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Original article

Association between self-reported exercise adherence and quality of life of patients with knee osteoarthritis attending Rheumatology and Rehabilitation clinics in National Hospital of Sri Lanka

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ABSTRACT

Background & Aim: Osteoarthritis is the world's most common rheumatologic disease. Adherence to the prescribed exercises is beneficial to improve the quality of life (QOL) of patients with knee osteoarthritis, adherence often declines over time. The study was conducted to assess the association between self-reported exercise adherence (SREA) and the QOL of patients with knee osteoarthritis attending the Rheumatology and Rehabilitation clinics at the National Hospital of Sri Lanka (NHSL).

Methods: This descriptive cross-sectional study recruited participants with knee osteoarthritis between the ages of 50-70 years, attending the Rheumatology and Rehabilitation clinics in NHSL. Participants were selected using simple random sampling according to the eligibility criteria of study. Demographic data were gathered using an interviewer-administered questionnaire. Medical Outcome Study Short Form-36 (SF-36) questionnaire was used to assess QOL and Exercise Adherence Rating Scale (EARS) was used to assess SREA. Descriptive statistics, Spearman correlation test and non-parametric chi-square test were used for data analysis in SPSS version 20.

Results: The study recruited 141 participants with knee osteoarthritis (22 male and 119 female), with a mean age of 57.39 (SD=5.56) years. Majority of the sample were unemployed (72.3%). Most of the participants experienced unsatisfactory exercise adherence (66%) and unsatisfactory QOL (62.4%). There was a statistically significant association between SREA and QOL with the chi-square test (p=0.029) and a weak positive correlation existed with spearman correlation test (p=0.031, r=0.182). The mean score of EARS was 31.16 (SD=8.8) and SF-36 questionnaire was 46.97 (SD=16.70).

Conclusions & Recommendations: The study found that most participants demonstrated unsatisfactory SREA, with QOL emerging as a significant concern. These findings suggest a potential association between SREA and QOL among patients with knee osteoarthritis. However, this relationship may be influenced by other factors, and causality cannot be established. Further longitudinal studies are recommended to better understand these relationships.

Keywords: *exercise adherence, quality of life, osteoarthritis, Sri Lanka, physiotherapy*

Introduction

Osteoarthritis (OA) is a degenerative disease of joint cartilage, characterized by articular cartilage degeneration, joint surface erosion, and the formation of osteophytes (1). Also termed primary osteoarthritis or degenerative joint disease, OA risk increases with age, female sex, obesity and occupations involving prolonged standing or kneeling, with incidence rising notably after 45 years (2,3). The knee is is a major cause of disability and may result in progressive joint structural changes, including bone erosion and deformity (4).

The global incidence of knee OA was 203 per 10,000 person-years among individuals aged over 20 years. The global prevalence of knee OA was 16% in individuals aged over 15 years and was 22.9% in individuals aged over 40 years. There are around 654.1 million individuals (40 years and older) with knee OA worldwide in 2020 (5). The healthcare burden of knee OA globally is projected to increase over the next 25 years due to population ageing and increasing rates of obesity (6). The estimated prevalence of clinical knee OA for Sri Lanka was 21.8%. Prevalence of clinical knee OA among adult females over 50 years was high, with a considerable proportion experiencing moderate or severe knee OA (7).

Although incurable, knee OA can be effectively managed through regular, supervised exercise programmes, which reduce pain, improves knee function and quality of life, and limits disability by addressing muscle atrophy and periarticular weakness, particularly through lower-extremity strength training (8). Exercise adherence is defined by the World Health Organization (WHO) as the consistency of patient behaviours with prescribed health programs and encompassing both participation in structured programs and maintenance thereafter is critical to realizing these benefits. Evidence supports that supervised exercise therapy for knee OA improves Quality of Life (QOL) alongside pain and functional outcomes (9).

However, QOL is a multifactorial outcome influenced by several factors, including exercise dosage as well as psychological, social, and disease-related factors. Therefore, while exercise adherence plays a key role, it should be considered within a broader biopsychosocial context when evaluating QOL outcomes (10). Barriers to adherence in Sri Lanka include time constraints, inconvenience, cost, physical discomfort, inadequate instruction and support, and waning interest (11).

