Original Article

The Effect of a Peer-Led Non-Pharmacological Pain-Management Program on Chronic Pain Intensity and Pain-Related Self-Efficacy in Older Adults with Osteoarthritis: A Quasi-Experimental Study

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Abstract

Introduction: Osteoarthritis is a leading cause of disability among the elderly, characterized by chronic pain and functional limitations. This study aimed to evaluate the impact of a peer-led, non-pharmacological pain management program on pain-related self-efficacy and chronic pain severity in older adults with osteoarthritis.

Methods: A quasi-experimental study was conducted in 2020 in two healthcare centers in Mashhad, Iran. Sixty elderly individuals with chronic osteoarthritis were assigned to intervention (n=30) and control (n=30) groups. The intervention group received four 90-minute peer-led training sessions over two weeks, facilitated by trained elderly peers under the researcher's supervision. Pain intensity and pain-related self-efficacy were measured using the McGill Pain Questionnaire and the Pain Self-Efficacy Questionnaire at baseline and at 8-week follow-up after completion of the intervention. Data analysis was performed using paired and independent t-test in SPSS version 21. A P value of less than 0.05 was considered statistically significant.

Results: Two months after the intervention, between-group comparison showed that there is a statistically significant difference in terms of pain-related self-efficacy ($P<0.001$). Two months after the intervention, between-group comparison in terms of total pain score ($P<0.001$) and the scores of its dimensions including sensory-discriminative ($P=0.009$) and affective ($P<0.001$) showed a statistically significant difference.

Conclusion: The peer-led pain management program effectively reduces pain and enhances self-efficacy in elderly individuals with osteoarthritis in the intervention group. Implementing such programs, which promote mental control and social engagement, is recommended for improved outcomes.

Keywords: Elderly; Osteoarthritis; Pain management; Peer group; Self efficacy

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Introduction

Osteoarthritis has been recognized as the most common chronic joint disorder and the leading cause of old-age disability.[1] In 2019, it was estimated that 528 million people worldwide were living with osteoarthritis, an increase of 113% since 1990. About 73% of people living with osteoarthritis are over age 55, and 60% are women.[2] The prevalence of osteoarthritis in Iran is reported to be 15.3% based on a large population-based study.[3] Osteoarthritis, often called 'wear and tear' arthritis, is a progressive joint disease common in the hands, hips, and knees and involves cartilage breakdown and bone changes, leading to pain and stiffness. All these symptoms can lead to quality of life impairment, with deterioration of the ability to perform daily activities.[4, 5] Patients with osteoarthritis often enter a vicious cycle of severe pain and immobility, leading to muscle weakness and progressive joint deterioration. In addition, the condition is accompanied by psychological and social consequences such as reduced self-confidence, decreased quality of life, and lower self-efficacy.[6] Self-efficacy refers to one's belief in his/her ability to execute behaviors necessary to produce specific performance attainments.[7] This concept has been further validated in recent pain management research.[8, 9] In fact, pain self-efficacy is a flexible mechanism that leads to increased emotional functioning, greater acceptance of pain, reduced pain, and less disability.[9]

A diverse range of pharmaceutical and non-pharmacological pain management approaches are now being utilized for osteoarthritis treatment.[10,11] The American College of Arthritis (ACR) deems non-pharmacological therapies as the "cornerstone of osteoarthritis management", and clinical guidelines also recommend vigilant non-pharmacological interventions as first line for managing patients with knee osteoarthritis.[12] Therefore, cost-effective training programs for the non-pharmacological management of osteoarthritis of the knee should be further investigated.[13]

The results of a meta-analysis study show that self-management in patients with osteoarthritis can help improve pain, knee function, stiffness, arthritis self-efficacy, mental health, and quality of life.[14] Another study also showed that the implementation of a pain self-management program is effective in reducing the incapacity and improving the range of motion of osteoarthritis patients.[15]

