



KNEE PAIN PREVALENCE AND ITS EFFECTS ON QUALITY OF LIFE AND PHYSICAL FUNCTION

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Abstract

Background: Knee pain is a common musculoskeletal complaint among adults and a major contributor to disability, diminished mobility, and reduced quality of life. Its prevalence increases with age and is influenced by demographic, lifestyle, and clinical factors. **Objective:** To determine the prevalence of knee pain among adults attending outdoor of Physical Medicine and Rehabilitation Department of Bangabandhu Sheikh Mujib Medical University (BSMMU) and to assess its effects on physical function and quality of life. **Methods:** A cross-sectional study was conducted among 210 adults aged ≥ 40 years attending the Physical Medicine and Rehabilitation outpatient department from January 2018 to December 2018. Data were collected using a structured questionnaire that included knee pain characteristics, the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and the Short Form-12 (SF-12). Anthropometric and clinical measurements were recorded. Statistical analyses included chi-square tests, independent t-tests, and multivariable logistic regression. **Results:** The prevalence of knee pain was 44.0%. Knee pain was significantly more common among females (52.8%) and individuals aged ≥ 60 years (53.4%). More than half (59.8%) had bilateral knee pain, and the mean pain intensity was 6.1 ± 1.8 . Aggravating factors included stair climbing (73.9%) and prolonged walking (69.6%). Participants with knee pain reported significantly worse WOMAC pain, stiffness, and physical function scores (all $p < 0.001$). SF-12 scores were also lower, indicating reduced physical and mental health. Older age (AOR = 2.58), female sex (AOR = 1.88), BMI ≥ 25 kg/m² (AOR = 2.29), and low physical activity (AOR = 1.55) were independently associated with knee pain, whereas diabetes and hypertension were not significant predictors. **Conclusion:** Knee pain is highly prevalent and substantially impairs functional ability and quality of life. Age, female sex, obesity, and low physical activity are key determinants. Targeted preventive strategies focusing on weight control, activity enhancement, and early intervention are essential to reduce knee pain burden and improve overall well-being.

Keywords: Knee pain, prevalence, WOMAC, SF-12, quality of life, physical function, osteoarthritis, risk factors.

INTRODUCTION

Knee pain is one of the most frequently reported musculoskeletal complaints among older adults, and its occurrence tends to rise steadily with advancing age. As individuals grow older, age-related degenerative changes, joint wear, and chronic health conditions contribute to a greater likelihood of experiencing discomfort or functional limitations in the knee [1]. Knee pain is a major contributor to physical disability and a reduced quality of life in older adults [2].

Osteoarthritis (OA) is a major cause of knee pain and functional limitation. It is a progressive degenerative joint disorder that can affect any joint and is marked by the gradual breakdown and loss of articular cartilage. As the cartilage deteriorates, individuals commonly experience pain, joint stiffness, and reduced mobility [3]. About one-quarter of adults aged 50 and above report chronic knee pain, with around 6% experiencing severe pain and functional impairment. Because age is the strongest risk factor for osteoarthritis, the global burden of knee osteoarthritis is expected to grow as populations age. In addition to pain, knee osteoarthritis often leads to stiffness, deformity, limited mobility, and dependence in daily activities, resulting in substantial economic and social impacts worldwide [4]. Depressive symptoms are a common comorbidity among older adults with knee osteoarthritis, affecting roughly 20% of this population at a rate notably higher than that seen in the general U.S. population. Studies indicate that depression is negatively associated with both the intensity of knee pain and self-reported physical functioning. The significance of depression in patients with knee OA is further highlighted by findings that managing depressive symptoms can lead to reductions in knee pain and improvements in perceived functional ability [5].

Globally, many studies report that knee pain is highly prevalent among older adults and significantly affects their quality of life and physical function. Epidemiological data indicate that about 25% of adults aged 50 and above experience knee pain, with rates increasing as populations age and life expectancy rises [6]. Research has also demonstrated that knee pain significantly reduces mobility, limits the ability to carry out daily activities, lowers participation in social and recreational activities, and leads to a notable decline in overall health-related quality of life [7].

