



Evaluation of Musculoskeletal Disorders, Comorbidities, and Quality of Life among the Elderly Population in Bangladesh

Md. Abul Kalam Azad¹, Nadia Rahman¹, Mohammad Golam Nobil¹, Md. Imamur Rashid¹, Md. Nadim Kamal¹, Sheikh Farhad², Erfanul Haque Siddique², M.A. Shakoor¹

¹Department of Physical Medicine and Rehabilitation, Bangladesh Medical University, Dhaka, Bangladesh

²Department of Orthopedics, Bangladesh Medical University, Dhaka, Bangladesh

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ABSTRACT:

Background: Musculoskeletal (MSK) disorders are a leading cause of disability among the elderly worldwide, significantly impacting their quality of life. In Bangladesh, the ageing population is expanding rapidly, yet data regarding the burden of MSK conditions and their effects on functional ability and wellbeing remain scarce.

Objective: This study aimed to evaluate the prevalence of musculoskeletal disorders, associated comorbidities, and quality of life among elderly individuals in Bangladesh.

Methods: A cross-sectional study was conducted at the Department of Physical Medicine & Rehabilitation, Bangladesh Medical University, from July 2021 to June 2022. A total of 103 adults aged 60 years and above with diagnosed MSK conditions were recruited via convenience sampling. Data were collected through structured interviews assessing demographic characteristics, MSK disorders, activities of daily living (ADL), and quality of life measured by the WHOQOL-BREF. Diagnoses were based on established clinical criteria. Statistical analyses were performed using SPSS version 26, including descriptive statistics, chi-square tests, and univariate logistic regression.

Results: The majority of participants were aged 60–65 years (61.2%) and resided in urban areas (72.8%). Knee pain (84.5%) and back pain (78.6%) were the most prevalent MSK conditions. No significant differences were observed in MSK disorder prevalence between males and females. Increasing numbers of comorbidities were associated with higher mean ADL scores, indicating greater functional impairment. Strong positive correlations were found among different ADL scales, while negative correlations existed between ADL measures and all quality of life domains. The physical and environmental domains of quality of life showed the strongest interrelations.

Conclusion: MSK disorders and comorbidities substantially affect the functional capacity and quality of life among the elderly in Bangladesh. These findings highlight the need for integrated healthcare strategies to address the complex health challenges faced by this vulnerable population.

INTRODUCTION

Bangladesh is undergoing a rapid demographic transition characterized by a substantial increase in its elderly population. This shift is primarily driven by declines in adult mortality and fertility rates, a pattern currently seen in many developing and low-income countries^{1, 2}. By 2050, it is projected that approximately 22.3% of Bangladesh's population will be aged 60 years or older, up from 8.1% in 2020¹. Globally, the United Nations estimates that the population aged 60 and above will triple over the next four decades, comprising over 20% of the total population by 2050, with one in five elderly individuals surpassing 80 years of age³. This demographic transition offers a “demographic dividend”

but also heralds new public health challenges as the disease burden shifts from communicable to chronic non-communicable diseases, including musculoskeletal (MSK) disorders⁴.

Musculoskeletal disorders have emerged as leading causes of disability among older adults worldwide, contributing to pain, reduced mobility, loss of independence, and diminished quality of life [5, 6]. The global burden of MSK conditions—including osteoarthritis, rheumatoid arthritis, osteoporosis, and low back pain—is substantial and growing, amplified by aging populations and increased life expectancy [7]. For example, low back pain alone is a major contributor to work impairment, absenteeism, and economic costs [8].



Despite their prevalence, MSK disorders often present diagnostic and therapeutic challenges due to their nonspecific pain manifestations and complex clinical presentations [9].

Simultaneously, diabetes mellitus (DM), a significant comorbidity among the elderly, is rising sharply in Bangladesh and globally, exacerbating MSK complications [10, 3]. Bangladesh currently ranks second highest in diabetes prevalence in Southeast Asia, with projections indicating continued growth [3]. The interplay between diabetes and MSK disorders results in increased chronic pain, disability, and healthcare demands, underscoring the need for integrated care approaches.

In Bangladesh, the challenges are compounded by limited aged care services, especially in rural areas, where healthcare access is often inadequate [11, 12]. Furthermore, social and psychosocial factors, including familial neglect and insufficient awareness, may worsen the burden of MSK disorders among older adults, leading to prolonged disability and reduced quality of life.

Given the high prevalence and complex nature of MSK disorders and comorbidities among the elderly in Bangladesh, this study aims to evaluate their prevalence, severity, and impact on quality of life. By focusing on rural elderly diabetic populations, the study seeks to generate evidence to guide targeted healthcare interventions and policy development tailored to this vulnerable group.

MATERIALS AND METHODS

A cross-sectional study was conducted at the Department of Physical Medicine & Rehabilitation, Bangladesh Medical University (BMU), Bangladesh, between July 2021 to June 2022. The study aimed to investigate musculoskeletal (MSK) disorders among adults aged 60 years and above, focusing on disability status, quality of life, and associated demographic, biological, psychological, and social factors.

