



PREVALENCE OF OA KNEE PAIN AMONG HOUSEHOLD FEMALES AND ITS IMPACT ON THEIR QUALITY OF LIFE IN SUKKUR

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ABSTRACT

Background: Knee osteoarthritis (OA) is a common cause of pain, functional limitation, and reduced quality of life. Women engaged in household work may experience knee symptoms during middle adulthood. This study aimed to determine the proportion of self-reported knee pain among women engaged in household work in Sukkur and examine its association with quality of life.

Methods: This cross-sectional study included 384 women aged 35-57 years in Sukkur. Participants were recruited through non-probability convenience sampling from households and the Physical Therapy Outpatient Department of Hidayat Hospital. Quality of life was assessed using a modified SF-36, and pain intensity was assessed using the Visual Analogue Scale (VAS) within a structured questionnaire. Data were collected through face-to-face interviews. No clinical examination or radiographic assessment was documented to confirm knee osteoarthritis.

Results: The mean age of the participants was 45.4 ± 6.5 years. Of 384 participants, 151 (39.3%) reported study-defined knee pain. Pain-intensity data were available for 150 participants, of whom 100 (66.7%) reported mild pain, 35 (23.3%) moderate pain, and 15 (10.0%) severe pain. Participants reporting knee pain had significantly lower quality-of-life scores than those without reported knee pain (25.21 ± 6.75 vs 30.11 ± 7.73). The mean difference was -4.90 (95% CI, -6.41 to -3.39), $t(382) = -6.37$, $p < 0.001$, with a standardized mean difference of 0.67. Quality-of-life scores did not differ significantly across reported pain-intensity categories ($F(2,146) = 2.55$, $p = 0.082$).

Conclusions: In this convenience sample, 39.3% of participants reported knee pain, and reported knee pain was associated with lower quality-of-life scores. Because the sample was selected using non-probability convenience sampling and included outpatient participants, this proportion should not be interpreted as a population prevalence estimate for all women in Sukkur. In addition, because no clinical or radiographic diagnostic criteria were documented, the findings refer to self-reported knee pain rather than confirmed knee osteoarthritis.

Keywords

osteoarthritis; knee pain; quality of life; women; household work; cross-sectional study; Sukkur; Pakistan

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Mangi MF et al. Short Title

Knee Pain and Quality of Life Among Women in Sukkur



INTRODUCTION

Osteoarthritis (OA) is a degenerative joint disease involving articular cartilage, subchondral bone, synovium, and periarticular tissues (1). Knee OA is among the most common forms of OA and is associated with pain, stiffness, functional limitation, and reduced quality of life (2). Its development is associated with multiple factors, including age, sex, body weight, previous joint injury, and physical or occupational demands (3). Women in middle and later adulthood may experience a substantial burden of knee-related symptoms (4). Household work can involve repeated or prolonged lower-limb loading, including squatting, kneeling, prolonged standing, lifting, and carrying (5). However, the present study did not measure or quantify household workload; therefore, household activities cannot be considered a cause of knee symptoms on the basis of these data (6).

Health-related quality of life (HRQoL) reflects physical functioning, pain, emotional well-being, social participation, and an individual's perception of health status (7). Knee symptoms may restrict daily activities and are associated with poorer HRQoL (3). Studies of knee OA have similarly reported limitations in physical and other components of HRQoL (6). Knee pain can have multidimensional consequences and may place a considerable burden on daily functioning. However, local evidence from Sukkur regarding knee pain and quality of life among women engaged in household work is limited. Therefore, this study aimed to determine the proportion of study-defined/self-reported knee pain among women engaged in household work in Sukkur and examine its association with quality of life.

METHODOLOGY

This cross-sectional study examined quality of life and knee-pain intensity among 384 women aged 35-57 years in Sukkur, Sindh, Pakistan. Participants were recruited from the Hidayat Hospital Physical Therapy Outpatient Department and from households in Barrage Colony, ADC Colony, Police Line, and Railway Colony between November 2023 and March 2024. Eligible participants were women aged 35-57 years who primarily performed their own household work. Participants were excluded if they had other jobs or other knee problems unrelated to the study outcome. A sample size of 384 was calculated using the Raosoft sample size calculator. Participants were selected through non-probability convenience sampling. Data were collected face-to-face after informed consent. Quality of life was assessed using a modified SF-36, and knee-pain intensity was measured using the Visual Analogue Scale (VAS). The primary outcome was study-defined/self-reported knee pain based on the study's reported knee-pain classification. No clinical examination or radiographic assessment for confirmation of knee osteoarthritis was documented; therefore, the outcome should not be interpreted as confirmed knee OA. Pain intensity was categorized as mild, moderate, or severe. Quality-of-life scores were compared between participants with and without reported knee pain using an independent-samples t test. Quality-of-life scores across pain-intensity categories were compared using one-way analysis of variance (ANOVA). All statistical tests were two-sided, and $p < 0.05$ was considered statistically significant.

