

Pain and Quality of Life among Patients with Knee Osteoarthritis at Tertiary Level Hospital

Nisha Labh¹, Subhash Lal Karna², Bhim Maya Yakha³,

¹Faculty of nursing, HOPE International College and Hospital Private Limited, Nepal

²Lecturer, Department of Orthopedics and Trauma Surgery, National Academy of Medical Sciences, Nepal

³Assistant Professor, HOPE International College and Hospital Private Limited, Nepal

Corresponding Author, Nisha Labh, nishafromkly@gmail.com

Received 05 June 2026, Accepted 15 June 2026, Published 30 June 2026

ABSTRACT

Background and objectives: Osteoarthritis is an age-related disease characterized clinically by pain, functional impairment, disability that may affect quality of life. This study was conducted to evaluate pain and quality of life among patients with knee osteoarthritis. **Methods:** A descriptive cross-sectional study was conducted among 162 patients attending Orthopedic Out Patient department of Kathmandu Medical College by convenience sampling method. Numerical Pain Rating Scale was used to assess pain and SF-36 questionnaire was used to assess quality of life through face-to-face interview method. Data analysis was done by SPSS version 20. Descriptive and inferential statistics including non-parametric tests like Mann Whitney U test, Kruskal-Wallis test were applied. Spearman's Correlation test was used to find out correlation between pain and quality of life, p significant at <0.05 with 95% confidence interval. **Results:** In Numerical Pain Rating Scale index, 55.6% had severe pain. The physical component summary score was 33.52±17.63 and mental component summary score was 48.28±21.64. There was significant difference of age and education level with physical component and mental component. The physical and mental component of quality of life was moderately negatively correlated with pain. **Conclusion:** Patients with knee osteoarthritis experienced severe pain and reduced score in physical and mental component of quality of life. There was significant difference between socio-demographic variables with physical and mental component of quality of life. Pain and physical and mental component of quality of life both were negatively correlated.

KEYWORDS

Knee osteoarthritis, Pain, Quality of life

INTRODUCTION

Osteoarthritis (OA) is common chronic musculoskeletal conditions globally, with the knee being the most frequently affected joint.(Pereira et al., 2011) The condition significantly impacts quality of life, causing functional impairment and disability. Knee OA is seen in 16.0% of people over the age of 15 and 22.9% of people over the age of 40 worldwide.(Cui et al., 2020)

Pain is a common symptom of OA of knee and affects both physical as well as psychological aspects hence quality of life is compromised. (Solis Cartas et al., 2019) About 80 percent of patients have some degree of movement limitation and 25 percent are unable to carry out major activities of daily living.(Ringdahl & Pandit, 2011)

This study was conducted to assess pain and quality of life among patients with knee osteoarthritis.

METHOD

A descriptive cross-sectional study was conducted from June 2023 to November 2024 at Kathmandu Medical College and Teaching Hospital in Sinamangal, Kathmandu. The study included patients aged over 40 years who were diagnosed by an orthopaedician to be a case of knee osteoarthritis. Exclusion criteria encompassed patients with knee pain due to trauma, infection, tumors, cognitive impairment, central nervous system disorders, or communication/hearing difficulties. The formula $n = z^2pq/e^2$ with a 95% confidence interval, 12% prevalence rate based on a study conducted in Bangladesh (Zahid-Al-Quadir et al., 2020), and 5% allowable error were used to determine a sample size of 162. Non-probability convenience sampling was used.

Data were collected using a structured questionnaire. The questionnaire comprised three sections: sociodemographic characteristics, the Numerical Pain Rating Scale (NPRS), and the Nepali-translated SF-36 Health Survey. BMI was calculated using standard formulas, and participants were classified accordingly. The NPRS, a validated tool for pain assessment, was utilized to assess pain intensity. The SF-36, a widely recognized instrument, was used to assess health-related quality of life. The Nepali version of the SF-36 has demonstrated good reliability, with a Cronbach's alpha of 0.85 and a test-retest correlation coefficient of 0.78. (Kafle Bhandari et al., 2018) Pretesting of the data collection tool was conducted on 10% of the sample (16 patients), yielding a Cronbach's alpha score of 0.76.

