S.sc, 8(8.7%) was H.sc, 21(22.8%) was honors or above educational level. Comparatively a paper discussed that highest (33.12%) respondents had primary passed followed by illiterate (31.19%), secondary (26.37%), higher secondary (4.82%), degree (2.89%) and post graduate (1.61%) (Keya 2015). 23% males and 56% females were illiterate in urban areas (Central Statistics of India, 2011) and survey carried out in Samsun City, Turkey, where 48.3% of people lack literacy.

The current study showed that frequency distribution of all participants by family status. It was released that 56.5% was nuclear and 43.5% was join family. A study showed that, 69.6% (n=80) were nuclear family, 30.4% (n=35) were extended family.(Liu et al., 2020). The present study showed that frequency distribution of the total participants by occupational status. It was found that majority of the participants 32 (34.8%) was house wife. The study also found that majority of the participants 49(53.3%) was middle class according to their family income BDT. Another study also found that 36.7% of them had retired from governmental job and 52% of them had inadequate monthly income (Jaiswal et al. 2023, p. 354-360). A same line study showed that 52% of them had inadequate monthly income (Hasan et al. 2023, p.56-61). A Bangladeshi paper done by Rahman et al. (2021) who found that retired person (16.4%), others (10.2%) and businessman (8.3%) respectively. In this case of monthly family income, 5,000-10,000 range family income was 34.8%(n=40),10001-20000 range family income was 22.6%(n=26), More than 20000 range family income was 42.6%(n=49). Mean ± SD was 23056.52±15602.767.(Islam 2022, p.1-121). Gupta S et al. (2016) in their study, found that 660 (66.0%) senior people relied heavily on

finances. A study found that 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 (Mimi 2023).

According to Alam S et al.(2021) about low middle income (69.50%), 19.30% from upper middle income and 7.70% had low income.In a broad spectrum thinking developing country increasing disability day by day due to various risk factors and entire factors disease related disability frequently common. About Asian country the disability rate higher than rich developed country and also another geographic environmental country. The current study done in Bangladesh that was found various level of disability among knee OA patients of study sample. The study showed that frequency distribution of all respondents by disability level. It was found that 5 (5.4%) was level in form of mild, 33(35.9) was level in form of moderate, 40 (43.5%) was level in form of severe and 14(15.2%) was level in form of extreme.

Another studies agree with the current study that patients with knee OA had significantly poorer QoL compared with healthy controls and functional ability of patients with knee OA (Alkan et al. 2014, p.166-172). Also a study done by kumar (2023) that partial agreed with present study. It was stated that patients with osteoarthritis show highest self-reported disability in terms of pain in climbing stairs, in terms of stiffness during morning, and in terms of functional difficulties during doing heavy domestic duties (Kumar, et al 2023, p. 81). In the same line a study done by Cuperus et al. (2014) but disagreed with disability rate and activity limitations of current study. The study explained that broad impact of general OA on the physical component of health. And also indicating moderate to severe functional limitations. Activities concerning mobility and domestic life were considered most important activity limitations, especially walking. The results show a high clinical burden of general OA in terms of HRQoL and activity limitations (Cerpus et al. 2014, p. 871). Chronic Knee OA, activity limitations, disease frequency, treatment burdens all factors in relation to poor economic status of a developing country that finally occurred disability rate. In a same context a study focused on interventions of knee OA patients that found only 2.1% of the knee OA patients easy to obtain medical care when needed (Choojaturo et al. 2019, p. 688). About frequency distribution of the respondents by level of quality of life. It was found that 23(25.0%) was better quality

of life, 33(35.9%) was moderate quality of life, 20(21.7%) was poor quality of life, 16(17.4%) was worse quality of life.

The maximum effect of knee OA was on the physical and psychological domain of quality of life, though social and environmental domains were also significantly lower (Abhishek et al., 2021). The QoL of knee OA patients was very poor (Choojaturo et all. 2019, p. 1-7). A similar theses also agreed about impact of quality of life of OA patients. It was indicated by their paper like Activity restriction of osteoarthritis patients significantly decreases the health-related quality of life and increase the probability of depression (Lee and Kim 2020, p. 329). The study found that 20(21.7%) better Imaginable Health, 27(29.3%) was moderate Imaginable Health, 34(37.9%) was poor Imaginable Health, 11(12.0%) was worse Imaginable Health.