RESULTS

A total of 384 women aged 35-57 years who were engaged in household work were included. The mean age was 45.4 ± 6.5 years. All participants were female and met the study eligibility criteria for household work. Other sociodemographic characteristics were not available for analysis.

Table 1. Demographic and participant characteristics.

Characteristic	Value
Sample size	384
Sex	Female: 384 (100.0%)
Age range	35–57 years
Age, mean $\pm$ SD	45.4 ± 6.5 years
Women engaged in household work	384 (100.0%)

The largest proportion of participants (171, 44.5%) reported good general health, followed by very good (83, 21.6%), fair (65, 16.9%), poor (40, 10.4%), and excellent (25, 6.5%) health. Physical health problems were reported by 135 (35.2%) participants, while emotional health problems were reported by 59 (15.4%).

Table 2. General health, physical health, and emotional health characteristics.

Characteristic	Response	n	%
General health	Excellent	25	6.5
General health	Very good	83	21.6
General health	Good	171	44.5
General health	Fair	65	16.9



General health	Poor	40	10.4
Physical health problems	No	249	64.8
Physical health problems	Yes	135	35.2
Emotional health problems	No	325	84.6
Emotional health problems	Yes	59	15.4

Among the participants, 199 (51.8%) reported no impact of health problems on social participation. Slight, moderate, severe, and very severe impacts were reported by 104 (27.1%), 50 (13.0%), 22 (5.7%), and 9 (2.3%) participants, respectively. Overall, 185 (48.2%) participants reported at least some degree of impact on social participation.

Table 3. Impact of physical or emotional health problems on social activities.

Impact level	n	%
Not at all	199	51.8
Slightly	104	27.1
Moderately	50	13.0
Severe	22	5.7
Very severe	9	2.3
Total	384	100.0

Study-defined/self-reported knee pain was reported by 151 of 384 participants (39.3%; 95% CI, 34.4%-44.3%). The remaining 233 participants (60.7%) reported no knee pain. Because participants were selected by non-probability convenience sampling, 39.3% represents the proportion observed in this study sample rather than a population prevalence estimate.

Table 4. Proportion of self-reported knee pain.

Self-reported knee-pain status	n	%	Approx. 95% CI
Yes	151	39.3	34.4–44.3
No	233	60.7	—
Total	384	100.0	—

Pain-intensity data were available for 150 of the 151 participants with self-reported knee pain. Of these, 100 (66.7%) reported mild pain, 35 (23.3%) moderate pain, and 15 (10.0%) severe pain. Thus, pain-intensity categories accounted for 150 participants, whereas 151 participants were classified as having self-reported knee pain in the primary analysis.

Table 5. Intensity of self-reported knee pain among participants with recorded severity.

Pain intensity	n	% among recorded severity	% of total sample
Mild	100	66.7	26.0
Moderate	35	23.3	9.1
Severe	15	10.0	3.9
Total	150	100.0	39.1

There was a statistically significant difference in mean quality-of-life scores between participants reporting knee pain and those without reported knee pain (25.21 ± 6.75 vs 30.11 ± 7.73). The mean difference was -4.90 points (95% CI, -6.41 to -3.39). The independent-samples t test showed a statistically significant between-group difference, $t(382) = -6.37$, $p < 0.001$. The standardized mean difference was 0.67 , indicating a moderate-to-large between-group difference.

Table 6. Quality-of-life scores according to self-reported knee-pain status.