Self-report adherence measures such as exercise diaries and rating scales are convenient and low burden for clinicians but are subject to recall bias; shorter recall intervals and brief scales may improve accuracy while minimizing participant burden (12). Individuals who engage in insufficient physical activities are also more prone to have reduced physical health related QOL. As physical activities level increase, it causes fewer physically and mentally unhealthy days indicating good QOL (13). QOL is defined by WHO as an individual's perception of their position in life within cultural and value contexts relative to goals and concerns (14).

The Short Form-36 (SF-36) Health Survey was used to assess quality of life (QOL), while the Exercise Adherence Rating Scale (EARS) was used to measure self-reported exercise adherence (SREA). Validity and reliability of the SF-36 questionnaire & EARS have been established in previous studies (15,16). Individuals who engage in insufficient physical activities are also more prone to have reduced QOL. As physical activities level increase, it causes to have fewer physically and mentally unhealthy days indicating good QOL (13).

Despite the recognized importance of exercise therapy in the management of Knee Osteoarthritis, limited evidence is available regarding exercise

adherence and its relationship with QOL, particularly within the Sri Lankan context. Understanding this relationship may contribute to improved rehabilitation strategies and patient-centred care. Therefore, this study aimed to evaluate exercise adherence and its association with QOL among patients with knee osteoarthritis.

The study aimed to examine the association between self-reported exercise adherence and quality of life in patients with knee osteoarthritis attending the Rheumatology and Rehabilitation Clinics at the National Hospital of Sri Lanka (NHSL). Specifically, it sought to describe the sociodemographic characteristics of these patients, assess their adherence to prescribed exercises, evaluate their QOL and determine the relationship between exercise adherence and QOL within this population.

Methods

A descriptive cross-sectional study was conducted at the Rheumatology and Rehabilitation Clinics of the NHSL among patients aged 50-70 years with clinically diagnosed knee osteoarthritis. Sample size (n = 141) was calculated using the Lwanga and Lemeshow (17) formula with a 95% confidence level, 4% margin of error, and an estimated adherence prevalence of 6.25%. A list of 420 patients diagnosed with knee osteoarthritis who attend the Rheumatology and Rehabilitation clinics in NHSL frequently was obtained. Then those patients were numbered. Then 141 patients were picked according to simple random sampling from the above-created list with the use of the online random number generator. On the days of data collection, patients were informed about the study protocol, and after queries had been answered, the consent forms and information sheets of the study were distributed among the patients. Then the participants who were eligible for the study were selected. 47 participants were excluded according to eligibility criteria. Then additional participants were selected from the remaining eligible participants using the same procedure.

Inclusion criteria were age 50–70 years, knee osteoarthritis of approximately one-year duration, and performing prescribed exercises for at least three weeks which were straight leg raising exercises and static quadriceps exercises, with 10 sets each, three times per day, received the most commonly prescribed frequency and types of exercises. These exercises were mainly lower limb muscle strengthening exercises and they were mainly home-based exercises prescribed by the physiotherapist. Patients who did exercises for both lower limbs and even for one lower limb were included. Exclusion criteria included recent surgery, spinal problems, other impairments, disease duration outside one year, performing more than those two types of exercises or less than those two types of exercises, or refusal to consent.

A socio-demographic questionnaire, the Short Form-36 (SF-36) Health Survey for quality of life, and the Exercise Adherence Rating Scale (EARS) for self-reported exercise adherence were used for data collection. Validity and reliability of the SF-36 questionnaire and EARS was confirmed in previous studies (15,16). SF-36 scale scores were calculated by summing responses of items and transforming scale to a 0-100 scale with a mean score of 50 and 0 which represents worst health to 100 represents best health (18). SF-36 scores ≥50 considered satisfactory QOL and low scores more than 50 were considered as unsatisfactory QOL (19). EARS includes 16 items on a 5-point Likert scale, with higher scores indicating better adherence (16). Since no validated scoring system with established cut-off points for this questionnaire was identified in the literature, the investigator categorized responses of “strongly agree” and “agree” as indicating satisfactory exercise adherence, while responses of “neutral”, “disagree” and “strongly disagree” were considered to indicate unsatisfactory exercise adherence. Questionnaires were administered in English, Sinhala and Tamil.