Although the initially calculated sample size was 280, a total of 103 participants with diverse severities of MSK conditions were recruited using convenience sampling from both urban and rural areas of Bangladesh. Data collection occurred between January and June 2022.

MSK conditions were diagnosed based on internationally accepted criteria, including: 1. Rheumatoid arthritis: 2010 ACR/EULAR Classification Criteria [13]; 2. Spondyloarthritis (axial and peripheral): ASAS Criteria [14]; 3. Ankylosing spondylitis: Modified New York Criteria (1984) [15]; 4. Psoriatic arthritis: CASPAR Criteria [16]; 5. Knee osteoarthritis: ACR clinical classification criteria [17]; 6. Systemic lupus

erythematosus: ACR Revised Criteria (1997) [18]; 7. Soft tissue rheumatism, including sub acromial bursitis, epicondylitis, trochanteric bursitis, anserine bursitis, and fibromyalgia.

Participants with endoprostheses, metabolic syndrome (including diabetes), acute trauma, or mental health disorders were excluded.

Data were collected via structured face-to-face interviews and observation. Information included demographics, musculoskeletal health status, activities of daily living (ADL), and quality of life, which was assessed using the WHO Quality of Life Scale (WHOQOL-BREF).

Ethical approval was obtained from the Institutional Review Board (IRB) of Bangladesh Medical University (BMU). Written informed consent was obtained from all participants, who were free to withdraw from the study at any time without penalty.

Statistical analysis

Data were analyzed using SPSS version 26. Descriptive statistics summarized participants' characteristics and prevalence of musculoskeletal conditions. Quantitative variables such as age, education, BMI, and ADL scores were categorized. Chi-square tests assessed associations between categorical variables. Univariate logistic regression was performed to estimate odds ratios for factors including age, sex, education, wealth, residence, smoking, physical activity, occupation, overweight status, trauma history, and diabetes. Results were stratified by sex and residence.

RESULTS

Between January 2021 and December 2021, this descriptive cross-sectional study was carried out at Bangladesh Medical University's (BMU) Department of Physical Medicine & Rehabilitation in Bangladesh. The study population included patients who had previously been diagnosed with cervical spondylosis by orthopedic experts and were receiving follow-up care at the department during the study period.

Table-1. Endoprostheses Socio-demographic characteristics of the study participants (N = 103)

Characteristic	Total n (%)	Male n (%)	Female n (%)
Age (years)			
60–65	63(61.2%)	36(57.1%)	27(42.9%)



66–70	32(31.1%)	20(62.5%)	12(37.5%)
71–75	6 (5.8%)	4 (66.7%)	2 (33.3%)
76–80	2 (1.9%)	1 (50%)	1 (50%)
Living Area			
Urban	75 (72.8%)	40(66.7%)	35(78.0%)
Rural	28 (27.2%)	18(30.0%)	10(22.2%)
Marital Status			
Married	70 (68.0%)	45(75.0%)	25(55.6%)
single	25 (24.3%)	15(25.0%)	10(22.2%)
Divorce	8 (7.8%)	3 (5.0%)	5 (11.1%)
Monthly Income			
10,000–24,999	55 (53.4%)	30 (50.0%)	25(55.6%)
25,000–49,999	28 (27.2%)	18(30.0%)	10(22.2%)
50,000–99,999	9 (8.7%)	5 (8.3%)	4 (8.9%)
≥100,000	11(10.7%)	6 (10.0%)	5 (11.1%)

Table 1 presents the socio-demographic characteristics of 103 participants. Most were aged 60–65 years (61.2%), with males comprising 57.1% and females 42.9% in this group. Participants aged 66–70 years accounted for 31.1%, with males at 62.5% and females 37.5%. Smaller proportions were observed in older age groups. Regarding residence, 72.8% lived in urban areas, while 27.2% were rural dwellers. In terms of marital status, 68.0% were married, with a higher percentage of males (75.0%) compared to females (55.6%). Singles and divorced individuals accounted for 24.3% and 7.8%, respectively. Monthly income distribution showed that

53.4% earned between 10,000 and 24,999 BDT, followed by 27.2% earning 25,000 to 49,999 BDT. Smaller proportions reported higher incomes.

Table-2. Prevalence of musculoskeletal disorders by sex among participants (n=103)

Condition	Total n (%)	Male n (%)	Female n (%)	Chi-square (X ²)	p-value
Back pain	81(78.6)	46(75.4)	35(83.3)	1.582	0.208
Neck pain	41(39.8)	27(44.3)	14(33.3)	0.498	0.480
Knee pain	87(84.5)	49(80.3)	38(90.5)	2.576	0.108
Heel pain	12(11.7)	7(11.5)	5(11.9)	0.005	0.944
Hip pain	6(5.8)	4(6.6)	2(4.8)	0.010	0.919
Gross muscle pain	12(11.7)	9(14.8)	3(7.1)	2.061	0.151
Elbow pain	20(19.4)	14(23.0)	6(14.3)	0.841	0.359
Wrist pain	24(23.3)	16(26.2)	8(19.0)	1.986	0.159
Shoulder pain	13(12.6)	10(16.4)	3(7.1)	0.669	0.669

Table 2 shows the prevalence of various musculoskeletal disorders among 103 participants. Back pain was the most common condition, reported by 78.6% of participants, followed by knee pain (84.5%) and neck pain (39.8%). The prevalence of other conditions such as heel pain, hip pain, and gross muscle pain ranged from 5.8% to 11.7%. Males and females showed similar prevalence rates across most conditions, with no statistically significant differences based on chi-square tests (all $p > 0.05$).