Self-reported knee-pain status	n	QOL mean $\pm$ SD	Mean difference (95% CI)	t (df)	p-value
Yes	151	25.21 ± 6.75	-4.90 (-6.41 to -3.39)	-6.37 (382)	<0.001

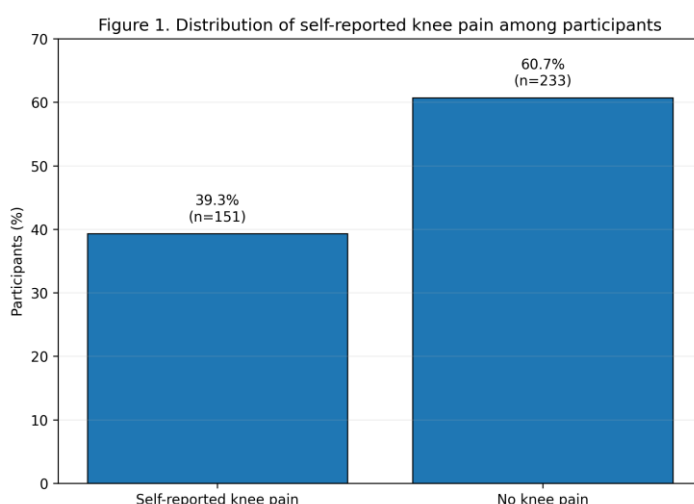
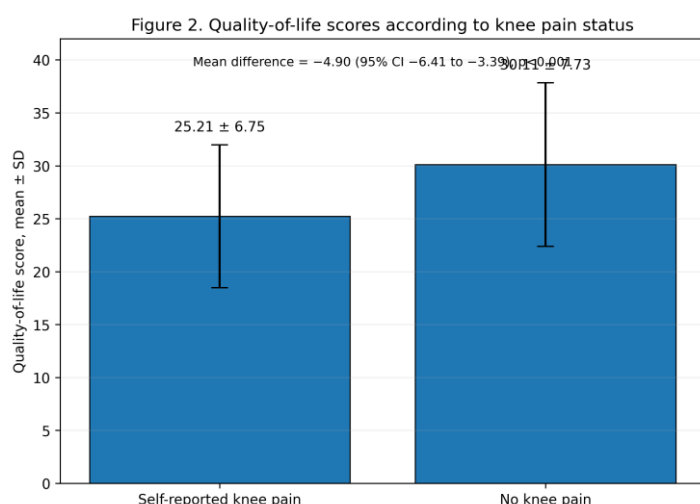


No	233	30.11 ± 7.73	Reference	—	—
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Among participants with available pain-intensity and quality-of-life data, mean quality-of-life scores were 25.13 ± 6.60 for mild pain ($n = 99$), 26.94 ± 7.64 for moderate pain ($n = 35$), and 22.33 ± 4.72 for severe pain ($n = 15$). The total sample for this analysis was 149 participants. Quality-of-life scores did not differ significantly across the three pain-intensity categories, $F(2,146) = 2.55$, $p = 0.082$.

Table 7. Quality-of-life scores according to reported pain intensity.

Pain intensity	n	QOL mean ± SD
Mild	99	25.13 ± 6.60
Moderate	35	26.94 ± 7.64
Severe	15	22.33 ± 4.72



DISCUSSION

This study examined self-reported knee pain and quality of life among women aged 35-57 years engaged in household work in Sukkur. In this mixed community and outpatient convenience sample, 39.3% (151/384) of participants reported study-defined knee pain. Because participants were selected through non-probability convenience sampling and no clinical or radiographic confirmation of knee osteoarthritis was documented, this figure should be interpreted as the proportion of self-reported knee pain within the study sample rather than the population prevalence of confirmed knee OA. The 95% confidence interval for the observed sample proportion was 34.4%-44.3%. Participants reporting knee pain had significantly lower quality-of-life scores than those without reported knee pain (25.21 ± 6.75 vs 30.11 ± 7.73 ; mean difference, -4.90 ; 95% CI, -6.41 to -3.39 ; $t = -6.37$; $p < 0.001$), with a standardized mean difference of 0.67. No statistically significant difference in quality of life was observed across pain-intensity categories ($F = 2.55$; $p = 0.082$). These findings demonstrate an association between reported knee pain and lower quality-of-life scores but do not establish causation.

The worldwide burden of osteoarthritis (OA) is substantial and increasing. In 2021, the Global Burden of Disease Study estimated approximately 607 million OA cases, including an estimated 346 million cases of knee OA, with higher age-standardized rates among females than males (8). GBD 2019 analyses also reported a large global burden of OA and projected further increases over time (9). Studies from Pakistan and other low- and lower-middle-income settings have reported varying OA prevalence estimates (10-12). However, direct comparison with the present study is limited because the current outcome was self-reported knee pain without documented clinical or radiographic confirmation and the sample was not population based. The mean age of the participants was 45.4 years, indicating that knee symptoms were present during midlife in this sample (13).