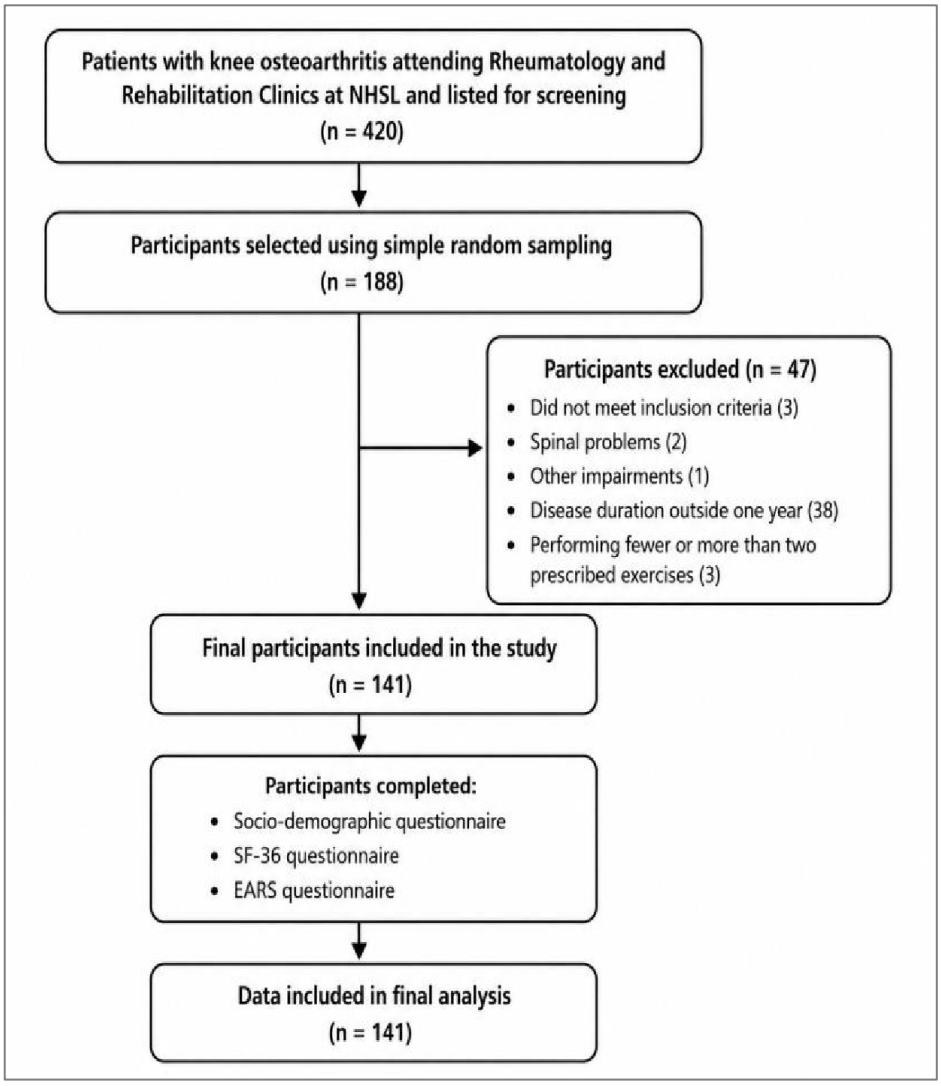

Figure 1 Participant recruitment flow diagram

Ethical approval was obtained from the Ethics Review Committee, Faculty of Medicine, University of Colombo, Sri Lanka (UCP/AL/19/478) and from the NHSL. Data were collected via interviewer-administered questionnaires on pre-identified clinic dates without disrupting routine services.

Statistical analysis was performed using SPSS version 20. Continuous variables were expressed as means and standard deviations, and categorical variables as frequencies and percentages.

Associations between exercise adherence and QOL were examined using chi-square tests and Spearman's correlation. Significance was set at $p < 0.05$, and correlation coefficients were interpreted from weak to very strong. Data normality was assessed using the Shapiro-Wilk test.

Results

The present study examined the association between SREA and QOL among patients with knee osteoarthritis attending the Rheumatology and Rehabilitation clinics at NHSL.

The ages of the participants ranged from 50 to 69 years, with a mean age of 57.39 (SD=5.56) years. Further, the participants were classified into two age groups. According to an international classification

regarding the age groups, ages 40-60 are classified as middle age and the ages older than 60 are described as older age (18). 96 participants (68.1%) were middle-aged (50–60 years), and 45 participants (31.9%) were older-aged (61–70 years). The sample included 22 males (15.6%) and 119 females (84.4%). Among the participants, 39 (27.7%) were employed, and 102 (72.3%) were unemployed.

