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Effect of Self-Management Program on Pain and Disability Index in Elderly Men with Osteoarthritis

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Abstract

Background: Osteoarthritis (OA) is a progressive disease of the joints, leading to decreased function and disability.
Objectives: The study aimed to investigate the effect of self-management (SM) program on disability index and pain in aging men with knee OA.
Methods: The study included an SM group and a control group. Given the sample size of the previous studies, 83 patients were recruited. The study tools included a demographic profile questionnaire, visual analogue scale (VAS), and HAQ 8-item DI. The intervention included 10 SM sessions for patients in the SM group (8 sessions of in-person intervention and 2 sessions of telephone intervention). Patients were placed in groups of 7, and the sessions were held weekly each for a period of 45 to 60 minutes. Data were analyzed using descriptive and analytical tests by SPSS V. 16 software.
Results: The two groups(SM and control group) were homogeneous in terms of demographic characteristics ($P > 0.05$). The mean (SD) disability score was 19.12 (1.92) in the SM group before the intervention, which reduced to 14.70 (1.63) after the intervention ($P = 0.000$, $T = 10.02$). The mean (SD) pain score, was 9.19 (0.71) in the SM group before the intervention, which reduced to 6.48 (0.84) after the intervention ($P = 0.000$, $T = 18.15$).
Conclusions: Training can help patients perform SM measures and improve their health status by enhancing the information needed for the disease.

Keywords: Pain, Disability, Aging, Knee Osteoarthritis

1. Background

Orthopedic illnesses are accompanied by different complications (1). Osteoarthritis (OA) is a progressive disease of the joints, leading to decreased function and disability (2-4). OA is a defect in a joint covered with the synovial membrane, characterized by the destruction of the hyaline cartilage. The main pathologic mechanism of OA is the progressive loss of muscle cartilage, followed by numerous clinical symptoms including pain, joint effusion, joint sensory disturbances, joint stiffness, instability, weakness and progressive muscular atrophy, immobilization, and contracture (5-7). The most commonly involved joints in OA are the hands, knees, hips, and spine (8). Knee osteoarthritis (KOA) is a type of osteoarthritis and one of the most important diseases causing disability with a great economic burden (9, 10). Various factors are involved in the creation of OA, including age, obesity, occupation, metabolic diseases, and trauma, with the age introduced as the strongest risk factor of OA (11, 12).

Other complications following KOA include pain and stiffness in the knee (13). Previous studies reported varying degrees of pain in patients with KOA (14-16). The side effects of pain include the impact on health status (17-20) and decreased quality of life (QOL) among patients (21). Knee stiffness is another side effect of KOA, which occurs mostly when the patient wakes from morning sleep or after his long-term immobilization (13, 22). There are several therapeutic and non-therapeutic methods to cure OA (23).

Self-management (SM) refers to the individual's capability to manage lifestyle, mental and physical changes caused by the illness, the symptoms, and treatment of the disease, hence requiring the acquisition of skills to cope with the disease (24). Some patients are not fully aware of the management and control of their illnesses (25, 26). The patients cannot make effective health-related decisions since they usually lack the self-care skills (27). In an SM program, the patient plays a pivotal role in disease

prevention, health promotion, and successful control of the disease, and contributes to his well-being (28). Previous studies have investigated the effect of SM program on mental health status (6), pain (29), and QOL (30).

2. Objectives

The elderly population has been growing in the recent century and has emerged as an important challenge to society (31-33). The present study aimed to investigate the effect of SM program on disability index and pain in aging men with KOA.

3. Methods

3.1. Design and Participants

The present study was conducted on an SM group and a control group (receiving routine care).

3.2. Sample Size

In this study, given the sample sizes of previous studies, 80 patients were recruited (12, 34, 35). However, taking in to account the possibility of drop-out, 90 patients were selected for the study. At the end of the study, four patients in the control group and three patients in the SM group were excluded from the study. Finally, statistical analysis was performed using the data of 41 and 42 patients in the SM and control groups, respectively.

3.3. Inclusion Criteria

The inclusion criteria included an age of at least 65 years, male gender, KOA diagnosis according to available medical records and a specialist physician confirmation, residence in Kermanshah (Songhor and Kolyaei townships), informed written consent for participation in the study, at least six-month history of KOA, lack of suffering from any other mental illness, having a phone to make telephone calls, and no chronic use of opiates.