Face-to-face interview was used to collect data. SPSS version 20 was used to analyze the data. Descriptive statistics like frequency, percentage, mean, standard deviation, median, and interquartile range were computed. Non-parametric methods, such as the Kruskal-Wallis and Mann-Whitney U tests, were used to investigate the relationship between quality of life and sociodemographic traits. The association between pain and quality of life was evaluated using Spearman's correlation coefficient.

Ethical approval was obtained from the Institutional Review Committee of Kathmandu Medical College and Teaching Hospital (ref no. 101123/03). Written informed consent was secured from all participants.

RESULTS

A total of 162 participants were included in the study. The mean age was 56.06 ± 9.91 years, with 72.8% of participants aged below 60. The sample comprised 77.8% females and 87% Hindus. Regarding education, 38.3% had basic education, and 44.4% were homemakers. In terms of ethnic composition, 36.4% identified as Janajati. Geographically, 71.6% resided in the Hilly region. Regarding body mass index (BMI), 47.5% were classified as overweight (Table 1). Pain assessment revealed that 55.6% of participants experienced severe pain (Table 2)

The SF-36 questionnaire was utilized to evaluate participants' quality of life across eight domains. The highest mean score was observed in Emotional Well-Being (54.44 ± 18.57), while the lowest was in Role Limitation due to Physical Health (21.75 ± 40.10). The Physical Component Summary (PCS) had a mean score of 33.52 ± 17.63 , and the Mental Component Summary (MCS) had a mean score of 48.28 ± 21.64 . (Table 3).

Statistical analysis indicated significant differences in the PCS scores based on age, sex, and education level. (Table 4) Significant differences with MCS scores were found for age, ethnicity, education, and BMI (Table 5). A strong negative correlation was identified between pain and the PCS ($r = -0.7$, $p < 0.001$). A moderate negative correlation was found between pain and the MCS ($r = -0.6$, $p < 0.001$), suggesting that as pain increase, quality of life decreases (Table 6).

Table 1: Socio demographic characteristics of patients **n=162**

Variables	Frequency (n)	Percentage (%)
Age group (in completed years)		
40-49		
50-59	48	29.6
60-69	63	38.9
70 and above	31	19.1
Mean $\pm$SD: (56.06$\pm$9.915)	20	12.4
Gender		
Male		
Female	36	22.2
	126	77.8
Educational level		
Illiterate	54	33.3
Basic	62	38.3
Secondary and above	46	28.4
Religion		
Hindu	141	87
Buddhist	11	6.8
Muslim	6	3.7
Christian	4	2.5
Occupation		
Homemaker	72	44.4
Farmer	47	29
Business and others	33	20.4
Teacher	10	6.2
Habitat		
Mountain	6	3.7
Hilly	116	71.6
Terai	40	24.7
Ethnicity		
Brahmin	46	28.4
Chhetri	39	24.1
Janajati	59	36.4
Dalit	18	11.1

BMI		
Underweight	3	1.9
Normal weight	61	37.7
Overweight	77	47.5
Obese	21	13

Table 2: Level of pain of patients

n=162

Variable	Frequency(n)	Percentage (%)
Mild	14	8.6
Moderate	58	35.8
Severe	90	55.6

Table 3: Domain Wise Quality of Life Score Among Patients with Knee Osteoarthritis

n=162

Domains of SF 36	Mean $\pm$ SD
Emotional wellbeing (EWB)	54.44 $\pm$ 18.57
Role limitation due to emotional health (RE)	53.29 $\pm$ 48.78
Social functioning (SF)	49.53 $\pm$ 23.96
Physical functioning (PF)	47.16 $\pm$ 18.99
General health (GH)	39.17 $\pm$ 16.66
Energy fatigue/ vitality (VT)	35.86 $\pm$ 21.47
Bodily pain (BP)	25.99 $\pm$ 17.31
Role limitation due to physical health (RP)	21.75 $\pm$ 14.10
Physical Component Summary (PCS)	33.52 $\pm$ 17.63
Mental Component Summary (MCS)	48.28 $\pm$ 21.64