Regarding SREA, 93 participants (66%) reported unsatisfactory adherence, whereas 48 participants (34%) reported satisfactory adherence. The distribution of exercise adherence by gender revealed that among males, 9 (40.9%) had unsatisfactory adherence and 13 (59.1%) had satisfactory adherence. Among females, 84 (70.6%) had unsatisfactory adherence and 35 (29.4%) had satisfactory adherence.

The distribution of exercise adherence by age group showed that among middle-aged participants, 58 (60.4%) had unsatisfactory adherence and 38 (39.6%) had satisfactory adherence. Among older-aged participants, 35 (77.8%) had unsatisfactory adherence and 10 (22.2%) had satisfactory adherence (total n=141).

Table 1 presents the mean scores and Standard deviations of the subscales of SF-36 questionnaire. Table 2 presents the SF-36 questionnaire scores among the participants and MCS & PCS are the main two subcategories of the questionnaire. The mean score of MCS was 57.64, which was higher than the 50 representing better mental well-being and for the PCS was 40.24 which was less than 50 representing poor physical health leading to unsatisfactory QOL.

Table 1. Mean scores and standard deviations of the subscales of the SF-36 questionnaire

Scale	Minimum	Maximum	Mean	SD
Physical functioning	10.00	95.00	51.60	20.64
Role limitations (physical)	0	100.00	19.33	37.13
Role limitations (emotional)	0	100.00	49.41	49.21
Vitality	0	100.00	54.26	21.82
Mental health	24.00	100.00	62.83	26.63
Social functioning	0	100.00	63.82	26.63
Pain	0	77.50	37.46	17.88
General health	0	95.00	35.35	21.05
Total	15.14	82.92	46.97	16.70

SF-36: Short Form-36, SD: standard deviation

Table 2. Mean scores and standard deviations of PCS and MCS of the SF-36 questionnaire

Scale	Minimum	Maximum	Mean	SD
MCS scale	20.71	97.14	57.64	21.42
PCS scale	7.14	82.86	40.24	19.04

MCS: Mental Component Summary, PCS: Physical Component Summary, SF-36: Short Form-36, SD: standard deviation

Table 3. SF-36 Score distribution among gender

	Male (n=22)		Female (n=119)	
	Mean	**SD**	**Mean**	**SD**
MCS scale	64.84	20.63	56.31	21.38
PCS scale	40.44	18.39	40.20	19.24
SF-36	49.88	16.75	46.43	16.70

MCS: Mental Component Summary, PCS: Physical Component Summary, SF-36: Short Form-36, SD: standard deviation
Data are presented as mean and standard deviation (SD)

Among the participants, 88 (62.4%) had unsatisfactory QOL, while 53 (37.6%) had satisfactory QOL. The distribution of QOL by gender showed that among males (n=22), 12 (54.5%) had unsatisfactory QOL and 10 (45.5%) had satisfactory QOL. Among females (n=119), 76 (63.9%) had unsatisfactory QOL and 43 (36.1%) had satisfactory QOL.

As shown in Table 3, both male and female participants showed lower mean scores than 50, representing unsatisfactory QOL.

The distribution of QOL by age group showed that among middle-aged participants (n=96, 68.1%), 61 (63.5%) had unsatisfactory QOL and 35 (36.5%) had satisfactory QOL. Among older-aged participants (n=45, 31.9%), 27 (60%) had unsatisfactory QOL and 18 (40%) had satisfactory QOL.

According to Table 4, Chi-square analysis indicated a statistically significant but weak association between exercise adherence and QOL (p=0.029, <0.05), demonstrating that higher exercise adherence is associated with better QOL. The findings suggest that lower exercise adherence was associated with poorer quality of life among patients with Knee Osteoarthritis.

As shown in Table 5, Spearman correlation analysis revealed a weak positive correlation between EARS scores and overall SF-36 scores (r=0.182, p=0.031) and between EARS scores and MCS scores (r=0.248, p=0.003). No significant correlation was observed between EARS scores and PCS scores (r=0.036, p=0.669), suggesting that SREA is more strongly associated with mental rather than physical components of QOL.