Self-management is a key care approach, especially for those with chronic diseases, and the development and promotion of self-management skills are emphasized.[15] Self-management skills are typically acquired through patient education programs (or self-management training). Self-management training programs foster strong beliefs in patients about their abilities, particularly their ability to manage symptoms and function, also known as self-efficacy. Self-efficacy plays a key role in the success of pain coping skills and improved motor function. It is also an important determinant of healthy behavior and encourages the adoption of healthy lifestyle activities when living with chronic conditions. Although the mechanism by which self-management is effective in knee osteoarthritis is not yet well understood, there seems to be a consensus among researchers that self-management increases the patient's adherence to various interventions (pharmacological and other interventions). Knee osteoarthritis is closely related to the patient's daily behaviors, habits, and lifestyle, and risk factors for knee osteoarthritis and other complications can be reduced by modifying lifestyle and specific habits.[14, 16, 17]

Peer support has been further documented in several studies as an effective self-management strategy to control chronic conditions, and peer education models have been extensively recruited, thanks to their cost-effectiveness in helping people cope with chronic diseases with promising outcomes.[18-20] Peer support involves "lay individuals with experiential knowledge who extend natural (embedded) social networks and complement professional health services." Peers leading

healthcare programs can accordingly help to establish a high level of communication among people who are the same age and have shared experience in life,[21, 22] and in particular allow them to feel less threatened while benefiting from the support of another person under a similar condition, compared to someone of the same age as a professional.[22] Evidence shows that peer-led non-pharmacologic pain management training programs bring positive results, such as improving perceived quality of life and functional capacity, along with reducing the number of complaints about pain, accompanied by beliefs about pain relief.[19, 20]

Although the positive results of peer education programs for non-pharmacologic pain management have been confirmed so far, no information was found regarding this type of intervention in the elderly population with osteoarthritis and chronic pain implemented by peers. Implementation of the intervention by trained peers with an emphasis on patient self-management strategies, accompanied by the presence and supervision of the research team, is one of the important strategies included in this educational program. Thus, this study aimed to evaluate the effect of a peer-led non-pharmacologic pain management training program on chronic pain intensity and pain-related self-efficacy in older adults with osteoarthritis.

Materials and Methods

This quasi-experimental study was conducted in 2020 at two healthcare centers (Advieh-Chi and Danesh-Amooz) affiliated with Mashhad University of Medical Sciences, Iran. The centers were selected based on providing systematic geriatric care programs.

The inclusion criteria for peers were individuals aged 60 or over, experiencing chronic knee pain as self-reports, and having a positive experience with non-pharmacological pain management, which was assessed through semi-structured interviews. These interviews explored how peers managed their pain, the strategies they used, and the outcomes achieved. This qualitative assessment ensured that the individual had a genuinely positive and effective experience with non-pharmacological pain management. Additionally, peers were required to express interest and motivation to assume the peer's role during an interview with the researcher, demonstrate no moderate-to-severe cognitive impairment according to the Brief Cognitive Assessment Tool–Short Form (BCAT-SF) results (i.e., a score of 16 or above, which includes individuals with normal cognition or possible mild cognitive impairment), have good social relationships and communication abilities, as verified through healthcare center records and interviews, and have good social relationships and communication abilities, verified through healthcare center records and conversations with them. After the completion of the 2-week training, their readiness to act as peer educators was evaluated based on their ability to deliver educational content, which was assessed through verbal feedback, question-and-answer sessions, and continuous monitoring by the research team.

For the older adults, the inclusion criteria were being 60 years old or over, being diagnosed with osteoarthritis accompanied by chronic knee pain (as diagnosed by a physician and documented in their healthcare records), being willingn to participate in the study, having no moderate-to-severe cognitive impairment, as determined by a BCAT-SF score ≥16 (including individuals with normal cognition or possible mild cognitive impairment), having no major chronic conditions such as cancer or previously diagnosed dementia/Alzheimer's disease, intaking no medication or drug addiction based on medical records review and confirmation by the treating physician at the healthcare centers, and having no experience of severe stress (e.g., death of loved ones) within the last six months.

The exclusion criteria for both peers and older adults were the onset of specific medical conditions (e.g., fractures, surgeries, etc.), severe stress due to the death of loved ones

during the study, or failure to attend at least one training session.

Based on the data obtained from Mirzaei et al.'s study,[16] considering 95% confidence interval and 80% test power as well as 10% sample loss, the sample size, using the formula below and the values of S_1=1.8, S_2=1.6, X_1=7.7, and X*2*=6.4 (the largest sample size was related to pain intensity) was estimated 60 subjects (i.e., 30 individuals in each group).