The study showed that frequency distribution of the participants by level of disability and level of quality of life. It was found that association between level of disability and level of quality of life was statistically highly significant, Where $P<0.000$ and *Chi value* 50.068. The present study also found that significant association between educational level and level of quality of life. And also found between educational level and level of disability of the participant. Where $X^2=26.712$, $df=12$, $P=0.008$ and $X^2=22.252$, $df=12$, $P=0.035$ respectively.

A study done on Palestine that indicated that pain severity score was found to have a significant negative association with both the EQ-5D and EQ-VAS scores. Similar associations were found between pain interference score and both EQ-5D and EQ-VAS scores. Multiple regression analysis showed that participants with higher educational level, less diseased joints, shorter duration of disease, and lesser pain severity and interference scores had significantly higher HRQOL scores (Shalhoub et al. 2022, p. 248).

Our study showed that factors such as sex, age, educational level,sleep quality, and walking frequency were associated with the prevalence of KOA in rural Tianjin.(Ji et al. 2023, p. 266).

Pain severity is strongly associated with disability in patients with self-reported OA. This association is less important when OA affects the upper limbs. Together with pain severity, disability was also robustly related to HR-QoL. The associations were

particularly consistent for pain severity at its worst, suggesting that pain exacerbations pose a relevant impact on disability and HR-QoL (Montero et al. 2016, p. 2293-2305).

Another one study found that higher level of the studied psychosocial resources was associated with better perception of quality of life and own health in the group of people in early old age with KOA. The study also showed that the level of self-efficacy was significantly higher and the life orientation more optimistic in the group of elderly people with undisturbed motor skills (Wojcieszek et al. 2023, p. 101).

Limitations of the Study:

- The study was conducted on a limited number of participants, which may not fully represent the entire elderly population with knee osteoarthritis.
- Participants were taken from a specific area/hospital/clinic, so the findings may not be generalizable to elderly populations in other regions or countries.
- Since the study design is cross-sectional, it only reflects disability status at a single point in time and cannot establish cause-and-effect relationships.
- Some data (such as pain intensity, functional limitations, or quality of life) were self-reported, which might have introduced recall bias or over/under-estimation.
- Due to time limitations, long-term outcomes of disability progression in knee osteoarthritis patients were not assessed.

CHAPTER-VI CONCLUSION AND RECOMMENDATION

6.1 Conclusion:

The aim of current study was to disability among the elderly People suffering from knee osteoarthritis with considering the variables like socio-demographic related variable, disability related variable and quality of life related variable. Convenience sampling was done to select samples. Total 92 data were collected from the knee OA patients by using a structured questionnaire. The study found that disability in form of mild, moderate, severe and extremely severe. The study sought out level of quality of life in form of better, poor and worse. The present study indicated that education of the participants impacted on disability level and overall quality of life of the participants.

So, the researcher wishes to minimize disability and pain that improve quality of life. This study crucial to develop research based findings about quality of life of knee OA patients.

6.2. Recommendation:

The current research suggested some recommendation. It will help to guide future research, identify gaps in current knowledge and explore new ways to reduce disability and improve the quality of life for elderly individuals suffering from knee osteoarthritis.

- This study found statistically significant relationship between educational status vs level of disability and educational status vs level of quality of life. So, Future studies should aim for a longer follow-up period to assess long-term outcomes and effectiveness in such variables.
- Long-term data can help identify early predictors of severe disability and the effectiveness of various treatment strategies over time. So Conduct longitudinal studies to track the progression of knee osteoarthritis over time in elderly populations, examining factors such as physical activity levels, comorbidities and treatment adherence.
- Missing data, recall bias and sample size limitations can affect the validity of results. Ensure data collection methods are robust to overcome biases in participant selection and response.
- Short-term studies may not capture the full progression of knee osteoarthritis. Future studies should aim for a longer follow-up period to assess long-term outcomes and effectiveness.