Table 4. Chi-square results to determine association between SREA and QOL

	Satisfactory QOL		Unsatisfactory QOL		Total
	No.	**Percentage (%)**	**No.**	**Percentage (%)**	
Satisfactory exercise adherence	24	50.00	24	50.00	48
Unsatisfactory exercise adherence	29	31.18	64	68.82	93
Total	53		88		141

SREA: self-reported exercise adherence, QOL: quality of life
Data are presented as frequency (n) and percentages (%)

Table 5. Correlation results to determine association between SREA and QOL

	r value	*p* value
Association between total SF-36 score and EARS score	0.182	0.031*
Association between MCS score and EARS score	0.248	0.003**
Association between PCS score and EARS score	0.036	0.669

SREA: self-reported exercise adherence, QOL: quality of life, SF-36: Short Form-36, EARS: exercise adherence rating scale, MCS: Mental Component Summary, PCS: Physical Component Summary
r = correlation coefficient, p = statistical significance
**Statistically significant at p<0.05, **Statistically significant at p<0.01*

Discussion

This chapter presents an evaluation and interpretation of the study results, highlighting their relevance to existing literature. This descriptive cross-sectional study aimed to examine the association between SREA and QOL among patients with knee osteoarthritis attending the Rheumatology and Rehabilitation Clinics at NHSL. The study setting was the main teaching hospital in Colombo district. Teaching hospitals often serve a wide range of patients. The study included 141 participants aged 50-70 years, predominantly female (84.4%), with a mean age of 57.39 years. Most participants (68.1%) were middle-aged, with mean ages of 57.20 years for females and 58.41 years for males.

The key findings include that 66% of participants reported unsatisfactory adherence to prescribed exercises as measured by EARS, with the highest non-adherence observed among females and older adults. 62.4% of participants had unsatisfactory QOL as measured by SF-36. Middle-aged and female participants showed the highest proportion of unsatisfactory QOL. Among the SF-36 subscales, the MCS had the highest mean score, with Social Functioning scoring highest within this component. A significant association was observed between SREA and QOL, indicating that better exercise adherence was linked to improved QOL.

Self-reported exercise adherence level of the participants

The mean EARS score in the current study was 31.16 (SD=8.8). Categorical analysis showed that 66% (n=93) of participants had unsatisfactory adherence to prescribed exercises, while 34% (n=48) were satisfactory. Female participants demonstrated lower adherence [mean (SD) = 30.48 (8.49)] than males [mean (SD) = 34.82 (9.74)], with 70.6% of females and 40.9% of males showing unsatisfactory adherence. Middle-aged participants (50–60 years) scored 32.10 (SD=8.94), whereas older participants (61–70 years) scored 29.13 (SD=8.23), with 60.4% and 77.8% unsatisfactory adherence, respectively.

Comparisons with international studies indicate lower adherence in older and female populations, consistent with literature suggesting South Asians are less physically active during leisure, possibly due to factors such as limited health literacy, cultural lifestyle patterns, pain during movement, lack of motivation, limited access to exercise facilities, and inadequate long-term healthcare support. These factors may partially explain the lower adherence levels among patients with Knee Osteoarthritis (20). Australian and Israeli studies using EARS reported higher adherence scores (mean 13.3–63.53), likely due to differences in age, sample characteristics, study design, and exercise protocols (21,22). Local studies in Sri Lanka reported 53–53.8% adherence to physiotherapy or self-directed exercise, higher than the 34% observed in this study, potentially due to

variations in methodology, sample size, and participant characteristics (23,24).

The current findings align with prior research showing males are more likely to meet recommended physical activity levels than females (24). Men demonstrated higher levels of physical activity adherence compared to women, which may be influenced by sociocultural and lifestyle factors. Women may experience greater household and caregiving responsibilities, limited leisure time, and reduced opportunities for regular exercise participation. Cultural attitudes, social support, and differences in health behaviours may also contribute to this finding among patients with Knee Osteoarthritis (11). Overall, the study highlights a high prevalence of unsatisfactory exercise adherence among patients with knee OA, particularly in females and older adults, emphasizing the need for targeted interventions.

Quality of life level of the participants

The mean SF-36 score in this study was 46.97 (SD=16.70), with PCS 40.24 (SD=19.04) and MCS 57.64 (SD=21.42). Categorical analysis showed 62.4% (n=88) of participants had unsatisfactory QOL, while 37.6% (n=53) had satisfactory QOL. The highest subscale score was observed in social functioning [mean (SD) = 63.82 (SD=26.63)], and MCS scores were consistently higher than PCS, indicating better mental than physical health. The relatively better scores in the social functioning domain compared to physical functioning may reflect psychosocial adaptation to chronic knee osteoarthritis, including a response shift in perceived QOL. Strong family and community support may also help maintain social engagement despite physical limitations. In addition, reduced occupational and household role demands among older adults may lessen perceived social restriction. In contrast, physical functioning is directly affected by pain, stiffness, and mobility impairment, making it more severely compromised. Together, these factors may explain the observed disparity between physical and social domains of QOL (25).