Moreover, international studies indicate that psychological factors, particularly depressive symptoms, often accompany knee pain, exacerbating functional limitations and further diminishing quality of life [8]. Overall, global research highlights knee pain as a prevalent musculoskeletal condition with substantial physical, social, and economic impacts [9].

In Bangladesh, National data also reveal that musculoskeletal conditions, including knee OA, contribute substantially to disability across Bangladesh: nearly a quarter of those affected reported some degree of functional disability, with losses in work capacity [10]. The aim of this study is to determine the prevalence of knee pain among patients attending outdoor of Physical Medicine and Rehabilitation Department of Bangabandhu Sheikh Mujib Medical University (BSMMU) and to assess its impact on quality of life and physical function, including limitations in daily activities, mobility, and overall well-being.

MATERIALS AND METHODS

Study Design and Setting

This study employed a cross-sectional observational design and was conducted in the Outpatient Department of Physical Medicine and Rehabilitation, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. The study period extended from January 2018 to December 2018. The study aimed to determine the prevalence of knee pain and assess its influence on physical function and quality of life among adult patients attending the department.

Study Population

The study population was consisted of adult male and female patients aged 40 years and above who attended the outpatient clinic for musculoskeletal or general health concerns during the study period. Participants were included if they were able to communicate effectively and provide informed consent. Exclusion criteria were:

- Prior history of significant knee trauma or knee surgery,
- Diagnosed inflammatory arthropathies such as rheumatoid arthritis,
- Severe cognitive impairment limiting participation in interviews.

Sample Size and Sampling Technique

A total of 210 participants were enrolled using a consecutive sampling method, where all eligible and consenting patients attending the clinic during the study period were included until the required sample size was reached.

Data Collection Instruments

Data were collected using a structured interviewer-administered questionnaire comprising the following components:

1. Knee Pain Assessment

- Presence of knee pain within the past 12 months.
- Pain intensity evaluated using the Numeric Rating Scale (NRS, 0–10).
- Pain laterality, duration, and aggravating factors.

2. Physical Function Assessment

Functional limitations related to knee pain were assessed using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), focusing on pain, stiffness, and physical function subscales.

3. Quality of Life Assessment

Quality of life was assessed using the Short Form-12 Health Survey (SF-12), with scores summarized into the Physical Component Summary (PCS) and Mental Component Summary (MCS).

4. Clinical and Anthropometric Measures

Height and weight were measured to calculate BMI (kg/m^2). Clinical knee examination included assessment of tenderness, crepitus, deformity, and range of motion.

Data Collection Procedure

Participants were interviewed in a designated private area of the outpatient clinic after obtaining written informed consent. Data were cross-verified for accuracy and completeness following each interview.

Data Analysis

Data were entered and analyzed using SPSS version 23. Descriptive statistics such as mean, standard deviation, frequencies, and percentages were used to summarize participant characteristics and outcome variables. Associations between knee pain and categorical variables were assessed using the Chi-square test, while continuous variables were compared using independent t-tests. Multiple logistic regression analysis was performed to identify factors independently associated with knee pain. A p-value of <0.05 was considered statistically significant.

RESULTS

Sociodemographic and Clinical Characteristics

A total of 210 participants were included in the final analysis. The mean age of the respondents was 56.9 ± 10.8 years, and 60.5% were female. Nearly half of the participants (49.0%) were overweight or obese ($\text{BMI} \geq 25 \text{ kg/m}^2$). The most common comorbidities were hypertension (36.2%) and diabetes mellitus (27.1%). Table 1 summarizes the baseline profile.