CHAPTER-VII REFERENCES

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Consent forms

Dear participant, Respondent ID no: | | | |

I am Md. Mehedi Hasan student of B.sc in physiotherapy program in the Department of Physiotherapy at SAIC College of Medical Science and Technology (SCMST) which is affiliated by Dhaka University conducting the study entitled **"Disability and quality of life among the elderly people suffering from knee osteoarthritis"** as a part my thesis work for the partial fulfillment of Bachelor degree. There is a list of question you need to fill up which include socio-demographic and musculoskeletal problem. For spending your time to participate in this self-administered interview which will take around 10-15 minutes. There is list of questionnaires and you need to fill up each answer. The information gained from this questionnaire will be used for academic purpose and will be kept confidential. Your participation in this study is totally voluntarily and you have the right to withdraw from the interview without any clarification at any moment. You can ask any question to the researcher and/or my research supervisor, Shahid Afridi, Lecturer, Department of physiotherapy, Mob-01780006441, Saic College of Medical Science and Technology, Mirpur-14, Dhaka-1216 regarding the study to meet up your quarry. Looking forward your kind cooperation.

Declaration of the participants,

I have been invited to participate in this survey. The foregoing information has been read to me and that have been answered to my satisfaction. I have noticed that my participation in this study is totally voluntary and I have the right to withdraw from the interview at any clarification. I give my consent voluntarily to be participants in this study.

Respondent name: …… Signature of the researcher: ……

Signature and date: ……. Signature of the witness: ……

Mobile no: ……

Appendix-I

Questionnaire

(English)

Part I: Patient's Identification

1.1 Patient ID No:

1.2 Patient Name:

Part II: Socio-demographic Information

2.1 Age:_____

2.2 Gender: Male_____ Female _____

2.3 Marital Status:	Unmarried	
	Married	
	Divorced	
	Widow	

2.4 Educational Status:	Illiterate	
	Primary	
	SSC	
	HSC	
	Honors and above	

2.5 Family Type:	Nuclear Family	
	Joint Family	

2.6 Living Area:	Rural	
	Urban	

2.7 Occupation:	Office Worker	
	Laborer	
	Driver	
	Housewife	
	Unemployed	
	Retired	
	Student	
	Others (specific)	

2.8 Family Income (per month):_____ Taka

Part III:

Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) Scale.

Instructions: Please rate the severity of your symptoms in each of the following categories over the past 48 hours. Use the following scale to answer each question: 0 = None, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Extreme

Section A: Pain

1. How much pain do you have while walking on a flat surface?	0	1	2	3	4
2. How much pain do you have going up or down stairs?	0	1	2	3	4
3. How much pain do you have at night while in bed?	0	1	2	3	4
4. How much pain do you have while sitting or lying?	0	1	2	3	4
5. How much pain do you have while standing upright?	0	1	2	3	4

Section B: Stiffness

6. How much stiffness do you have after first waking up in the morning?	0	1	2	3	4
7. How much stiffness do you have later in the day?	0	1	2	3	4

Section C: Physical Function

8. How much difficulty do you have descending stairs?	0	1	2	3	4
9. How much difficulty do you have ascending stairs?	0	1	2	3	4
10. How much difficulty do you have rising from a sitting position?	0	1	2	3	4
11. How much difficulty do you have standing?	0	1	2	3	4
12. How much difficulty do you have bending to the floor?	0	1	2	3	4
13. How much difficulty do you have walking on a flat surface?	0	1	2	3	4
14. How much difficulty do you have getting in or out of a car?	0	1	2	3	4
15. How much difficulty do you have going shopping?	0	1	2	3	4
16. How much difficulty do you have putting on socks?	0	1	2	3	4
17. How much difficulty do you have lying in bed?	0	1	2	3	4
18. How much difficulty do you have taking off socks?	0	1	2	3	4
19. How much difficulty do you have rising from bed?	0	1	2	3	4
20. How much difficulty do you have getting in or out of a bath?	0	1	2	3	4
21. How much difficulty do you have sitting?	0	1	2	3	4
22. How much difficulty do you have getting on or off the	0	1	2	3	4

toilet?					
23. How much difficulty do you have performing heavy household duties (e.g., moving furniture, scrubbing floors)?	0	1	2	3	4
24. How much difficulty do you have performing light household duties (e.g., dusting, washing dishes)?	0	1	2	3	4

Scoring Instructions:
Normalized Score=(Max Score/Raw Score)×100
Interpret the Score: There is no strict cutoff for severity, but general interpretations include:

- **0-25%** → Mild symptoms
- **25-50%** → Moderate osteoarthritis
- **50-75%** → Severe osteoarthritis
- **75-100%** → Extreme disability

Part-IV: Questionnaires

EQ-5D-5L Health Questionnaire

Please tick the box that best describes your health today.

