Self-management of Elderly Patients with Osteoarthritic Knee on Recovery Outcomes

Magda M. Mohsen[1], Nabila E.Sabola[1], Nagwa I. El-khayat[2], Entsar A. Abd El-Salam[3]

[1]Prof. of Family and Community Health Nursing, [2]Assist.Lecturer of Geriatric Nursing, [3]Assist. Prof. of Geriatric Nursing, Faculty of Nursing, Menoufia University-Egypt

Abstract

Background: Knee osteoarthritis accounts for almost four fifths of the burden of worldwide. It is the leading cause of mobility impairment, disability and loss of function in older adults. This study aimed to examine the effectiveness of self-management of elderly patients with osteoarthritic knee on recovery outcomes.

Material and methods: A quasi- experimental design was utilized to conduct this study. The study was carried out at outpatient clinic of Shebin- Elkom University and Educational Hospital, and then they were following up at their homes. 100 elderly patients were selected who met inclusion and exclusion criteria.A constructed interviewing questionnaire, arthritis self-efficacy scale, and Western Ontario and McMaster Universities Osteoarthritis (WOMAC) index were used to collect the data.

Results: there was increase in the mean total pain self-efficacy score, and other symptoms self-efficacy score in study group than control group.There was decrease in the mean total physical function WOMAC score in study group than control group after intervention.

Conclusion: Implementation of self-management for elderly patients was effective in management symptoms of knee osteoarthritis among study group compared to control group.

Keywords: *Elderly, Knee osteoarthritis, Self-management, recovery outcomes.*

Introduction

Knee osteoarthritis (KOA), known as degenerative joint disease, is typically the result of wear and tear and progressive loss of articular cartilage. It is most common in elderly women and men. Knee osteoarthritis can be classified as, primary and secondary. Primary osteoarthritis is articular degeneration without any apparent underlying reason. Secondary osteoarthritis is the consequence of either an abnormal concentration of force across the joint as with post-traumatic causes or abnormal articular cartilage, such as rheumatoid arthritis (RA). Osteoarthritis is typically a progressive disease that may eventually lead to disability(1).

Globally, 18% of women and 9.6% of men aged over 60 years have symptomatic OA, with a quarter of these individuals unable to perform routine daily activities. By 2050, a projected 130 million people will suffer with OA, constituting a significant societal burden (2). In Egypt, more than five million people have OA, percentage of years of healthy life lost due to OA disability per 100.000 people is 67.6 %. The rate of years of healthy life lost from osteoarthritis has changed over time and relative to the parent region of North Africa & Middle East and the world at large (3).

Corresponding author:
Entsar Abd El-aleem Abd El-salam
Department of Geriatric Nursing, Faculty of Nursing, Menoufia University, Egypt, code: 32511, Email: entsargodia@gmail.com, Mobile:01008112167

Self-management intervention has an important role to play in managing osteoarthritis, and suit an integrative model of shared care between conventional and complementary medicine practitioners. Self-management program help to promote health and management of diseases, increasing motivation of elderly and decreasing the negative effects on their daily function [4]. It including low-impact activity, balance of rest, range-of-motion exercises, relaxation, heat or cold, taking medication, joint protection, massage, splints and nutrition [5,6].

Aim of the Study

The study aimed to examine the effectiveness of Self-management of elderly patients with osteoarthritic knee on recovery outcomes.

Hypotheses:

· Elderly patients who will receive self-management will be more likely to have a different score of self -efficacy than elderly patients who will not receive the intervention.

· Elderly patients who will receive self-management will be more likely to have change in their physical function than elderly patients who will not receive the intervention.

Subject and method:

Design: A quasi- experimental design (study and control) was utilized to conduct this study.

Setting: This study was conducted at outpatient clinic of Shebin- Elkom University and Educational Hospital, and then they were following up at their homes.

Sample: A convenience sample of 100 elderly patients with osteoarthritic knee, were recruited. They were assigned randomly by tossing a coin for two groups (study group from University Hospital and control group from Educational Hospital).