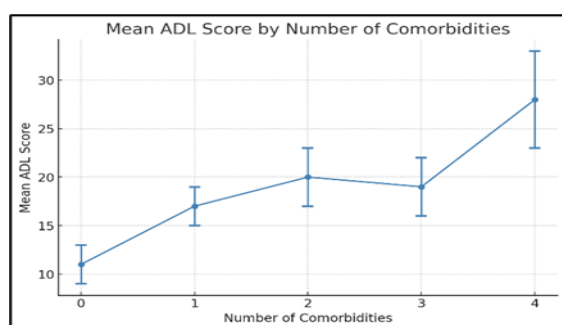


Figure 1 illustrates the relationship between the number of comorbidities and the mean Activities of Daily Living (ADL) scores among participants. The mean ADL score increased progressively from 11 in participants with no comorbidities to 28 in those with four comorbidities. Error bars indicate variability within each group, with the widest range observed in participants with four comorbidities. A slight decrease in mean ADL score is observed between two and three comorbidities, followed by a sharp increase at four comorbidities.

Figure 1. Mean Activities of Daily Living (ADL) scores stratified by the number of comorbidities among study participants.

Table- 3. Pearson's correlation coefficients between Activities of Daily Living (ADL) scales and domains of quality of life measured by WHO-QoL BREF.

Variables	Basic ADL	Instrumental ADL	Social Roles Participation	WHO-QoL Physical	WHO-QoL Psychological	WHO-QoL Social Relationship	WHO-QoL Environmental
Basic Activities of Daily Living (ADL)	1.000	0.9500	0.9289	-0.4073	-0.2711	-0.3455	-0.4156
Instrumental Activities of Daily Living		1.000	0.9751	-0.4550	-0.2473	-0.3564	-0.4318
Participation in Usual Social Roles			1.000	-0.4472	-0.2368	-0.3526	-0.4274
WHO-QoL BREF (Physical)				1.000	0.3887	0.7788	0.8881
WHO-QoL BREF (Psychological)					1.000	0.5677	0.6533
WHO-QoL BREF (Social Relationship)						1.000	0.8476
WHO-QoL BREF (Environmental)							1.000

DISCUSSION



This study assessed musculoskeletal disorders, comorbidities, and quality of life among elderly adults in Bangladesh, providing important insights into the prevalence and impact of these conditions. The majority of participants were younger elderly adults (60–65 years), predominantly residing in urban areas, which aligns with demographic trends observed in similar settings¹⁹. The higher proportion of married males compared to females reflects the societal structure common in Bangladesh and many developing countries.

The prevalence of musculoskeletal disorders was notably high, with knee pain (84.5%) and back pain (78.6%) being the most common complaints, consistent with previous findings in elderly populations worldwide^{20, 21}. This significant burden of MSK conditions reflects the cumulative effect of ageing on the musculoskeletal system, including decreased muscle mass and structural changes that contribute to pain and disability^{22, 23}. The relatively similar prevalence rates between males and females observed here are also in line with prior reports, suggesting that MSK conditions broadly affect elderly populations irrespective of sex^{19, 24}.

A progressive increase in mean Activities of Daily Living (ADL) scores correlates with the number of comorbidities, underscoring the cumulative impact of multiple health conditions on functional ability. This relationship highlights the heightened risk of disability and loss of independence as comorbid conditions accumulate, consistent with existing evidence emphasising the need for integrated management of chronic diseases in ageing populations^{25, 26}.

The strong positive correlations observed among different ADL scales in Table 3 reflect the interdependence of basic, instrumental, and social activities in maintaining functional independence. Negative correlations between ADL scales and WHO-QoL BREF domains suggest that greater functional impairment is associated with a poorer perceived quality of life across physical, psychological, social, and environmental dimensions. The high positive correlations among quality of life domains align with previous studies emphasising the multidimensional nature of well-being in older adults^{27, 28}.

Overall, these findings emphasise the significant burden of musculoskeletal conditions and comorbidities among the elderly in Bangladesh, alongside their detrimental

effects on functional status and quality of life. They highlight the urgent need for targeted public health strategies and clinical interventions to tackle these challenges in rapidly ageing populations, particularly in low- and middle-income countries^{20, 29}.

Conclusion:

This study highlights the high prevalence of musculoskeletal disorders among the elderly population in Bangladesh, with knee and back pain being the most common conditions. The presence of multiple comorbidities significantly impacts functional ability and quality of life, emphasizing the need for comprehensive healthcare approaches that address both physical and psychosocial aspects. Targeted interventions and policies are essential to improve the wellbeing and independence of older adults, particularly in resource-limited settings. Further research is warranted to develop effective strategies for prevention, management, and support for this vulnerable population.

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