1. Mobility

□ I have no problems walking.
□ I have slight problems walking.
□ I have moderate problems walking.
□ I have severe problems walking.
□ I am unable to walk.

2. Self-Care

□ I have no problems washing or dressing myself.
□ I have slight problems washing or dressing myself.
□ I have moderate problems washing or dressing myself.
□ I have severe problems washing or dressing myself.
□ I am unable to wash or dress myself.

3. Usual Activities (e.g., work, study, housework, family, or leisure activities)

□ I have no problems doing my usual activities.
□ I have slight problems doing my usual activities.
□ I have moderate problems doing my usual activities.
□ I have severe problems doing my usual activities.
□ I am unable to do my usual activities.

4. Pain/Discomfort

□ I have no pain or discomfort.
□ I have slight pain or discomfort.
□ I have moderate pain or discomfort.
□ I have severe pain or discomfort.
□ I have extreme pain or discomfort.

5. Anxiety/Depression

□ I am not anxious or depressed.
□ I am slightly anxious or depressed.
□ I am moderately anxious or depressed.
□ I am severely anxious or depressed.
□ I am extremely anxious or depressed.

Your Overall Health Today

(EQ-VAS: Visual Analogue Scale)

Please mark an (X) on the scale to indicate how good or bad your health is today.

0 (Worst health you can imagine) ---|---|---|---|---|---|---|---|---|--- **100** (Best health you can imagine)

Your score: _____

Appenndix-II

সম্মতি পত্র

প্রিয় অংশগ্রহণকারী, উত্তরদাতার আইডি নং:

আমি মোঃ মেহেদী হাসান, ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের অধীনে সাইক কলেজ অফ মেডিক্যাল সাইন্স এন্ড টেকনোলজি বি.এস.সি ইন ফিজিওথেরাপি বিভাগের শেষ বর্ষের ছাত্র।আমার কোর্সটি শেষ করার জন্য আমি একটি গবেষণা করছি যার শিরোনাম **"বৃদ্ধ বয়সে হাঁটুর ক্ষয়জনিত রোগে ভোগা রোগীদের মধ্যে প্রতিবন্ধীতার হার "** এখানে একটি ফর্ম রয়েছে যেটি আপনাকে পূরণ করতে হবে। আমি আমার অধ্যয়ন সংক্রান্ত কিছু তথ্য জানতে চাই। এটি আনুমানিক ১০-১৫ মিনিট সময় নেবে। আমি আপনাকে জানাতে চাই যে এটি একটি সম্পূর্ণরূপে একাডেমিক অধ্যয়ন এবং প্রাপ্ত তথ্য অন্য কোন কাজে ব্যবহার করা হবে না। আপনার দেয়া সমস্ত তথ্য গোপন রাখা হবে এবং তথ্যের উৎস বেনামি থাকবে। এই গবেষণায় আপনার অংশগ্রহণ স্বেচ্ছায় এছাড়াও স্বাক্ষাৎকারের সময় আপনি পছন্দ করেন না বা উত্তর দিতে চান না এমন একটা নির্দিষ্ট প্রশ্নের উত্তর না দেওয়ার অধিকার রয়েছে। আপনি আপনার ফর্মটি পূরণের জন্য গবেষণার বিষয়ে গবেষককে যে কোন প্রশ্ন করতে পারেন অথবা আমার গবেষণা অধীক্ষক, শাহিদ আফ্রিদি, প্রভাষক, ফিজিওথেরাপি বিভাগ, মোবাইব নাম্বার -০১৭৮০০০৬৪৪১, সাইক কলেজ অফ মেডিকেল সাইন্স এন্ড টেকনোলজি মিরপুর -১৪ ঢাকা -১২১৬। । আপনার সদয় সহযোগিতা একান্ত কাম্য ।