Gender-wise, males showed higher mean MCS [mean (SD) = 64.84 (20.63)] and PCS [mean (SD) = 40.44 (18.39)] scores than females [MCS: 56.31 (21.38); PCS: 40.20 (19.24)]. Accordingly, 54.5% of males and 63.9% of females had unsatisfactory QOL, highlighting poorer outcomes among female participants. Age-wise, middle-aged participants (50–60 years) had higher mean SF-36 scores (47.58, SD=17.62) than older participants (61–70 years), with 69.3% of middle-aged and 30.7% of older participants showing unsatisfactory QOL. Males had higher MCS and PCS scores than females, possibly due to lower caregiving burden, higher activity levels, and less psychological distress, while females reported poorer QOL. Middle-aged participants showed better SF-36 scores than older adults, likely reflecting disease progression, comorbidities, and reduced functional independence with age. Overall, gender and age differences in QOL appear to be driven by combined biological, functional, and psychosocial factors (26).

These findings are consistent with prior studies reporting lower physical health scores in knee OA patients, while mental health scores were relatively preserved (27,28). Factors such as pain, functional limitations, physical inactivity, and female predominance may explain the reduced QOL (29,30).

Association between SREA and QOL

The present study investigated the association between SREA and QOL among patients with knee osteoarthritis. Analysis of SF-36 and EARS scores revealed a significant association, indicating that satisfactory exercise adherence was linked to better QOL. Nonparametric chi-square (p=0.029) and Spearman correlation tests (p=0.031) confirmed this relationship, highlighting the importance of consistent exercise for improving QOL in knee OA patients.

No recent studies conducted in Sri Lanka have

assessed this association using EARS and SF-36. However, similar findings have been reported in other populations. A study of 33,071 U.S. adults aged ≥45 with physician-diagnosed arthritis showed that adherence to physical activity guidelines was associated with better health-related QOL, measured by physically and mentally unhealthy days (31). Likewise, a cross-sectional survey using the Behavioural Risk Factor Surveillance System questionnaire reported that individuals meeting physical activity recommendations experienced fewer unhealthy days and lower risk of impaired physical or mental QOL (13). Additional studies support the link between exercise and QOL. In a cross-sectional study of 1,586 community-dwelling older adults in Korea, participants who engaged in regular exercise demonstrated significantly higher QOL scores than non-exercisers (32). Similarly, a randomized controlled trial of 93 cancer survivors showed that home-based exercise interventions were significantly associated with improvements in QOL as measured by Functional Assessment of Cancer Therapy-Colorectal Scale and Satisfaction with Life Scale ($p=0.019$) (33).

The association between exercise adherence and improved QOL in knee osteoarthritis may be explained by physiological and biomechanical mechanisms, including enhanced muscle strength, improved joint stability, reduced mechanical loading, and better joint mobility, all of which contribute to pain reduction and improved functional capacity. These changes may further enhance independence in daily activities and overall wellbeing. However, this relationship should be interpreted with caution, as several potential confounders such as disease severity, pain intensity, comorbidities, and psychosocial factors may influence both exercise adherence and QOL (30). Therefore, causality cannot be established, and adherence may represent one of multiple contributing factors to improved outcomes.

The impact of exercise adherence on QOL in knee osteoarthritis may also depend on the type and quality of exercise performed. Strengthening exercises, particularly targeting the quadriceps, can improve joint stability and reduce pain. However, adherence alone may not ensure optimal outcomes if exercises are not appropriately prescribed or correctly performed. Supervision by trained healthcare professionals is therefore important, as it ensures correct technique, appropriate progression, and improved motivation, thereby enhancing the effectiveness of rehabilitation (34). This suggests that both the quality and context of exercise delivery are critical in translating adherence into meaningful improvements in QOL.

These findings suggest that adherence to prescribed exercises is a key determinant of better QOL, consistent with the results of the current study. The study has several limitations. It relied on self-reported data, which are prone to recall bias and possible under- or over-reporting. The Exercise Adherence Rating Scale required participants to retrospectively recall their exercise routines over the past three weeks, further increasing the risk of inaccurate reporting. Additionally, the study was conducted only at the National Hospital in Colombo district, without including base or district hospitals, which may limit the generalizability of the findings. Finally, potential confounding factors such as comorbidities and socioeconomic status were not explored, though they could influence QOL and its relationship with exercise adherence.