Tool I:A constructed interviewing questionnaire

This questionnaire was developed by the researcher for demographic data: age, gender, marital status, and level of education.....etc, history of chronic diseases and medication taken.

Tool II: Arthritis self-efficacy scale (ASES) [7] usedto assess self-efficacy of patients with osteoarthritis.

Tool III: Western Ontario and McMaster Universities Osteoarthritis (WOMAC) [8]used to assess physical function among OA elderly patients.

Validity of tools:

The validity of three tools was done by a jury of four experts (two Professors in Community health nursing and two experts in Geriatric nursing) who reviewed the questionnaire for clarity, relevance, comprehension, understanding and applicability, content accuracy and internal validity.

Reliability of tools: Reliability was estimated among 10 participants by using test retest method with two weeks apart between them.

Regarding tool 2 (ASES scale): It was 0.76 with the following Cronbach alpha reliability values for its subscales:Pain SE: 0.70, other symptoms SE: 0.78**.**

Concerning tool 3 (WOMAC): It was 0.74 with the followingCronbach alpha reliability values for its subscales: Stiffness: 0.70, Physical function: 0.78. The Cronbach alpha reliability for the three tools and their subscales indicate that the three tools are reliable to detect the objectives of the study.

Pilot study: conducted on 10 of elderly patients to evaluate the effectiveness of the study tools, clarity, techniques and the availability of the study sample.

Ethical consideration:

· Approval of the ethical research Committee was obtained at the Faculty of Nursing, Menoufia University.

· The agreements for participation of the elderly patients were taken after the aim of the study was explained to them.

· The elderly patientshad the full rights to refuse to participate in the study or to withdrawal at any time. Also they were assured that, the information would remain confidential and used for the research purpose only.

· The researcher gave copies of general information package (booklet) about self-management to elderly with knee OA for achieving the ethical principles of research as the principle of beneficence that all subjects should benefit from the research's knowledge.

Data collection procedure

· Data collection started on February 2019 and lasted until January 2020.

· Filling in the questionnaire for elderly patients(case and control) was conducted at the waiting area of orthopedic Out-patient Clinic affiliated to Shebin- Elkom University and Educational Hospital, after the elderly patients receiving medical examination and treatment.

· Each subject was personally interviewed for about 45 minutes-1 hour(according to the level of patient understanding) to fill the questionnaire for case and control group and give simple intervention about knee osteoarthritis only for case group.

· The researcher took address and telephone number from each patient to facilitate communication and follow up at their homes. The implementation of the home visit for self-management intervention sessions was achieved within 6 months one session per week for every individual (total duration 3weeks for every individual).

· The intervention included telephone follow up to elderly patients for completing intervention sessions for reassurance, support and keep contact.

· The final session (fourth):was done after 3 month (post intervention) After the implementation of the self-management intervention each elderly patients was assessed using the study tool to determine the effect of the sessions on their pain, other symptoms and physical function of knee. Time required for the sessionwas 20 minutes.

Statistical Analysis: -Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using student t- test for comparison between two means; Correlation coefficient (r) was used to test the correlation between two quantitative variables. Qualitative data were presented in the form of frequency distribution tables. It was analyzed by chi-square (χ^2) test.