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 \times [(S_1{}^2 + S_2{}^2)]}{(X_1 - X_2)^2}$$

Participants were recruited through convenience sampling from two centers. Those attending Danesh-Amooz were assigned to the intervention group, while participants from Advieh-Chi formed the control group. This center-based allocation minimized cross-group contamination. Eligible individuals were selected using the inclusion criteria and provided written informed consent before enrollment. Due to the nature of the intervention, full blinding of the participants and facilitators was not feasible. However, outcome assessors and the statistician were blinded to group assignments.

Two qualified peer leaders (one male and one female) were selected based on predefined criteria, including attending the preparatory peer training course, achieving a minimum score of 80 out of 100 on a written knowledge test designed by the research team based on the educational content, and demonstrating effective communication skills during semi-structured interviews. They participated in four 90-minute face-to-face training sessions (two sessions per week) over two weeks, following the peer training curriculum outlined by the research team. Competency was confirmed through simulated peer-teaching sessions and direct observation by the research team.

In the intervention group, in addition to receiving usual care, the participants received a peer-led educational program. Two trained peer leaders (one male and one female) facilitated the program for same-sex subgroups to respect gender sensitivity. The 30 participants in the intervention group were divided into four subgroups of 7–8 individuals. Each peer leader managed two subgroups (totaling 14 and 16 participants per peer). The program was delivered using standardized booklets over four 90-minute face-to-face sessions (twice weekly for two weeks), focusing on non-pharmacological pain management strategies (Table 1). The control group received only usual care during the study period. At the end of the study, the educational booklet used in the intervention was provided to the control group as well.

The data collection tools included a demographic characteristics form, the BCAT-SF, the Pain Self-Efficacy Questionnaire (PSEQ), and the McGill Pain Questionnaire (MPQ). The demographic form collected information such as age, sex, educational level, marital status, and living status.

The BCAT-SF was administered at baseline to all participants and peer educators to ensure the absence of moderate-to-severe cognitive impairment. The PSEQ and MPQ were administered to both the intervention and control groups at two time points: before the intervention (baseline) and two months after completion of the intervention.

PSEQ is a 10-item questionnaire developed to evaluate a patient's belief in his/her ability to perform various activities despite pain. It was based on Bandura's Social Learning Theory. The PSEQ items are scored on a scale from 0 (no confidence) to 6 (complete confidence), with a total possible score ranging from 0 to 60. Higher scores reflect stronger self-efficacy in managing pain, whereas lower scores indicate greater difficulty in maintaining daily activities due to pain.[23] Several validation studies have confirmed the PSEQ's construct validity and convergent validity, demonstrating strong correlations (r=0.65-0.82) with established measures of pain intensity and functional disability.[23, 24] The original version demonstrated high internal consistency, with a Cronbach's alpha of 0.92, indicating excellent reliability.[24]

Table 1: Content of educational sessions presented in the intervention group

Session	Topic	Researcher Role	Peer Role
First	• Opening remark • Introduction of the researcher, peer educators, and group members • Overview of study goals and session process • Q & A[a]	• Opening, welcoming, and introducing the research team and peers • Explaining study objectives and training process • Answering questions	• Delivering opening remarks and introducing themselves to participants • Facilitating group familiarity
Second	• Education about the physiological changes of aging with emphasis on the muscular and skeletal system and its impact on the life of the elderly • Osteoarthritis disease, its symptoms and drug treatments, • Q & A	Facilitator & Supervise	Instructor
Third	• Introducing self-management and non-pharmacological methods to control chronic pain in osteoarthritis: • Resting the joints, using warm water compresses, hot springs, elevating the extremities, reducing heavy activities, • Modifying lifestyles, including: sitting, using a chair and crutches, using a bed instead of a mattress • Correcting getting up from the floor, using a toilet seat, using handrails • Teaching balance in the correct body position, how to use safety equipment, • Listening to massage music, visual stimulation by seeing albums photos, watching TV, stimulating the sense of smell and taste. • Q & A (All cases were objectively implemented in the meeting)	Supervise	Instructor
Fourth	• Teaching the methods of doing exercises and sports as one of the non-pharmacological methods including: • Walking, exercises to strengthen the knee muscles and other joints in terms of how to sit on a chair and get up from bed. • Q & A • Closing Remark.	Supervise	Instructor

[a]Q&A: Question and answer

The PSEQ was translated into Persian following a standard forward-backward translation process, reviewed by a team of experts in pain management and psychology. Content validity was assessed by a panel of experts, resulting in a content validity index (CVI) of 0.85. Internal consistency was tested with a pilot study on 10 participants, yielding a Cronbach's alpha of 0.74, indicating acceptable reliability for use in the Persian-speaking population.