3.4. Exclusion Criteria

The exclusion criteria included taking intra-articular injections, the experience of associated surgery such as joint restoration or joint replacement (before or during the intervention), patient's desire to withdraw from the study, lack of possibility to coordinate with intervention sessions, and development of a new disease affecting pain and disability.

3.5. Questionnaires

3.5.1. Demographic Questionnaire

This questionnaire included questions on age, education status, income, marital status, duration of illness, suffering from other illnesses, and the presence/absence of caregivers at home.

3.5.2. Visual Analogue Scale (VAS)

This scale measured pain severity from 0 to 10. The validity and reliability of the VAS have been confirmed in previous studies (36-38).

3.5.3. Health Assessment Questionnaire 8-item Disability Index (HAQ 8-item DI) in Elderly People

The questionnaire has eight items. Each item, depending on the individual's ability, takes a score between zero (no difficulty with any task) and 3 (total inability to perform tasks) (39, 40). The validity and reliability of the HAQ 8-item DI have been confirmed in the study by Tagharrobi et al. (41).

3.6. Method of Research

In this study, patients with KOA diagnosis referring to health centers in Kermanshah province were randomly assigned to two groups of SM and control. To this end, the patients were offered white or black colored cards. Patients choosing a white card were placed in the control group and those selecting a black card were placed in the SM group. Before the intervention, the instruments were completed for the participants in the SM and control groups through interviews. Then, 10 SM sessions were held for the patients in the SM group (eight sessions of in-person intervention and two sessions of telephone intervention). Patients were divided into subgroups of 7, and the sessions were held weekly each for a period of 45 to 60 minutes. A summary of the training sessions is given in Table 1 (12, 42, 43). After one month, the questionnaires were completed again. At the end of the intervention, a summary of the materials taught to the intervention group was provided to patients in both groups.

3.7. Ethical Considerations

(1) The aims of the research were explained to the patients, (2) informed written consent was obtained, (3) interventions were free of cost for the patients, (4) the patients had the right to withdraw from the study at any time during the study, (5) the patients' secrets were kept.

3.8. Statistical Analysis

Data were analyzed using descriptive and analytical tests by SPSS V. 16 software.

Table 1. The Content of Self-Management Sessions Trained to KOA Patients in the SM Group

	Session Content
1	An explanation of the study goals, completion of the research instruments, allocation of patients to the SM and control groups, general explanations of KOA
2	A discussion on the cause, prevalence, medical and non-medical methods of KOA treatment, the definition of pain, the cause of pain in KOA
3	An explanation of the medical and non-medical management of pain in KOA, medication and cognitive behavioral therapy
4	Training of how to take analgesics properly, how to use hot water compress for pain reduction in KOA, knee resting, holding knee straightly, using a cane, using standing toilets
5	Training of a lifestyle associated with KOA in full and discussing its challenges
6	Training of how to sit and walk properly, providing information about the benefits of exercise, training exercises for knee muscle strengthening, training in relation to balance, prevention of falling
7	Training on proper nutrition and proper diet
8	Reviewing of previous materials
9	Telephone following up and providing appropriate training to patients
10	Telephone following up and providing appropriate training to patients

4. Results

Table 2 shows the demographic characteristics of male patients participating in the SM program. The two groups were homogeneous in terms of demographic characteristics ($P > 0.05$).

Table 3 shows the status of disability and pain in the intervention and control groups. According to the findings, the implementation of the SM program reduced the disability and pain scores in the experimental group ($P < 0.05$). The mean (SD) disability score was 19.12 (1.92) in the SM group before the intervention, which reduced to 14.70 (1.63) after the intervention ($P = 0.000$, $T = 10.02$). The mean (SD) pain score, was 9.19 (0.71) in the SM group before the intervention, which reduced to 6.48 (0.84) after the intervention ($P = 0.000$, $T = 18.15$).

Table 2. Demographic Characteristics of Elderly Individuals in the SM and Control Groups[a]

Demographic variables, subsets	SM	Control	P Value
Marital status			0.07
Married	30 (73.2)	34 (81.0)	
Single	11 (26.8)	8 (19.0)	
Education			0.23
Illiterate	12 (29.3)	9 (21.4)	
Secondary school	24 (58.5)	24 (57.1)	
Diploma or higher	5 (12.2)	9 (21.4)	
Monthly income			0.19
Low	15 (36.6)	9 (21.4)	
Moderate	22 (53.7)	28 (66.7)	
Good	4 (9.8)	5 (11.9)	
Having caregivers in the family			0.75
Yes	24 (58.5)	26 (61.9)	
No	17 (41.5)	16 (38.1)	
Other diseases			0.49
Yes	9 (22)	12 (28.6)	
No	32 (78)	30 (71.4)	
Duration of illness	4.43 ± 1.00	4.02 ± 1.17	0.08
Age	75.36 ± 6.58	79.26 ± 14.17	0.11

Abbreviation: SM, self-management.
[a]Values are expressed as mean ± SD or No. (%).