অংশগ্রহণকারীর ঘোষণা ,

আমাকে এই জরিপে অংশগ্রহণের জন্য আমন্ত্রণ জানানো হয়েছে । উপরের তথ্যগুলো আমি পড়েছি । এখানে এটা স্পষ্ট যে এই সাক্ষাৎকারে আমি স্বেচ্ছায় অংশগ্রহণ করতে পারবো এবং যেকোনো সময় এটি প্রত্যাহার করতে পারব । আমই এই গবেষনায় অংশগ্রহণকারী হতে সম্মতি প্রদান করছি ।

মোবাইল নাম্বার:

অংশগ্রহণকারীর নাম : গবেষকের স্বাক্ষর:

অংশগ্রহণকারীর স্বাক্ষর এবং তারিখ : সাক্ষীর স্বাক্ষর:

প্রশ্নপত্রঃ (বাংলা)

প্রথম অংশঃ রুগী সনাক্তকরণ

১.১ রোগীর আইডি নাম্বারঃ..

১.২ রোগীর নামঃ

১.৩ বয়সঃ.

দ্বিতীয় অংশঃ সামাজিক জনসংখ্যা সংক্রান্ত তথ্যঃ

২.১ লিঙ্গ	পুরুষ	
	মহিলা	

২.২ **বৈবাহিক অবস্থাঃ**	অবিবাহিত	
	বিবাহিত	
	তালাকপ্রাপ্ত	
	বিধবা	

২.৩ শিক্ষাগত যোগ্যতাঃ	অশিক্ষিত	
	প্রাথমিক	
	এস এস সি	
	এইচ এস সি	
	সম্মান বা ততোধিক	

২.৪ পরিবারের ধরনঃ	একক পরিবার	
	যৌথ পরিবার	

২.৫ পেশাঃ	অফিসকর্মী	
	ড্রাইভার	
	শ্রমিক	
	গৃহিনী	
	বেকার	
	অবসরপ্রাপ্ত	
	ছাত্রী	
	অন্যান্য	

২.৬ পরিবারের আয় (প্রতিমাসে)

তৃতীয় অংশ

ওয়েস্টার্ন অন্টারিও এবং ম্যাকমাস্টার ইউনিভার্সিটিজ অস্টিওআর্থ্রাইটিস ইনডেক্স -বাংলা সংস্করণ

নির্দেশনাঃ নিচের প্রতিটি প্রশ্নের জন্য আপনার অভিজ্ঞতা অনুযায়ী যথাযথ উত্তর দিন। প্রতিটি প্রশ্নের উত্তর ০ থেকে ৪ পর্যন্ত স্কেলে দিন, যেখানেঃ০ = কোনো সমস্যা নেই,১ = মৃদু সমস্যা,২ = মাঝারি সমস্যা,৩ = গুরুতর সমস্যা,৪ = অত্যন্ত গুরুতর সমস্যা

৩.১. **ব্যথা সংক্রান্ত প্রশ্নাবলী** (গত এক সপ্তাহে আপনি কতটা ব্যথা অনুভব করেছেন নিম্নলিখিত পরিস্থিতিতে)

৩.১. ১	হাঁটার সময় কি ব্যথা অনুভব করেছেন?	০	১	২	৩	৪
৩.১. ২	সিঁড়ি ওঠা-বসার সময় ব্যথা হয়েছে কি?	০	১	২	৩	৪
৩.১. ৩	রাতের সময় বিশ্রামের অবস্থায় ব্যথা অনুভব করেছেন কি?	০	১	২	৩	৪
৩.১. ৪	বসার পর উঠে দাঁড়ানোর সময় ব্যথা হয়েছে কি?	০	১	২	৩	৪
৩.১. ৫	চলাফেরার সময় কি ব্যথা অনুভব করেছেন?	০	১	২	৩	৪
৩.১. ৬	হাঁটার সময় কি ব্যথা অনুভব করেছেন?	০	১	২	৩	৪

৩.২. **শক্তভাব সংক্রান্ত প্রশ্নাবলী** (গত এক সপ্তাহে আপনি কতটা অস্বস্তি অনুভব করেছেন নিম্নলিখিত পরিস্থিতিতে)

৩.২. ১	সকালে ঘুম থেকে ওঠার পর কি জয়েন্ট শক্ত অনুভূত হয়েছে?	০	১	২	৩	৪
৩.২. ২	দিনের মধ্যে দীর্ঘ সময় বসে থাকার পর কি জয়েন্ট শক্ত লেগেছে?	০	১	২	৩	৪