The version of the MPQ used in this study consists of 20 descriptor sets assessing four dimensions of pain perception: sensory-discriminative (Sets 1–10), affective (Sets 11–15), cognitive- evaluative (Set 16), and various other types of pain (Sets 17–20). In each set, the participants select only one descriptor

that best represents their pain. If none of the descriptors apply, a score of zero is assigned to that set. Each descriptor is assigned a rank value according to the scoring key. Based on the scoring system, the possible score ranges are as follows: sensory-discriminative dimension: 0–42, affective dimension: 0–14, cognitive-evaluative dimension: 0–5, and various other types of pain dimension: 0–16. The total MPQ score ranges from 0 to 77, with higher scores indicating greater perceived pain intensity.[25] Its psychometric properties have been verified in Iranian populations, which reported satisfactory internal consistency (Cronbach's alpha=0.88) and confirmed construct validity.[26] In the current study, a pilot test conducted on 10 participants yielded a Cronbach's alpha of 0.85, indicating good internal reliability for the Persian MPQ.

The BCAT-SF is a 21-point screening instrument designed to assess global cognitive functioning in older adults. The total possible score ranges from 0 to 21, with higher scores indicating better cognitive performance. According to the official BCAT-SF scoring guidelines, scores of 19–21 indicate normal cognition, 16–18 suggest possible mild cognitive impairment, 11–15 indicate probable mild dementia, and 0–10 reflect moderate-to-severe cognitive impairment. In this study, the participants with a score ≥16 were included, thereby excluding individuals with moderate-to-severe cognitive impairment. The BCAT-SF has demonstrated strong psychometric properties, including a Cronbach's alpha of 0.85 and construct validity through confirmatory factor analysis.[27] The BCAT-SF was translated and culturally adapted to Persian for this study using a standard forward-backward translation procedure. The translation was reviewed by a panel of five experts in geriatric cognitive assessment to ensure cultural appropriateness and conceptual equivalence. Since no previous psychometric validation study of the Persian version of BCAT-SF was found in the literature, we conducted a preliminary pilot test with 10 older adults. The Content Validity Index was calculated as 0.83, indicating acceptable content validity. Construct validity was explored using factor analysis, and internal consistency reliability was measured using Cronbach's alpha, which was 0.81, confirming good internal consistency. It should be noted that although a Persian version of the original full BCAT has been previously introduced,[28] that version differs from the short-form version used in this study, and no formal psychometric validation of the Persian BCAT-SF had been conducted before this research.

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to present demographic characteristics. The Kolmogorov–Smirnov test confirmed normality of all variables. Between-group comparisons for demographic variables were performed using Chi-square or Fisher's exact tests. Within the intervention and control groups, changes in pain-related self-efficacy and total pain scores (including subdimensions) from baseline to two months were analyzed using paired t-tests. Between-group comparisons at each time point were performed using independent-samples t-tests. Data were analyzed with SPSS version 21, and a P value <0.05 was considered statistically significant.

This study was approved by the Ethics Committee of Mashhad University of Medical Sciences (IR.MUMS.NURSE.REC.1398.078) and adhered to the Declaration of Helsinki. Informed consent was obtained from all participants, who were provided with a clear explanation of the study objective and importance. The participants who met the inclusion criteria signed a written informed consent form, and they were informed that they could withdraw from the study at any time with no impact on their care.

Results

A total of 36 participants out of 96 older adults initially assessed were excluded (16 did not meet the inclusion criteria, and 20 declined participation).

The remaining 60 participants were allocated to the intervention (n=30; mean age=68.2±5.1 years) and control (n=30; mean age=67.8±4.9 years) groups. Demographic characteristics of both groups are shown in Table 2. No attrition occurred during the study.