Table 4: Difference of Sociodemographic variables with Physical Component of Quality of life

n=162

Variables	Frequency	Median (IQR)	P value
Age			
≤ 60	118	39 (30)	0.03#
> 60	44	31 (16)	
Sex			
Male	36	40 (33)	0.00#
Female	126	37 (26)	
Religion			
Hindu	141	37(27)	0.35#
Non-hindu	21	25(31)	
Ethnicity			
Brahmin	46	39(26)	0.27^

Chhetri	39	45(31)	
Janajati	59	30(23)	
Dalit	18	34(19)	
Habitat			
Mountain	6	29(15)	0.34 [^]
Hilly	116	37(27)	
Tera	40	39(35)	
Occupation			
Homemaker	72	37(27)	0.60 [^]
Farmer	47	37(30)	
Business and others	33	32(27)	
Teacher	10	51(37)	
Education			
Illiterate	54	36(18)	<0.001 [^]
Basic	62	31(26)	
Secondary and above	46	50(32)	
BMI			
Underweight	3	50(21)	0.09 [^]
Normal weight	61	32(28)	
Overweight	77	37(25)	
Obese	21	48(30)	

P value significant at the level of <0.05, # Mann -Whitney U-test [^] Kruskal-Wallis test

Table 5: Difference of sociodemographic variables with Mental Component of Quality of life
n= 162

Variables	Frequency	Median (IQR)	P value
Age			
≤60	118	39 (30)	0.03#
>60			
	44	31 (16)	
Sex			
Male	36	40 (33)	0.15#
Female	126	37 (26)	
Religion			

Hindu	141	37(27)	0.07#
Non-hindu	21	25(31)	
Ethnicity			
Brahmin	46	39(26)	<0.001^
Chhetri	39	45(31)	
Janajati	59	30(23)	
Dalit	18	34(19)	
Habitat			
Mountain	6	29(15)	0.82^
Hilly	116	37(27)	
Terai	40	39(35)	
Occupation			
Homemaker	72	37(27)	0.06^
Farmer	47	37(30)	
Business and others	33	32(27)	
Teacher	10	51(37)	
Education			
Illiterate	54	36(18)	0.01^
Basic	62	31(26)	
Secondary and above	46	50(32)	
BMI			
Underweight	3	50	0.01^
Normal weight	61	32(28)	
Overweight	77	37(25)	
Obese	21	48(30)	

P value significant at the level of <0.05, # Mann -Whitney U- test ^Kruskal-Wallis test

**Table 6: Spearman's Correlation between Pain score and Quality of life score
n= 162**

Variables	PCS	MCS
Spearman's correlation coefficient	-0.7	-0.6
P value	<0.001	<0.001

DISCUSSION

In this study, 55.6% of participants reported severe pain, while 35.8% experienced moderate pain. Similar findings were reported in a study from Egypt, where 70% of elderly women had severe pain and 30% had moderate pain (Fahmy et al., n.d.). However, a study from Palestine found that about half of the participants (51%) reported mild pain (Shalhoub et al., 2022). These differences in pain intensity may reflect variations in disease severity, individual pain perception, genetic susceptibility, and psychological factors across study populations.

In this study, the mean physical component score (PCS) was 33.52 ± 17.63 , while the mean mental component score (MCS) was 48.28 ± 21.64 . Similar findings were reported in a study from Turkey, where physically active participants had higher PCS (42.0 ± 13.0) than less active participants (33.7 ± 11.3), while MCS scores were relatively similar between the two groups (48.6 ± 7.3 vs. 47.7 ± 9.6) (Mesci, 2016). The similarity in findings may be explained by the use of comparable study designs and assessment tools, as well as similar socioeconomic and lifestyle factors that influence quality of life.