Table 1. Sociodemographic and Clinical Characteristics of the Participants (N = 210)

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
Mean $\pm$ SD	56.9 $\pm$ 10.8	—
Sex		
Male	83	39.5
Female	127	60.5
BMI Category		
Normal (<25 kg/m ²)	107	51.0
Overweight/Obese (≥ 25 kg/m ²)	103	49.0
Comorbidities		
Hypertension	76	36.2
Diabetes Mellitus	57	27.1

Prevalence of Knee Pain

The overall prevalence of knee pain among participants was 44.0% (n = 92). Knee pain was significantly more common among females (52.8%) compared to males (30.1%) (p < 0.001). Prevalence increased progressively with age, with the highest rate among participants aged ≥ 60 years (53.4%). (Table 2)

Table 2. Prevalence of Knee Pain Among Study Participants (N = 210)

Variable	n (%)	p-value
Overall knee pain	92 (44.0%)	—
Sex		<0.001
Male (n = 83)	25 (30.1%)	
Female (n = 127)	67 (52.8%)	
Age Group		0.005
40–49 years (n = 78)	26 (33.3%)	
50–59 years (n = 74)	34 (45.9%)	
≥ 60 years (n = 58)	31 (53.4%)	

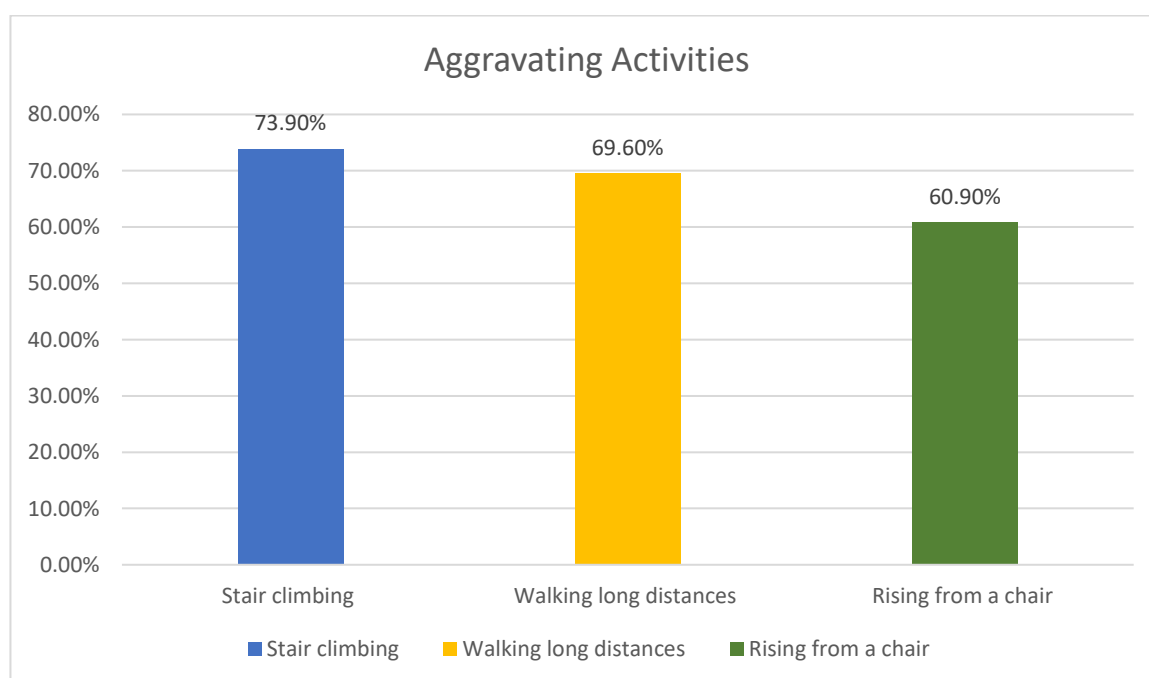
**Figure I: Aggravating activities among participants with knee pain (n=92)**

Figure I shows that stair climbing 68(73.9%), walking long distances 64(69.6%), and rising from a chair 56(60.9%) were the most common aggravating activities.

Characteristics of Knee Pain

Table 3 shows that more than half of the participants (59.8%) experienced bilateral knee pain, indicating that knee symptoms commonly affected both joints. The mean pain intensity was moderately high at 6.1 ± 1.8 on the NRS scale, reflecting a substantial level of discomfort among the participants. Additionally, 41.3% reported daily or persistent symptoms, suggesting a considerable proportion suffered from ongoing knee pain rather than intermittent episodes.