In the intervention group, pain-related self-efficacy significantly improved from 36.99±6.91 at baseline to 54.45±4.74 two months after the intervention (P<0.001), whereas no significant change was observed in the control group (P=0.582). Two months after the intervention, between-group comparison showed a statistically significant difference in terms of pain-related self-efficacy (P<0.001) (Table 3).

Table 2: Frequency distribution of demographic characteristics of older adults with osteoarthritis in the study groups

Variables	Groups		P value
	Intervention N(%)	Control N(%)	
Sex			
Male	14 (46.70)	13 (43.30)	0.795*
Female	16 (53.30)	17 (56.70)	
Marital status			
Married	21 (70.00)	18 (60.00)	0.681**
Deceased spouse	8 (26.70)	10 (33.30)	
Separated	1 (3.30)	2 (6.70)	
Occupation			
Unemployed	3 (10.00)	1 (3.33)	0.609**
Self-employed	7 (23.30)	7 (23.33)	
Retired	12 (40.00)	13 (43.33)	
Employee	0 (0.00)	2 (6.66)	
Not in Labor Force	8 (26.70)	7 (23.33)	
Level of education			
Illiterate	1 (3.33)	2 (6.70)	0.699**
Primary school	7 (23.33)	11 (36.70)	
Middle school	15 (50.00)	10 (33.30)	
High school	3 (10.00)	3 (10.00)	
Higher education	4 (13.33)	4 (13.30)	
Smoking			
Yes	5 (16.70)	5 (16.70)	1.000*
No	25 (83.30)	25 (83.30)	
Housing			
Rental	7 (23.30)	4 (13.30)	0.402**
Private	20 (66.70)	20 (66.70)	
Other	3 (10.00)	6 (20.00)	

*Chi-square test; **Fishers exact test

Table 3: Mean scores of the pain-related self-efficacy among older adults with osteoarthritis before and after the non-pharmacological pain management training program in the study groups

Pain-related self-efficacy score	Groups		P value*
	Intervention n=30	Control n=30	
	Mean±SD	Mean±SD	
Before intervention	36.99±6.91	34.62±8.91	0.256
Two months after intervention	54.45±4.74	35.85±8.75	<0.001
P value**	<0.001	0.582	

*Independent-samples t-test; ** Paired t-test

Table 4: Comparison of the total pain score and its dimensions in older adults with osteoarthritis before and after the non-pharmacological pain management training program in the study groups

Variables			Intervention n=30	Control n=30	P value*
			Mean±SD	Mean±SD	
Four dimensions	Sensory-discriminative	Before intervention	26.37±4.81	27.18±3.52	0.459
		Two months after intervention	26.51±3.80	29.39±4.44	0.009
		P value**	0.899	0.698	
	Affective	Before intervention	8.74±2.40	9.47±1.97	0.201
		Two months after intervention	9.28±1.55	10.71±1.52	<0.001
		P value**	0.396	0.774	
	Cognitive-evaluative	Before intervention0	3.00±1.38	2.87±1.07	0.698
		Two months after intervention	2.86±1.33	3.17±1.27	0.361
		P value**	0.659	0.448	
	Various other types of pain	Before intervention	11.62±2.46	12.08±2.40	0.462
		Two months after intervention	10.10±2.20	11.16±2.61	0.097
		P value**	0.014	0.956	
Total score		Before intervention	50.71±6.59	48.26±7.08	0.170
		Two months after intervention	48.55±7.75	56.33±6.63	<0.001
		P value**	0.259	0.371	

*Independent-samples t-test; **Paired t-test

Regarding pain scores, in the intervention group, total pain decreased slightly from 50.71±6.59 at baseline to 48.55±7.75 at two months; however, this change was not statistically significant (P=0.259). Among its dimensions, only miscellaneous pain significantly decreased (P=0.014), while sensory-discriminative, affective, and cognitive-evaluative dimensions did not change significantly in the intervention group (P>0.05). In the control group, no statistically significant changes were observed in total or dimensional pain scores over time (P>0.05). Two months after the intervention, between-group comparisons in terms of total pain score (P<0.001) and the scores of its dimensions, including sensory-discriminative (P=0.009) and affective (P<0.001), showed statistically significant differences (Table 4).