The findings indicate a substantial burden of reported knee pain among the women included in this study. Published evidence has also described a greater burden of osteoarthritis among women (14). Household work may involve prolonged standing, kneeling, squatting, stair climbing, lifting, and carrying, all of which may increase mechanical loading of the lower limbs (6). Some studies have reported associations between daily housework and knee osteoarthritis among middle-aged women (15), while physically demanding occupations have also been examined in relation to osteoarthritis risk (16). In the present study, however, household workload was not quantitatively assessed; therefore, no causal relationship between domestic work and knee pain can be established.

The lower quality-of-life scores among participants with knee pain are consistent with published literature. Knee OA is an important cause of disability, and pain can affect mobility, participation, mood, and sleep (17). Chronic pain, stiffness, and difficulty performing daily activities are also associated with poorer quality of life in people with knee OA (18). A study of middle-aged





individuals in Pakistan reported lower quality-of-life scores among participants with knee OA compared with those without knee OA, and another Pakistani study using the SF-36 reported impaired perceived quality of life among patients with knee OA (19). In the present study, the standardized mean difference of 0.67 suggests a moderate-to-large between-group difference in quality-of-life scores; however, this unadjusted association may also reflect other unmeasured factors.

Overall, 48.2% of participants reported at least some interference of physical or emotional health problems with social activities, including severe or very severe interference in 8.0%. Because this item referred to health problems generally, the reported social interference cannot be attributed specifically to knee pain. The high frequency of physical health problems and knee pain is nevertheless consistent with literature describing pain/discomfort as an important health-related quality-of-life concern in knee OA (20).

Quality-of-life scores did not differ significantly across the mild, moderate, and severe pain-intensity groups ($p = 0.082$). This differs from studies reporting poorer quality of life with greater knee-pain severity (21,22). Interpretation should be cautious because the severe-pain subgroup was small ($n = 15$), pain intensity was self-reported, and the observed mean quality-of-life scores did not show a monotonic decline across increasing pain-intensity categories. The lowest mean score was observed in the severe-pain group (22.33 ± 4.72), whereas the moderate-pain group had the highest mean score among the three categories (26.94 ± 7.64). Larger studies with more balanced subgroup sizes are needed to clarify the relationship between pain intensity and quality of life.

Strengths of the study include the inclusion of 384 women from both household settings and a physical therapy outpatient setting in an area with limited local epidemiological information on knee symptoms. The study also examined the association between reported knee pain and quality of life. Several limitations should be considered. First, knee pain was self-reported and was not verified by clinical examination or radiography; therefore, the findings represent symptomatic knee pain rather than confirmed knee osteoarthritis. Second, participants were selected through non-probability convenience sampling and included women attending a physical therapy outpatient department, which limits generalizability and prevents the observed 39.3% from being interpreted as a population prevalence estimate for Sukkur. Third, the cross-sectional design does not establish temporality or causation between knee pain and quality of life. Fourth, detailed demographic and clinical variables, including body mass index, education, marital status, comorbidities, previous knee injury, menopausal status, and analgesic use, were not reported or analyzed and could confound the observed association. Fifth, pain intensity was self-reported using the VAS, and the relatively small subgroup sizes limited the precision of comparisons across pain-intensity categories. Finally, the analyses presented are based on the available study data and do not include multivariable adjustment for potential confounding factors.

These findings are relevant to the sampled women in Sukkur and highlight the need for further locally representative research on knee symptoms and quality of life. Because the present study used non-probability convenience sampling and included outpatient participants, the results should not be generalized to all women in Sukkur. Future population-based studies should use clearly defined diagnostic criteria, representative sampling methods, and assessment of relevant clinical and household-work factors. In the present sample, approximately two in five participants reported study-defined knee pain, and those reporting knee pain had lower quality-of-life scores.

CONCLUSION

In this convenience sample of women engaged in household work in Sukkur, 39.3% reported study-defined knee pain, and reported knee pain was associated with lower quality-of-life scores. The observed proportion should not be interpreted as a population prevalence estimate because participants were recruited using non-probability convenience sampling, including from a physical therapy outpatient setting. Furthermore, because no clinical or radiographic diagnostic criteria were documented, the findings refer to self-reported knee pain rather than confirmed knee osteoarthritis. Further population-based studies using defined diagnostic criteria and representative sampling are warranted.

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