Table 3. Characteristics of Knee Pain (n = 92)

Characteristics	Frequency / Mean	Percentage / SD
Bilateral knee pain	55	59.8%
Mean pain intensity (NRS)	6.1	± 1.8
Daily/persistent symptoms	38	41.3%

Impact of Knee Pain on Functional Status (WOMAC Scores)

Participants with knee pain had significantly worse WOMAC scores across all domains than those without knee pain. Table 4 shows that participants with knee pain had significantly higher WOMAC scores across all domains compared to those without knee pain. The knee-pain group reported markedly greater pain (9.7 ± 3.0 vs. 4.5 ± 2.7), stiffness (4.0 ± 1.4 vs. 2.3 ± 1.1), and physical functional limitation (41.3 ± 12.3 vs. 24.3 ± 10.1). Consequently, their total WOMAC score was substantially higher (55.0 ± 14.4 vs. 31.1 ± 10.8). All differences were statistically significant ($p < 0.001$), indicating that knee pain is associated with considerable impairment in pain, stiffness, and functional ability.

Table 4. Comparison of WOMAC Scores Between Groups

WOMAC Domain	Knee Pain (n = 92) Mean $\pm$ SD	No Knee Pain (n = 118) Mean $\pm$ SD	p-value
Pain	9.7 ± 3.0	4.5 ± 2.7	<0.001
Stiffness	4.0 ± 1.4	2.3 ± 1.1	<0.001
Physical Function	41.3 ± 12.3	24.3 ± 10.1	<0.001
Total WOMAC Score	55.0 ± 14.4	31.1 ± 10.8	<0.001

Quality-of-Life Differences (SF-12 Scores)

Quality-of-life scores were significantly poorer in the knee pain group. Table 5 shows that participants with knee pain had significantly lower SF-12 quality-of-life scores compared to those without knee pain. The mean Physical Component Summary (PCS) score was notably reduced in the knee-pain group (36.4 ± 8.2) relative to participants without knee pain (44.8 ± 7.2), indicating poorer physical health status ($p < 0.001$). Similarly, the Mental Component Summary (MCS) score was slightly but significantly lower among individuals with knee pain (47.3 ± 8.9) compared to those without (50.6 ± 8.4) ($p = 0.020$).

Table 5. Comparison of SF-12 Scores Between Groups

SF-12 Domain	Knee Pain (n = 92) Mean $\pm$ SD	No Knee Pain (n = 118) Mean $\pm$ SD	p-value
Physical Component Summary (PCS)	36.4 ± 8.2	44.8 ± 7.2	<0.001
Mental Component Summary (MCS)	47.3 ± 8.9	50.6 ± 8.4	0.020

Factors Associated with Knee Pain

Table 6 shows that several factors were independently associated with knee pain after adjusting for potential confounders. Participants aged ≥ 60 years had significantly higher odds of experiencing knee pain (AOR = 2.58; 95% CI: 1.42–4.72; $p < 0.001$). Female sex was also an important predictor, with women being nearly twice as likely to report knee pain compared to men (AOR = 1.88; $p = 0.011$). Individuals with BMI ≥ 25 kg/m² had more than double the odds of knee pain (AOR = 2.29; $p = 0.001$), indicating a strong association with overweight/obesity. Low physical activity showed a modest but statistically significant association (AOR = 1.55; $p = 0.049$).

In contrast, diabetes and hypertension were not significantly associated with knee pain, as their confidence intervals included 1 and p-values were above 0.05. These findings highlight age, female sex, obesity, and low activity levels as key determinants of knee pain in this study population.

Table 6. Logistic Regression Analysis of Factors Associated with Knee Pain

Variable	AOR	95% CI	p-value
Age ≥ 60 years	2.58	1.42–4.72	<0.001
Female sex	1.88	1.15–3.08	0.011
BMI ≥ 25 kg/m ²	2.29	1.38–3.81	0.001
Low physical activity	1.55	1.00–2.49	0.049
Diabetes	1.20	0.75–1.95	0.437
Hypertension	1.16	0.72–1.78	0.533

DISCUSSION:

This study assessed the prevalence, characteristics, functional impact, quality-of-life differences, and associated risk factors of knee pain among 210 adult participants. The mean age was 56.9 years, females comprised 60.5% of the sample, and nearly half (49.0%) were overweight or obese—consistent with known demographic patterns of knee pain and osteoarthritis (OA).