Discussion

This study aimed to evaluate the effect of a peer-led non-pharmacologic pain management training program on chronic pain intensity and pain-related self-efficacy in older adults with osteoarthritis. The study findings showed that two months after the completion of the program, pain-related self-efficacy improved and pain intensity decreased in the intervention group in comparison with the control group. This suggests the therapeutic effects accumulated progressively during the two months following program completion. Previous studies also reported significant improvements in pain from participation in pain management programs. Our results are consistent with those studies.[18, 29-31] Moreover, the results of a study show that self-management in patients with osteoarthritis can help improve pain, knee function, stiffness, mental health, and quality of life.[14] Another study also showed that the implementation of a pain self-management program is effective in reducing the incapacity and improving the range of motion of osteoarthritis patients.[15] Thus, the participants are allowed to perform their daily activities even with their painful conditions, which enhances their quality of life. The results of the mentioned studies accordingly confirmed the positive effect of self-management programs in moderating pain intensity, and as a result, the functional status of the elderly suffering from chronic osteoarthritis. Pain is thus a big concern for patients with this condition, which is a bitter and harmful experience the lack of management of which can lead to negative effects on their performance.

In the present study, after the intervention, the average pain-related self-efficacy score of

the elderly improved significantly after two months in the intervention group. Our results are consistent with previous studies.[16, 18, 20, 32, 33] Pain self-efficacy is defined as a critical mechanism of change in pain management interventions. In fact, pain self-efficacy is a flexible mechanism that leads to increased emotional functioning, greater acceptance of pain, and reduced pain and less disability.[9] Clinically, pain self-efficacy makes taking part in physical activity possibleand causes calm treatment response in those with chronic pain.[34]

In this study, the encouragement of peers would also be a motive for the significant advance in pain-related self-efficacy that was noticed in the intervention group. The peer support model has been proven to be a successful approach to managing chronic conditions, so it can boost the confidence of older adults in dealing with their pain.[20] In several studies, peer support has been further recognized as an effective self-management strategy to control chronic conditions, and peer education models have also been extensively utilized,[18, 35] which is consistent with the results of the present study.

It should be added that in a systematic review study, the lack of the effect of the pain self-management program on the pain self-efficacy of patients with chronic pain of the musculoskeletal system has been reported.[34] Other studies reported that self-management interventions might help improve the pain, knee function, stiffness, self-efficacy, mental health, and quality of life in patients with knee osteoarthritis.[14] The difference in results could be because those researchers based their analysis on general self-efficacy beliefs (generic self-management) instead of focusing on pain-related self-efficacy and performance self-efficacy. Generic self-management interventions provide a generic set of skills and competencies (e.g. problem solving, decision making, etc.) in order to facilitate living a meaningful life despite chronic pain.[36]

In addition, self-management program pain was divided into four fields (1) Heath promotion, housing education on pain, the major techinque of diagnosis and treatments and behavior, and life-style change; (2) Mind control, which enclose knowledge about oneself, one′s thoughts and belief; (3) Social features, motivating older patients to share their experiences of chronic pain to teach and learn about it and to help others (via lay-peer strategies, for example), and (4) How to do, which includes strategies to execute the appropriate physical exercise, self-efficacy, that is the ability to organize and act to reach clinical objectives, and self-monitoring, to ensure continuity of the results.[35] Our study used the areas of self-management of chronic pain for the elderly with osteoarthritis, which includes paying attention to the principles of physical pain control (factors that aggravate and relieve pain, for example), mental factors (knowledge and opinions of participants) and social and motivational factors (the presence of peers) and that all the mentioned areas were led in the form of a organized program based on the latest available evidence and the supervision of the research team.

This study has some limitations. First, the short follow-up period (8 weeks) may not capture the long-term effects of the intervention. Second, due to the quasi-experimental design, the participants were not randomly assigned to groups, which could introduce selection bias. Third, the inability to blind the participants to the intervention might have influenced their self-reported outcomes. However, our study also has notable strengths, including the use of validated questionnaires (PSEQ, MPQ) adapted for the Persian-speaking population, the supervision of peers by the research team to ensure the intervention fidelity, and the inclusion of both male and female peers to address potential gender differences in pain management.

Conclusion

Pain self-management training program by peers can be used to improve the pain intensity and pain self-efficacy in elderly people with osteoarthritis. The use of combined strategies,

including physical pain control, mind control, and social and motivational factors to promote more active and social participation of the elderly in pain management, is suggested to achieve better and more effective results.