In this study, age, sex, and education level were significantly associated with the physical component of quality of life (PCS), while BMI showed no significant association. For the mental component (MCS), significant associations were found with age, education, and BMI. These findings are consistent with a study from India, which reported significant associations between PCS and sex and education, and between MCS and education, while no significant associations were observed between MCS and gender, religion, or occupation (Kumar et al., 2023). Higher educational attainment may improve coping skills, leading to better quality of life.

In the present study there was a strong negative correlation between the level of pain and physical component of health which indicates as pain increases, physical health decreases. There was a moderate negative correlation between the level of pain and mental component, indicating that as pain increases, mental health tends to worsen, though the effect is weaker than with physical health. The study done in 2023 in Japan also showed the negative correlation between knee pain and physical component score.(Yokota et al., n.d.) It may be because pain universally restricts physical functioning (leading to lower PCS scores) and affects mental health to a moderate extent.

LIMITATION

This study has some limitations. Its cross-sectional design prevents us from determining whether pain affects quality of life or vice versa. In addition, the analyses did not adjust for

potential confounding factors, such as age, sex, education, BMI, occupation, or other clinical characteristics, which may have influenced the results.

CONCLUSION

Patients with knee osteoarthritis experience severe pain and reduced quality of life. Several sociodemographic variables were associated with reduced scores of physical and mental components of quality of life. There was strong negative correlation between level of pain and both physical and mental component of quality of life.

REFERENCES

- Cui, A., Li, H., Wang, D., Zhong, J., Chen, Y., & Lu, H. (2020). Global, regional prevalence, incidence and risk factors of knee osteoarthritis in population-based studies. *EClinicalMedicine*, 29–30. <https://doi.org/10.1016/j.eclinm.2020.100587>
- Kafle Bhandari, B., Pradhan, R. R., Pathak, R., Poudyal, S., Paudyal, M. B., Sharma, S., & Khadga, P. K. (2018). Assessment of Validity of SF 36 Questionnaire Using Nepali Language to Determine Health-related Quality of Life in Patients with Chronic Liver Disease: A Pilot Study. *Cureus*. <https://doi.org/10.7759/cureus.2925>
- Pereira, D., Peleteiro, B., Araújo, J., Branco, J., Santos, R. A., & Ramos, E. (2011). The effect of osteoarthritis definition on prevalence and incidence estimates: A systematic review. In *Osteoarthritis and Cartilage* (Vol. 19, Number 11, pp. 1270–1285). <https://doi.org/10.1016/j.joca.2011.08.009>
- Ringdahl, E., & Pandit, S. (2011). *Treatment of Knee Osteoarthritis* (Vol. 83, Number 11). www.aafp.org/afpAmericanFamilyPhysician
- Solis Cartas, U., Johana, S., Calvopiñ, C., Bejarano, C., Pedro, J., Larrarte, M., Ramiro, Á., Moreno, P., Isabel, G., & Duchitanga, S. (2019). *Perception of quality of life in patients with osteoarthritis. Sociodemographic and clinical characteristics. A 5 year study*. www.elsevier.es/rcrsuma
- Yokota, A., Maeshima, E., Sasaki, K., Ooi, T., Sainoh, T., & Hosokawa, H. (n.d.). *Physical functions associated with health-related quality of life in older adults diagnosed with knee osteoarthritis*.
- Zahid-Al-Quadir, A., Zaman, M. M., Ahmed, S., Bhuiyan, M. R., Rahman, M. M., Patwary, I., Das, B. B., Hossain, S. A., Paul, S., Shahin, A., Rahman, M., & Haq, S. A. (2020). Prevalence of musculoskeletal conditions and related disabilities in Bangladeshi adults: a cross-sectional national survey. *BMC Rheumatology*, 4(1). <https://doi.org/10.1186/s41927-020-00169-w>