৩.৩. **দৈনন্দিন কার্যকলাপ সংক্রান্ত প্রশ্নাবলী** (গত এক সপ্তাহে আপনার দৈনন্দিন কাজ করতে কতটা সমস্যা হয়েছে)

৩.৩. ১	সিঁড়ি ওঠা-বসা করতে?	০	১	২	৩	৪
৩.৩. ২	এক জায়গা থেকে অন্য জায়গায় হাঁটতে?	০	১	২	৩	৪
৩.৩. ৩	বসে থাকা অবস্থায় দীর্ঘ সময় পর উঠতে?	০	১	২	৩	৪
৩.৩. ৪	শোয়া অবস্থা থেকে উঠে দাঁড়াতে?	০	১	২	৩	৪
৩.৩. ৫	জুতা বা মোজা পরতে?	০	১	২	৩	৪
৩.৩. ৬	শৌচাগারে বসতে?	০	১	২	৩	৪
৩.৩. ৭	দাঁড়িয়ে থাকতে?	০	১	২	৩	৪
৩.৩. ৮	বাজারের ব্যাগ বা হালকা কিছু বহন করতে?	০	১	২	৩	৪
৩.৩. ৯	বিছানা থেকে নামতে?	০	১	২	৩	৪
৩.৩. ১০	গাড়িতে ওঠা-বসা করতে?	০	১	২	৩	৪
৩.৩. ১১	দৈনন্দিন ব্যক্তিগত কাজ যেমন গোসল, চুল	০	১	২	৩	৪

	আঁচড়ানো করতে?					
৩.**৩. ১২**	হাঁটু মুড়ে বসতে?	০	১	২	৩	৪
৩.**৩. ১৩**	হালকা গৃহস্থালি কাজ করতে?	০	১	২	৩	৪
৩.**৩. ১৪**	১ কিলোমিটার বা তার বেশি হাঁটতে?	০	১	২	৩	৪
৩.**৩. ১৫**	ভারী কাজ করতে?	০	১	২	৩	৪
৩.**৩. ১৬**	দ্রুত হাঁটতে?	০	১	২	৩	৪
৩.**৩. ১৭**	দৌড়াতে?	০	১	২	৩	৪

চতুর্থ অংশ: প্রশ্নোবলী

ইকিউ -৫ডি-৫এল প্রশ্নাবলী: অনুগ্রহ করে সেই বাক্সটি টিক দিন যা আপনার আজকের স্বাস্থ্যের সাথে সবচেয়ে ভালো মেলে।

৪.১. চলাফেরা:

আমি হাঁটতে কোনো সমস্যা অনুভব করি না।	
আমার হাঁটতে সামান্য সমস্যা হয়।	
আমার হাঁটতে মাঝারি সমস্যা হয়।	
আমার হাঁটতে গুরুতর সমস্যা হয়।	
আমি হাঁটতে অক্ষম।	

৪.২. নিজের যত্ন নেওয়া

আমি নিজেকে ধোয়া বা পোশাক পরতে কোনো সমস্যা অনুভব করি না।	
আমি নিজেকে ধোয়া বা পোশাক পরতে সামান্য সমস্যা অনুভব করি।	
আমি নিজেকে ধোয়া বা পোশাক পরতে মাঝারি সমস্যা অনুভব করি।	
আমি নিজেকে ধোয়া বা পোশাক পরতে গুরুতর সমস্যা অনুভব করি।	
আমি নিজেকে ধোয়া বা পোশাক পরতে অক্ষম।	

৪.৩. দৈনন্দিন কাজকর্ম (যেমন: কাজ, পড়াশোনা, গৃহস্থালি কাজ, পারিবারিক বা অবসর কার্যকলাপ)

আমি আমার দৈনন্দিন কাজকর্ম করতে কোনো সমস্যা অনুভব করি না।	
আমি আমার দৈনন্দিন কাজকর্ম করতে সামান্য সমস্যা অনুভব করি।	
আমি আমার দৈনন্দিন কাজকর্ম করতে মাঝারি সমস্যা অনুভব করি।	
আমি আমার দৈনন্দিন কাজকর্ম করতে গুরুতর সমস্যা অনুভব করি।	
আমি আমার দৈনন্দিন কাজকর্ম করতে অক্ষম।	