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Authors' Contribution

MSH contributed to the conception and design of the study, data collection and analysis, literature review, and drafting of the manuscript. MS, SM, SRM, and MN contributed to the study design and supervision; MS also secured funding and provided statistical and administrative support, and SRM provided statistical consultation. All authors critically reviewed and revised the manuscript for important intellectual content, approved the final version, and take responsibility for the integrity of the data and the accuracy of the analyses. The corresponding author confirms that all authors meet the authorship criteria and that no eligible contributor has been omitted.

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Conflict of Interest

Non declard.

Declaration on the use of AI

This study did not utilize Artificial Intelligence (AI)-Assisted Technology in data collection, analysis, or manuscript preparation.

References

1 Farinelli L, Riccio M, Gigante A, et al. Pain management strategies in osteoarthritis. Biomedicines. 2024;12:805.
2 World Health Organization. Osteoarthritis. Geneva: World Health Organization; 2023.
3 Jamshidi A, Kianifard T, Ghorpade R, et al. THU0708 Disparity in osteoarthritis knee prevalence-a tale of two cities in iran (TEHRAN) and india (PUNE): findings from who ilar copcord population survey (STAGE I). Annals of the Rheumatic Diseases. 2018;77:546.
4 Magni A, Agostoni P, Bonezzi C, et al. Management of osteoarthritis: expert opinion on NSAIDs. Pain and Therapy. 2021;10:783-808.
5 Sharma L. Osteoarthritis of the Knee. New England Journal of Medicine. 2021;384:51-9.
6 Fertelli TK, Mollaoglu M, Sahin O. Aquatic exercise program for individuals with osteoarthritis: pain, stiffness, physical function, self-efficacy. Rehabilitation Nursing. 2019;44:290-9.
7 Bandura A. On the functional properties of perceived self-efficacy revisited. Journal of Management. 2012;38:9-44.
8 Yarns BC, Lumley MA, Cassidy JT, et al. Emotional awareness and expression therapy achieves greater pain reduction than cognitive behavioral therapy in older adults with chronic musculoskeletal pain: a preliminary randomized comparison trial. Pain Medicine. 2020;21:2811-22.
9 Tomlinson RM, Cousins LA, McMurtry CM, et al. The power of pain self-efficacy: applying a positive psychology framework to pediatric pain. Pediatric Pain Letter. 2017;19:2-13.
10 Shtroblia V, Petakh P, Kamyshna I, et al. Recent advances in the management of knee osteoarthritis: a narrative review. Frontiers in Medicine. 2025;12:1523027.
11 Allen KD, Ambrose KR, Booker SQ, et al. Non-pharmacological pain management