In this study, 44.0% of participants reported knee pain, with significantly higher prevalence among females (52.8%) compared to males (30.1%) and progressively increasing rates across age groups, reaching 53.4% among individuals aged ≥ 60 years. These findings mirror global epidemiological evidence, where symptomatic knee OA and chronic knee pain rise steadily with age and are consistently more prevalent among women. Meta-analytic data report a female-to-male prevalence ratio of approximately 1.69, and Asian population studies similarly show greater knee pain burden among women and older adults [11,13]. Thus, the distribution of knee pain in our study aligns with well-established demographic trends.

Regarding symptom patterns, 59.8% of participants with knee pain reported bilateral involvement, with a mean pain score of 6.1 ± 1.8 , reflecting moderate-to-severe pain intensity. Moreover, 41.3% experienced daily or persistent symptoms, and the most common aggravating activities were stair climbing (73.9%), walking long distances (69.6%), and rising from a chair (60.9%). These findings are consistent with earlier research showing that bilateral knee involvement becomes increasingly common over time, and stair climbing, prolonged walking, and chair-rise maneuvers are the most frequently reported pain-exacerbating tasks in knee OA populations [14–18].

Participants with knee pain demonstrated markedly poorer functional status, as reflected by significantly elevated WOMAC pain, stiffness, and physical function scores compared with individuals without knee pain. These findings are consistent with prior research demonstrating the strong relationship between symptomatic knee osteoarthritis and functional limitation. Gorial et al. reported that higher WOMAC scores were closely associated with greater clinical severity and reduced functional capacity among patients with knee OA, emphasizing the utility of WOMAC as a sensitive indicator of symptom burden and disability [19]. Similarly, Fang et al. observed significant

gender-based differences in WOMAC outcomes, with women exhibiting worse pain, stiffness, and functional limitation than men, underscoring the disproportionate functional impact of knee OA in female populations [20].

Quality-of-life assessments further supported these observations. Participants with knee pain had significantly lower SF-12 PCS and MCS scores, indicating impaired physical and mental health. Similar reductions in PCS and MCS scores have been reported in international studies among individuals with OA or chronic knee pain [21–23], affirming that knee pain is strongly associated with reduced health-related quality of life.

The multivariable logistic regression analysis identified older age (≥ 60 years), female sex, BMI ≥ 25 kg/m², and low physical activity as significant predictors of knee pain. These findings are consistent with prior epidemiological research demonstrating that age, obesity, and insufficient physical activity are major contributors to knee joint degeneration and chronic pain [24]. The identification of these modifiable and non-modifiable risk factors highlights key areas for prevention and intervention efforts in similar populations.

Overall, the results of this study are consistent with established evidence on knee pain and osteoarthritis globally and regionally. The findings reinforce the substantial burden of knee pain on functional ability and quality of life and underline the importance of early identification, lifestyle modification, weight management, and activity promotion to reduce knee pain risk and improve outcomes.

CONCLUSION:

This study identified a high prevalence of knee pain among adults, affecting 44% of participants, with a disproportionately greater burden among older adults, females, and individuals with elevated BMI. Knee pain was strongly associated with substantial impairment across pain, stiffness, physical function, and overall quality-of-life measures, as reflected by significantly poorer WOMAC and SF-12 scores. Logistic regression analysis revealed that age ≥ 60 years, female sex, overweight/obesity, and low physical activity were significant independent predictors of knee pain, highlighting the multifactorial nature of the condition. In contrast, diabetes and hypertension were not significantly linked to knee pain in this population. Overall, the findings underscore the need for targeted preventive and management strategies—particularly weight control, physical activity promotion, and early identification of at-risk groups—to reduce the burden of knee pain and improve functional outcomes and quality of life among adults.

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