Limited literature was available regarding exercise adherence across gender and age groups, as well as SF-36 scores among different age groups of patients with knee osteoarthritis. Future studies should consider multicentre recruitment with larger sample sizes to improve representativeness and generalizability, while longitudinal designs may help establish causal relationships between exercise adherence and QOL. Further research is also needed to explore the associations between gender, age, exercise adherence, and QOL, as well as to identify additional factors influencing QOL. Additionally, incorporating objective methods to monitor exercise adherence may reduce the limitations associated with

self-reported data.

Conclusions

The study aimed to investigate the association between SREA and QOL in patients with knee osteoarthritis attending the Rheumatology and Rehabilitation clinics in NHSL. Given the limited existing evidence, the study primarily focused on exploring this relationship. The key findings indicate a significant association between SREA and QOL. In this female-predominant sample, most participants demonstrated unsatisfactory exercise adherence and poor QOL. Female and older patients showed higher rates of unsatisfactory exercise adherence, while female and middle-aged patients had higher proportions of unsatisfactory QOL.

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Author Declarations

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References

1. Weiss E. Osteoarthritis and body mass. J Archaeol Sci. 2006;33(5):690-5.
2. Van Saase JLCM, Van Romunde LKJ, Cats A, Van Den Broucke JP, Valkenburg HA. Epidemiology of osteoarthritis: Zoetermeer survey. Comparison of radiological osteoarthritis in a Dutch population with that in 10 other populations. Ann Rheum Dis. 1989 Apr;48(4):271-80.
3. Fransen M, Bridgett L, March L, Hoy D, Penserga E, Brooks P. The epidemiology of osteoarthritis in Asia. Int J Rheum Dis. 2011;14(2):113-21.
4. Di Nicola V. Degenerative osteoarthritis: A reversible chronic disease. Regen Ther. 2020;15:149-60.
5. Cui A, Li H, Wang D, Zhong J, Chen Y, Lu H. Global, regional prevalence, incidence and risk factors of knee osteoarthritis in population-based studies. EClinicalMedicine. 2020;29-30:100587
6. Wilson R, Abbott JH. The projected burden of knee osteoarthritis in New Zealand: healthcare expenditure and total joint replacement provision. N Z Med J. 2019;132(1503):53-65.
7. Hettihewa AP, Gunawardena NS, Atukorala I, Hassan F, Lekamge IN, Hunter DJ. Prevalence of knee osteoarthritis in a suburban Sri Lankan adult female population: A population-based study. Int J Rheum Dis. 2018;21(2):394-401.
8. Hafez AR, Mohammed A. Knee osteoarthritis: A review of literature. Phys Med Rehabil Int. 2018;5(1):1121.
9. Wang J, Yang L, Li Q, Wu Z, Sun Y, Zou Q, et al. Construction of an adherence rating scale for exercise therapy for patients with knee osteoarthritis. BMC Musculoskelet Disord. 2018;19(1):1-10.
10. Campos GC, Rezende MU, Pailo AF, Frucchi R, Camargo OP. Assessment of quality of life in patients with knee osteoarthritis. Acta Ortop Bras. 2015;23(6):307-10.

11. Becker MH. Patient adherence to prescribed therapies. Med Care. 1985;23(5):539-55.

12. Nicolson PJA, Hinman RS, Wrigley TV, Stratford PW, Bennell KL. Self-reported home exercise adherence: A validity and reliability study using concealed accelerometers. J Orthop Sports Phys Ther. 2018;48(12):943-50.

13. Abell JE, Hootman JM, Zack MM, Moriarty D, Helmick CG. Physical activity and health-related quality of life among people with arthritis. J Epidemiol Community Health. 2005;59(5):380-5.

14. WHOQOL Group. Study protocol for the World Health Organization project to develop a quality of life assessment instrument (WHOQOL). Qual Life Res. 1993;2(2):153-9.

15. Motamed N, Ayatollahi AR, Zare N, Sadeghi-Hassanabadi A. Validity and reliability of the Persian translation of the SF-36 version 2 questionnaire. East Mediterr Health J. 2005;11(3):349-57.

16. Newman-Beinart NA, Norton S, Dowling D, Gavriloff D, Vari C, Weinman JA, et al. The development and initial psychometric evaluation of a measure assessing adherence to prescribed exercise: the Exercise Adherence Rating Scale (EARS). Physiotherapy. 2017;103(2):180-5.