Results

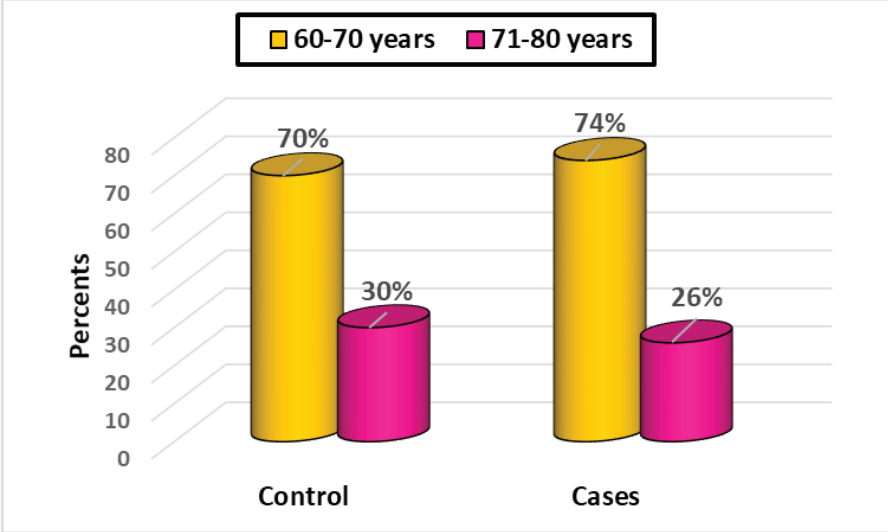

Fig.1: Percent distribution of age of studied groups

Fig 1. seventy percent of control group, and 74% of cases of the studied elderly patients with osteoarthritic knee aged between 60 to 70 years with mean of 65 ± 5.1 years and 66.2±.6.4 respectively.

Table 1: Effect of self-management, on thetotal self-efficacy subscales scores and total Self efficacy scale

Total self-efficacy subscales scores and total Self efficacy scale	Pre intervention program		Post intervention program		P pre	P post
	Control X± SD	Case X± SD	Control X± SD	Case X± SD		
Pain SE score	9.3±21.8	7.8±17.6	9.8±21.7	9.4±28.7	t=2.4 ,P<0.02	t=3.9 P<0.0001
Other symptoms SE score	11.4±27.6	22.6±9.6	11.7±27.1	10.6±41.1	t=2.3 ,P<0.02	t=6.2 P<0.0001
Total SE(pain +symptoms) scale	49.4 ±20.1	40.2±16.7	48.4± 21.1	69.9±18.2	t=2.4 ,P<0.02	t=5.5 ,P<0.0001

Table (1) Highlights that, there was a highly significant improvement in the mean total pain SE score, among case group than control group Post -intervention (28.7 ± 9.4 vr 21.7 ± 9.8, P<0.0001). Similar pattern was observed concerning other symptoms SE subscale. In addition, total SE scale (pain +symptoms) showed similar pattern where mean total SE score, among case group was higher than control group and the difference was highly statistically significant (P<0.0001).