for osteoarthritis: review update. Current Rheumatology Reports. 2025;27:19.
12 Ferreira RM, Martins PN, Gonçalves RS. Non-pharmacological and non-surgical interventions to manage patients with knee osteoarthritis: An umbrella review 5-year update. Osteoarthritis and Cartilage Open. 2024;6:100497.
13 Woods B, Manca A, Weatherly H, et al. Cost-effectiveness of adjunct non-pharmacological interventions for osteoarthritis of the knee. PLoS One. 2017;12:e0172749.
14 Wu Z, Zhou R, Zhu Y, et al. Self-Management for Knee Osteoarthritis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Pain Research and Management. 2022;2022:2681240.
15 Omidi A, Zanganeh MJ, Khodaveisi M, et al. The effect of self-management training on pain intensity in patients with knee osteoarthritis referring to orthopedic clinic of Imam Hossein Hospital in Malayer. National Journal of Physiology, Pharmacy and Pharmacology. 2018;8:1035-40.
16 Mirzaei N, Mohammadi Shahbolaghi F, Nourozi K, et al. The effect of self-management training on self-efficacy of elderly patients with knee osteoarthritis. Iranian Journal of Rehabilitation Research in Nursing. 2017;3:29-34. [In Persian]
17 Uritani D, Koda H, Sugita S. Effects of self-management education programmes on self-efficacy for osteoarthritis of the knee: a systematic review of randomised controlled trials. BMC Musculoskeletal Disorders. 2021;22:515.
18 Pullyblank K, Brunner W, Scribani M, et al. Evaluation of a peer led chronic pain self-management program in a rural population. Journal of Primary Care & Community Health. 2022;13:21501319221121464.
19 Tse MM, Ng SS, Lee PH, et al. Effectiveness of a peer-led pain management program in relieving chronic pain and enhancing pain self-efficacy among older adults: a clustered randomized controlled trial. Frontiers in Medicine. 2021;8:709141.
20 Tse M, Li Y, Tang SK, et al. An exploration of the effectiveness of a peer-led pain management program (PAP) for nursing home residents with chronic pain and an evaluation of their experiences: a pilot randomized controlled trial. International Journal of Environmental Research and Public Health. 2020;17:4090.
21 Matthias MS, Bair MJ, Ofner S, et al. Peer support for self-management of chronic pain: the evaluation of a peer coach-led intervention to improve pain symptoms (ECLIPSE) trial. Journal of General Internal Medicine. 2020;35:3525-33.
22 Doull M, O'Connor AM, Welch V, et al. Peer support strategies for improving the health and well-being of individuals with chronic diseases. The Cochrane Database of Systematic Reviews. 2017;2017:CD005352.
23 Nicholas MK. The pain self-efficacy questionnaire: taking pain into account. European Journal of Pain. 2007;11:153-63.
24 Asghari A, Nicholas MK. Pain self-efficacy beliefs and pain behaviour. A prospective study. Pain. 2001;94:85-100.
25 Melzack R. The McGill Pain Questionnaire: major properties and scoring methods. Pain. 1975;1:277-99.
26 Khosravi M, Sadighi S, Moradi S, et al. Translation, adaptation and reliability of Persian-McGill Pain Questionnaire (P-MPQ) in Iranian cancer patients. Basic & Clinical Cancer Research. 2014;6:12-7.
27 Mansbach WE, MacDougall EE. Development and validation of the short form of the Brief Cognitive Assessment Tool (BCAT-SF). Aging & Mental Health. 2012;16:1065-71.
28 Sharifi F, Nazari N, Shoaee S, et al. Brief Cognitive Assessment Tool (BCAT): a new developed instrument for screening of the cognitive dysfunction in older adults. Iranian Journal of Diabetes and Metabolism. 2017;16:231-40. [In Persian]
29 Mortazavi H, Pakniyat A, Ganji R, et al.

The Effect of self-management education program on disability of elderly patients with knee osteoarthritis referring to elderly care clinic of Imam Reza (AS) Treatment Center in Shiraz 2015-2016. Journal of North Khorasan University of Medical sciences. 2016;8:461-70. [In Persian]

30 Leung DKY, Fong APC, Wong FHC, et al. Non-Pharmacological Interventions for Chronic Pain in Older Adults: A Systematic Review and Meta-Analysis. The Gerontologist. 2024;64:gnae010.

31 Hatefi M, Parvizi R, Borji M, et al. Effect of self-management program on pain and disability index in elderly men with osteoarthritis. Anesthesiology and Pain Medicine. 2019;9:e92672.

32 Maghdoori Z, Mohammadi Shahbalaghi F, Novorzi Tabrizi K, et al. The effect of using a pain self-management program on self-efficacy and acceptance of pain in the elderlies with chronic back pain: a clinical trial study. Iranian Journal of Rehabilitation Research in Nursing. 2022;9:41-52. [In Persian]

33 DiRenzo D, Finan P. Self-efficacy and the role of non-pharmacologic treatment strategies to improve pain and affect in arthritis. Current Treatment Options in Rheumatology. 2019;5:168-78.

34 Martinez-Calderon J, Zamora-Campos C, Navarro-Ledesma S, et al. The role of self-efficacy on the prognosis of chronic musculoskeletal pain: a systematic review. The Journal of Pain. 2018;19:10-34.

35 Antunes TPC, Jardim FG, de Oliveira Abreu CIP, et al. Chronic Pain Self-Management Strategies for Older Adults: An Integrative Review. Life. 2024;14:707.

36 Elbers S, Wittink H, Pool J, et al. The effectiveness of generic self-management interventions for patients with chronic musculoskeletal pain on physical function, self-efficacy, pain intensity and physical activity: A systematic review and meta-analysis. European Journal of Pain. 2018;22:1577-96.