17. Lemeshow S, Hosmer DW, Klar J, Lwanga SK. Adequacy of sample size in health studies. Chichester: John Wiley & Sons; 1990.

18. Busija L, Pausenberger E, Haines TP, Haymes S, Buchbinder R, Osborne RH. Adult measures of general health and health-related quality of life: Medical Outcomes Study Short Form 36-Item (SF-36) and Short Form 12-Item (SF-12) Health Surveys, Nottingham Health Profile (NHP), Sickness Impact Profile (SIP), Medical Outcomes Study Short Form 6D (SF-6D), Health Utilities Index Mark 3 (HUI3), Quality of Well-Being Scale (QWB), and Assessment of Quality of Life (AQoL). Arthritis Care Res (Hoboken). 2011;63(Suppl 11):S383-412.

19. Kalpakjian CZ, Forchheimer M, Tate DG. Quality of life after spinal cord injury. In: Kirshblum SC, Campagnolo DI, DeLisa JA, editors. Spinal cord injuries: management and rehabilitation. 1st ed. Philadelphia: Elsevier; 2008. p. 517-30.

20. Ranasinghe CD, Ranasinghe P, Jayawardena R, Misra A. Physical activity patterns among South-Asian adults: A systematic review. Int J Behav Nutr Phys Act. 2013;10:116.

21. Bennell K, Nelligan RK, Schwartz S, Kasza J, Kimp A, Crofts SJ, et al. Behavior change text messages for home exercise adherence in knee osteoarthritis: Randomized trial. J Med Internet Res. 2020;22(9):e21749.

22. Gabay M, Levi O, Petracovschi S, Negrea C, Matichescu M, Oravitan M. Exploring exercise adherence and quality of life among veteran, novice, and dropout trainees. Front Sports Act Living. 2023;5:1293535.

23. Rheumatology supplement abstract reference. Rheumatology (Oxford). 2023;61(Suppl 1):keac133.178.

24. Pisters MF, Veenhof C, Schellevis FG, Twisk JWR, Dekker J. Exercise adherence improving long-term patient outcome in patients with osteoarthritis of the hip and/or knee. Arthritis Rheum. 2010;62(8):1087-94.

25. Sprangers MAG, Schwartz CE. Integrating response shift into health-related quality of life research: a theoretical model. Soc Sci Med. 1999;48(11):1507-1515.

26. Salaffi F, Carotti M, Stancati A, Grassi W. Health-related quality of life in older adults with symptomatic hip and knee osteoarthritis: a comparison with matched healthy controls. Aging Clin Exp Res. 2005;17(4):255-263.

27. Perera M, Gunawardena N. Quality of life and

social support of patients with knee osteoarthritis in two selected hospitals in Sri Lanka. Ceylon Med J. 2015;60(3):87-96.

28. Fang WH, Huang GS, Chang HF, Chen CY, Kang CY, Wang CC, et al. Gender differences between WOMAC index scores, health-related quality of life and physical performance in an elderly Taiwanese population with knee osteoarthritis. BMJ Open. 2015;5(9):e008542.
29. Kawano MM, Araújo IL, Castro MC, Matos MA. Assessment of quality of life in patients with knee osteoarthritis. Acta Ortop Bras. 2015;23(6):307-10.
30. Rhodes RE, Martin AD, Taunton JE, Rhodes EC, Donnelly M, Elliot J. Factors associated with exercise adherence: An individual perspective. Sports Med. 1999;28(6):397-411.
31. Austin S, Qu H, Shewchuk RM. Association between adherence to physical activity guidelines and health-related quality of life among individuals with physician-diagnosed arthritis. Qual Life Res. 2012;21(8):1347-57.
32. Oh S, Kim D, Lee S, Jung SH, Lee SY. Association between exercise type and quality of life in community-dwelling older people: A cross-sectional study. PLoS One. 2017;12(11):e0188335.
33. Courneya KS, Friedenreich CM, Quinney HA, Fields AL, Jones LW, Fairey AS. A randomized trial of exercise and quality of life in colorectal cancer survivors. Eur J Cancer Care (Engl). 2003;12(4):347-57.
34. Bennell KL, Hinman RS. A review of the clinical evidence for exercise in osteoarthritis of the hip and knee. J Sci Med Sport. 2011;14(1):4-9.