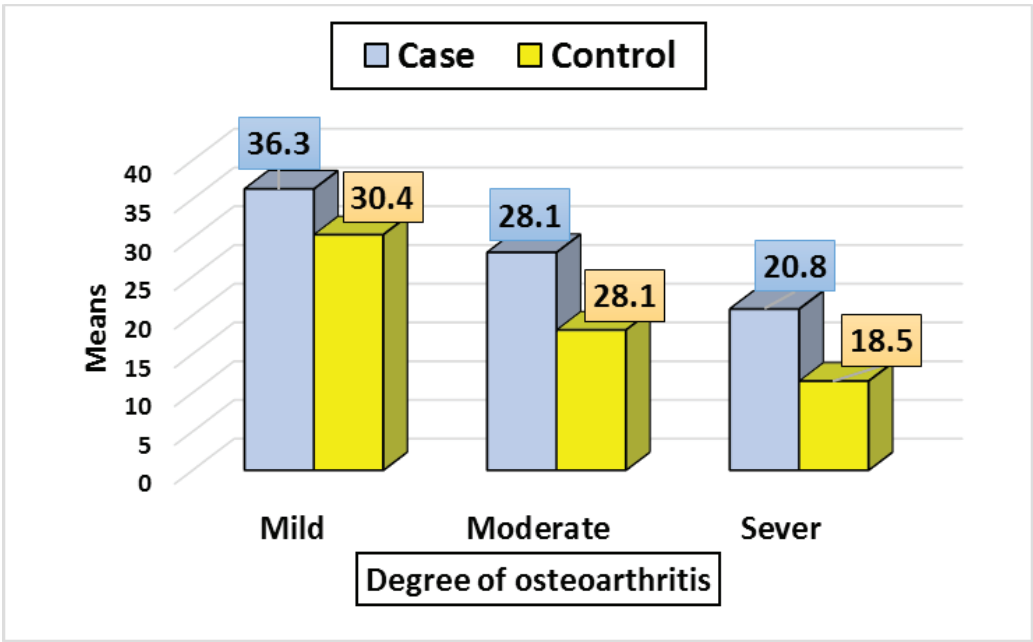

Fig. 2: Post intervention Mean pain SE score in mild, moderate and sever osteoarthritis among case and control groups

Fig 2. Reveals that post-intervention mean total score in pain SE in both case and control groups were decreased when degree of osteoarthritis increased.

Table 2. : Relation between post interventionmean total score of pain and other symptoms SE, with post intervention degree of osteoarthritis and pain intensity.

Total self-efficacy subscales scores	Degree of osteoarthritis			Levels of pain intensity			P Osteo	P Pain
	Mild X± SD	Moderate X± SD	Sever X± SD	Mild X± SD	Moderate X± SD	Sever X± SD		
Cases group Pain SE score	(N=17) 36.3±7.3	(N=18) 28.11±5.4	(N=15) 20.8±8.7	(N=20 32.5 ±10.8	(N=19) 23.5 ±6.0	(N=11) 22.4 ±8.6	F=18.4 ,P<0.0001	F=4.7 P<0.01
Other symptoms SE	45.7±9.5	43.6±7.5	32.9±11.0	43.6 ±7.7	40.9 ±13.1	25.5 ±8.6	F=8.4 P<0.0001	F=9.2 P<0.0001
Control group Pain SE score	N=19 30.4±7.6	N=19 28.1±5.3	N=12 18.5±4.8	(N=9) 34.0±6.7	(N=16) 23.6±8.1	(N=25) 23.1±6.1	,F=4.8 P<0.04	F=5.7' P<0.04
Other symptoms SE	36.6±7.1	25.7±7.1	14.2±7.1	41.7±5.1	32.1±9.3	18.7±7.1	F=5.7 P<0.01	F=15.2, P<0.001

Table 2.reveals that post-intervention mean total score in pain SE and other symptoms SE in both case and control groups were decreased when degree of osteoarthritis and the pain intensity increased.