5. Discussion

Nurses can help health community by providing compassionate nursing care (44). One example of this is self-care education for patients(12, 42, 43). The findings of this study showed that an SM program improved the health status of patients with KOA. Mirzaee et al. also showed that the implementation of an SM program in four sessions of 70 minutes for four weeks resulted in the improvement of the performance of elderly patients with KOA (12). Gay et al. showed that an SM program could improve the physical activity of male and female patients with OA aged 50 - 75 (45). Kao et al. demonstrated that an SM program could improve the performance, health, and QOL of patients with KOA (46). The difference in the results of this study with other studies (12, 45, 46) was that the mentioned studies were conducted on male and female patients while the present study was carried out only among male patients.

The findings of this study showed that the implementation of the SM program diminished pain in patients with KOA. Our results are consistent with the findings obtained in the study by Ganji et al. in which a group of elderly people with KOA showed reduced pain after the implementation of six sessions of the SM program (47). Coleman et al. showed that the execution of an SM program decreased the pain and increased the QOL and function of the patients (43). Moreover, Egwu et al. indicated that the implementation of an SM program could reduce the pain of the patients (48). Furthermore, in the study by Mortazavi et al., which included six sessions of SM training, the execution of this intervention led to a decrease in the disability of patients with KOA (35). The SM program seems to help relieve the pain among patients through improving health literacy regarding the illness and improving their abilities in

Table 3. Comparison of Disability and Pain Scores Between the SM and Control Groups[a]

Group/Time	SM	Control	Between Groups
Disability			
Pretest	19.12 ± 1.92	18.90 ± 1.46	P = 0.56, T = 0.58
Posttest	14.70 ± 1.63	19.30 ± 1.48	P = 0.000, T = -13.42
Within groups	P = 0.000, T = 10.02	P = 0.03, T = -2.16	-
Pain			
Pretest	9.19 ± 0.71	9.04 ± 0.76	P = 0.36, T = 0.90
Posttest	6.48 ± 0.84	8.95 ± 0.96	P = 0.000, T = -12.42
Within group	P = 0.000, T = 18.15	P = 0.35, T = 0.94	-

Abbreviation: SM, self-management.
[a]Values are expressed as mean ± SD.

managing the symptoms of the illness (49).

The exercise was one of the issues trained to the patients in the MS group during the intervention. A study performed by Lawford et al. also showed that an exercise program was effective in pain reduction (50). In a review study by Goh et al., it was shown that exercise programs could reduce pain and improve the performance of patients with KOA (21). In addition, in a study by Smith et al., performing exercise programs could improve the performance and QOL of patients with total knee arthroplasty (TKA) (51). In line with the present study, the findings of a study by Cai et al. demonstrated that cognitive-behavioral therapy (CBT) implementation, which was one of the materials trained in this intervention, could enhance knee function, reduce pain, and reduce kinesiophobia in patients with TKA (52), besides diminishing depression (52); these findings are consistent with those obtained in the current study. Improving the awareness and ability of patients seems necessary to help improve their health status.

5.1. Conclusions

The SM program could reduce pain and improve the functional status of patients with KOA. Accordingly, it is concluded that training can help patients perform self-care measures and improve their health status by enhancing the information needed for the disease.

Footnotes

Authors' Contribution: Study concept and design: Masoud Hatefi, Asma Tarjoman and Milad Borji; analysis and interpretation of data: Milad Borji and Asma Tarjoman; drafting of the manuscript: Reza Parvizi, Masoud Hatefi and Asma Tarjoman; critical revision of the manuscript for important intellectual content: Milad Borji, Asma Tarjoman, Masoud Hatefi and Reza Parvizi; Statistical analysis: Masoud Hatefi and Reza Parvizi.

Conflict of Interests: No conflict of interest is reported.

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Patient Consent: Informed consent was obtained from all the participants.

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