৪.৪. ব্যথা/অসুবিধা

আমার কোনো ব্যথা বা অস্বস্তি নেই।	
আমার সামান্য ব্যথা বা অস্বস্তি রয়েছে।	
আমার মাঝারি ব্যথা বা অস্বস্তি রয়েছে।	
আমার গুরুতর ব্যথা বা অস্বস্তি রয়েছে।	
আমার চরম ব্যথা বা অস্বস্তি রয়েছে।	

৪.৫. উদ্বেগ/বিষণ্নতা

আমি উদ্বিগ্ন বা বিষণ্ন নই।	

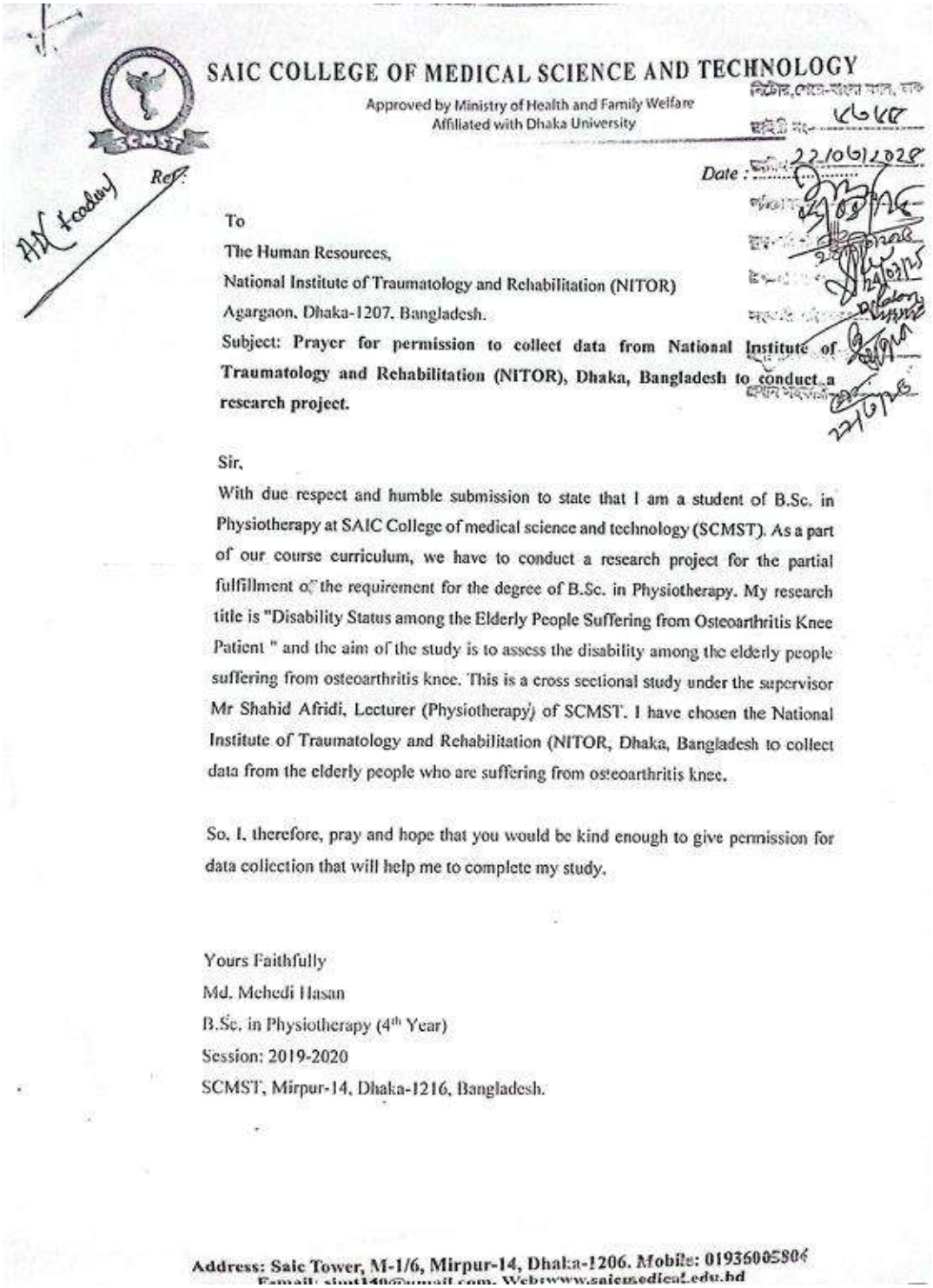
আমি সামান্য উদ্বিগ্ন বা বিষণ্ন।	
আমি মাঝারি উদ্বিগ্ন বা বিষণ্ন।	
আমি গুরুতর উদ্বিগ্ন বা বিষণ্ন।	
আমি চরম উদ্বিগ্ন বা বিষণ্ন।	