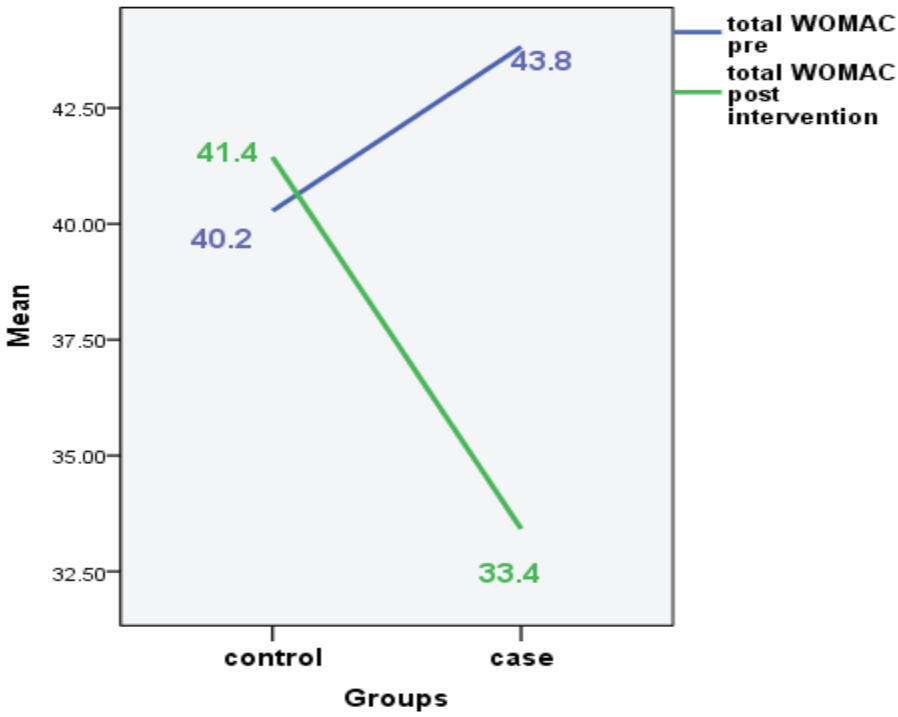

Fig.3: Mean total WOMAC score pre and post intervention

among control and case elderly groups

Fig 3:shows post-intervention decreases in total WOMAC score in the two groups; however, the case group had more pronounced significant pre–post differences (43.8 and 33.4) compared to the control group (40.2 and 41.4) respectively. This difference was statistically high significant (p <0.001).

Table (3) : Relation between post intervention mean total score of stiffness, and physical function with post intervention degree of Osteoarthritis, as well as Pain intensity levels among cases and control groups (N=100).

Total stiffness and physical function scores	Osteoarthritis Degree			Pain intensity			P Osteo	P Pain
	Mild X± SD	Moderate X± SD	Sever X± SD	Mild X± SD	Moderate X± SD	Sever X± SD		
Case group Stiffness	0.51±1.0	3.2±1.3	5.4±1.3	1.7 ±1.2	2.8±1.1	5.4±1.4	F=39.6 ,P<0.0001	F=17.8 P<0.0001
Physical function	22.5±9.1	32.6±8.6	46.2±5.8	28.9±15.5	30.8±6.0	45.5±3.7	F=33.9 P<0.0001	F=9.4 P<0.0001
Control group Stiffness	2.2±1.6	4.0±1.3	6.3±1.6	2±1.4	2.9±1.4	5.8±1.6	F=6.3 ,P<0.01	F=6.3’ P<0.01
Physical function	36.3±10.3	40.5±7.6	48.8±5.8	31.3±10.5	33.5±8.8	45.8±7.5	F=7.5 P<0.01	F=7.5’ P<0.01

Table (3) post-intervention mean total scores in stiffness and physical function were increased in both case and control groups when degree of osteoarthritis and the pain intensity categories increased.

Discussion

Knee osteoarthritis causes significant pain and function loss among elderly people. As the disease progresses, it can cause chronic joint pain, muscle weakness, deformity and functional deficiency and leads to dependency for daily life activities and decreased quality of life, thus increasing the need of the elderly for healthcare services [9]**.** The present study aimed toexamine the effectiveness of Self-management of elderly patients with osteoarthritic knee on recovery outcomes.

Regarding the effect self-management on pain self-efficacy the current study revealed that there was a highly significant improvement in the mean total pain self-efficacy, among case group than control group post intervention. This result is supported by study conducted by [10] who studied “The Effect of Self-management Training on Self-efficacy of Elderly Patients with Knee Osteoarthritis” in Iran. They reported that implementation of self-management training is effective in improving the self-efficacy of the elderly with knee osteoarthritis.

Also, this finding is consistent with the results of a study by [11]who studied “Feasibility of Imported Self-Management Program for Elderly People with Chronic Pain” in Japan. They concluded that pain self-efficacy was significantly improved immediately after the program compared with baseline and these effects

were maintained at 3-month follow-up, this finding has important implications for the development of pain services in community-dwelling elderly Japanese.

Concerning the effect self-management on other symptoms self-efficacy the current study revealed that there was a highly significant improvement in the mean total other symptoms self-efficacy, among case group than control group post intervention. This result is congruent with study by [12] who studied "Effect of self-management program on outcome of adult knee osteoarthritis" in Iran. They reported that the self-management program, which included pain relief methods, proper diet and exercise, aimed to improve pain, symptoms, function and quality of life. They have demonstrated that participants in the self-management program experienced improvements in the outcome of knee osteoarthritis.

This finding is consistent with the results of study by [13]who studied "The better management of patients with osteoarthritis program; outcomes after education and exercise delivered nationwide" in Sweden. They indicated that patients with knee osteoarthritis showed significant improvements in scores for arthritis self-efficacy other symptoms subscale and arthritis self-efficacy painsubscale.

In addition, this finding is agreement with the results of study by [14]They showed that knee symptoms scores significantly improved and quality-of-life scores significantly increased. Moreover, is consistent with the results of study by [15] They indicated regarding self-efficacy, there was improvement in the confidence that studied elderly abilities to perform a specific task with a significant difference was observed at 8th week post intervention and 6th month follow-up among study group compared to control group. As the exercises, proper diet and pain relief measures included as part of the self-management program (SMP), that can reduce stiffness and help knee pain relief.

In contrast, [16] who studied "Challenges in evaluating an Arthritis Self-Management Program for people with hip and knee osteoarthritis in real-world clinical settings" in Australia. They showed that there wasn't any difference in improving the quality of life, pain, stiffness of the joints, physical function and psychosomatic symptoms at 3 and 12 months after the intervention. This may be attributed topatients with hip and knee osteoarthritis may have more complication that affect quality of life of elderly patients.

Regarding the effect of self-management on physical function results of the current study revealed a highly significantimprovement in function WOMAC score after intervention than control group.This finding is similar to what was reported by[17]**,**They showed that their study supports the importance of a combined self-management and exercise intervention to improve functional lower limb strength and aerobic capacity in a Portuguese sample. Additionally, pain and other symptoms have improved. Also, result is supported by [18] They showed that a self-management program improved the health status of patients with knee osteoarthritis.

In addition, this result came on the same line with study conducted by [15] They suggested that concerning physical function subscales for study group, a statistically significant difference was found between pretest and posttest after implementation of interventions regarding to descending stairs, rising from sitting, standing walking on flat surface, lying in bed, getting in/out of bath and sitting.

Moreover, study by [19]They found that self-efficacy at baseline was associated with change over time in pain intensity and physical activity at follow-up after the intervention. High self-efficacy had a positive effect on pain intensity and physical activity, that increasing the need for exploring and strengthening patients' self-efficacy. This result may be related to implementation of pain relieve measures and physical exercise that can improve physical function for elderly patients with knee osteoarthritis.

Regarding the relation between elderly knee osteoarthritis, socio demographic characteristic and their mean of post intervention self-efficacy and physical function scores, the current study revealed that, young

age of studied elderly patients from 60-70 years had high self-efficacy and improved physical function compared with other ages from 71-80 years. Also, male, university education, had high self-efficacy and improved physical function compared with others. This results supported by a study by[20] They reported that female gender are significantly related to less self-efficacy and higher disability, and low educational level negatively influences the amount of perceived pain and disability, and older age can affect degree of disability and pain intensity.

Also, study by [21] who reported that indicators of quality of life are equal or even higher in older compared to younger patients. Moreover, Study by [22]they stated that subjective disability was affected by education level. In contrast, study by [20] who studied "Is there a relationship between self-efficacy, disability, pain and sociodemographic characteristics in chronic low back pain?" in Italy. They reported that they did not find any correlation between educational level and pain self-efficacy. This may be related to difference in community cultures.

Conclusion

Implementation of self-management for elderly patients was effective in management symptoms of knee osteoarthritis among study group compared to control group which was resulting in increasing their self-efficacy regarding pain and other symptoms. Moreover, it was effective in increasing physical function in study group than control group.

Recommendations: Awareness programs, targeted for all elderly patients, their family caregivers and general public about self-management and its importance for increasing self-efficacy and improving physical function.

Ethical Clearance- Institutional review committee was informed and study cleared

Source of Funding- Self

Conflict of Interest - Nil

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