(ই কিউ -ভিজ্যুয়াল অ্যানালগ স্কেল)

০ (আপনার কল্পনার সবচেয়ে খারাপ স্বাস্থ্য) ০----------।১০-------।২০--------।৩০--------।৪০--------।৫০--------।৬০--------।৭০--------।৮০--------।৯০--------। ১০০-------- (আপনার কল্পনার সবচেয়ে ভালো স্বাস্থ্য)

আপনার স্কোরঃ

Appendix-Ⅲ



SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY

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

Date : 22/06/2020

To
The Human Resources,
National Institute of Traumatology and Rehabilitation (NITOR)
Agargaon, Dhaka-1207, Bangladesh.

Subject: **Prayer for permission to collect data from National Institute of Traumatology and Rehabilitation (NITOR), Dhaka, Bangladesh to conduct a research project.**

Sir,

With due respect and humble submission to state that I am a student of B.Sc. in Physiotherapy at SAIC College of medical science and technology (SCMST). As a part of our course curriculum, we have to conduct a research project for the partial fulfillment of the requirement for the degree of B.Sc. in Physiotherapy. My research title is "Disability Status among the Elderly People Suffering from Osteoarthritis Knee Patient " and the aim of the study is to assess the disability among the elderly people suffering from osteoarthritis knee. This is a cross sectional study under the supervisor Mr Shahid Afridi, Lecturer (Physiotherapy) of SCMST. I have chosen the National Institute of Traumatology and Rehabilitation (NITOR, Dhaka, Bangladesh to collect data from the elderly people who are suffering from osteoarthritis knee.

So, I, therefore, pray and hope that you would be kind enough to give permission for data collection that will help me to complete my study.

Yours Faithfully
Md. Mehedi Hasan
B.Sc. in Physiotherapy (4th Year)
Session: 2019-2020
SCMST, Mirpur-14, Dhaka-1216, Bangladesh.

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1206. Mobile: 01936005806

Fig. Permission letter from NITOR

Appendix-IV

SCMST-BPT/IRB/.03- 10/ 25/04

To
Md. Mehedi Hasan
4th Year Student of B.Sc. in Physiotherapy
Session: 2019-20, Reg No: 8832
SAIC College of Medical Science & Technology (SCMST)
Mirpur-14, Dhaka-1216, Bangladesh

Subject: Approval of the thesis proposal "Disability among the Elderly People Suffering from Knee Osteoarthritis." by ethics committee.

Dear Md. Mehedi Hasan
Congratulations.
The Institutional Review Board (IRB) of SCMST has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the principal investigator. The Following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Research proposal.
2	Structured Questionnaire (English & Bangla version)
3	Information sheet & consent form.

The purpose of the study is to assess the disability among the elderly people suffering from osteoarthritis knee patient. The study involves face to face interview by using structured questionnaire to assess the disability among the elderly people suffering from osteoarthritis knee patient that may take 30 to 40 minutes to fill in the questionnaire and there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09.00 AM on 4th September 2024 at SCMST.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring during 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,
04.09.24

Dr. Abul Kasem Mohammad Ehamul Haque
Principal, SCMST &Chairman, Institutional Review Board (IRB)
SAIC College of Medical Science & Technology (SCMST)
Mirpur-14, Dhaka-1216, Bangladesh.

Fig. IRB from SCMST

Gantt chart

Activities/ months	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	June 25	July 25	Aug 25
Proposal presentation												
Introduction												
Literature review												
Methodology												
Data collection												
Data Analysis												
Result												
1st progress presentation												
Discussion												
Conclusion And Recommendation												
2nd progress presentation												
Communication with supervisor												
Final submission												