

Impact of Designed teaching Program on Osteoarthritic patients' Outcome at Minia University Hospital

Eman Fadl Abd Elkhaliq, Warda Yousef Mohamed², Abdou Saad Taha EL-Labban³, Samia Mahmoud Teleb⁴ and Lobna Mohamed Gamal¹

¹ Medical – Surgical Nursing, Faculty of Nursing, Minia University, Egypt.

² Critical and Emergency Nursing, Faculty of Nursing, Cairo University, Egypt.

³ Rheumatology and Rehabilitation, Faculty of Medicine, Minia University, Egypt.

⁴ Adult Nursing, Faculty of Nursing, Assiut University, Egypt.

fadleman@yahoo.com

Abstract: Back ground: Osteoarthritis is the most common disease of the joints and one of the most widespread of all chronic diseases; several studies have indicated that patients knowledge and practices about osteoarthritis prevention and management are inadequate. **The aim** of this study is to investigate the impact of a designed teaching program on osteoarthritis patients' outcome as indicated by knowledge, practice, pain, muscle strength and level of dependence. To fulfill the aim of these study five research hypotheses were formulated; Design quasi-experimental research design was utilized to fulfill the aim of this study. The study sample included 100 male and female adult patients with osteoarthritis. They were matched and allocated randomly into two groups, study and control (50 patients each). Sitting Rheumatology and Rehabilitation out patient department, El Minia University Hospital. Four tools were utilized for data collection; socio-demographic and medical data sheet, pre/post knowledge questionnaire interview schedule, Barthel index scale, Pain scale and Muscle strength scale. Structured interview and direct observation techniques were utilized for data collection, An immediate post- test, after one month and after three months post test are performed. Results of the study documented a significant improvement in patients knowledge and practices post program in addition to reaching of an satisfactory level of independence for daily activities living, with relive pain and a significant improvement in muscle strength. Therefore the five stated hypotheses were supported with, ($p < 0.0001$ and $p < 0.003$). In conclusion, education of osteoarthritis patient is necessary to achieve an optimum level of functioning. Replication of this study on larger probability sample is highly recommended.

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1. Introduction

Osteoarthritis, the most common form of joint disease, is a slowly progressive non-inflammatory disorder of the synovial joints. Osteoarthritis is no longer considered to be a normal part of the aging process, but growing older continues to be consistently identified as one risk factor for disease development. Cartilage destruction can actually begin between ages 20 and 30, and the most common of adults are affected by age 40. Osteoarthritis results from cartilage destruction, progression deterioration of osteoarthritis causes the normally smooth, white, translucent articular cartilage to become dull, yellow, and granular. Affected cartilage gradually becomes softer, less elastic, and less able to resist wear with heavy use. Continued changes in the collagen structure of the cartilage lead to fissuring and erosion of the articular surfaces. As the central cartilage becomes thinner, cartilage and bony growth increase at the joint margins. (Lewis *et al.*, 2011)

OA is one of the most common causes of disability due to limitations of joint movement, particularly in people old age above 50. Men tend to

develop OA at earlier ages than women, however, after 55 years; it is majority in women (Meszaros, 2005). So Osborn *et al.*, 2010 stated that, (osteoarthritis can occur as a primary idiopathic disorder that is localized or generalized or secondary osteoarthritis is due to an underlying cause for example congenital defects of joint structure, trauma, inflammatory diseases, or metabolic disorders as diabetes). Gregory *et al.*, 2008 added that, (cause of OA is unknown. It is mainly risk factors related to aging, but metabolic, genetic, chemical and mechanical factors can also lead to OA).

Gregory, Sperry, and Wilson (2008) and Meszaros (2005) reported that, symptoms usually occur in middle age, patients with OA may have joint pain on only one side of the body and it primarily affects the knees, hips, spine, hands and feet. Deep aching joint pain gets sever after exercise or putting weight on it and is relieved by the rest, grating of the joint with motion, joint swelling, limited movement and morning stiffness.

Joyce B, and Jane H, (2009), Hairon N., NICE (2008) stated that, the goal of nursing management is

maintain of healthy, positive adaptation in the patient with osteoarthritis. Teaching is the key to successful treatment of the disease and the nurse plays a major and important role as patient educator. Therefore, the present study has carried out in an attempt to investigate the impact of implementing a designed teaching program on the outcome of osteoarthritis patient at Minia University Hospital as indicated by enrichment, improvement of patient's knowledge and practices, related to osteoarthritis, relieve of joint pain and preventing joint stiffness, improvement muscle strength, increase functional statuses, reduction of the frequency of readmissions.

Significance of the study

In Egypt at the last 5 years about 5 million people are suffering from osteoarthritis (Extrapolation of Prevalence Rate of Osteoarthritis to Countries and Regions, 2010) & 220 patients annually with osteoarthritis were admitted to Rheumatology and Rehabilitation Department in El-Minia University Hospital (Hospital Record at the last 2 years).

It has been observed over a period of 4 years of experience as an assistant lecturer of Medical-Surgical nursing at Minia University hospital, osteoarthritis is the most famous and common disease affect on patients and interfere with the main activities of their daily living and lead to pain, joint stiffness, reduce joint function and changes in their life style. These complication burden hospital resources and endanger patient's life. Therefore an investigation which provides information about the extent that osteoarthritis patients are developing complications could have an impact upon its reduction. It might also be useful to nursing as to other health care providers in several ways. Its might help professionals to monitor and manage the possible complications that might be developed to such group of patients in the future. As well as early detection, and proper management will reduce the load on hospital and safe patient's life. It is also hoped that this effort might generate an attention and motivation for further researches in this area. In addition to the constructing of data base about this problem.

2.Subjects and Methods

Research design;

Quasi-experimental research design has been utilized in this study to examin causal relationships, Quasi-experimental design have insufficient control when compared with experimental design. Thus, nurse researchers conduct more quasi-experimental studies (Polit *et al.*, 2001).

Study variables:

1. Independent variable in this study is the designed. Teaching program.

2. Dependent variables are: patient's knowledge and practice, activity of daily living, muscle strength mean score, and pain scale scores.

Technical design

Setting of the study:

The study was conducted at the Rheumatology and Rehabilitation Department (out patient clinic) at Minia University Hospital. Hospital according to record cards for follow up, regulated to have hospital management as wax, tenses, hot compresses and exercises.

Study subjects:

One hundred patients with osteoarthritis equitably divided into study group and control groups 50 patients for each group; they were matched according to age, sex, education, occupation, and the severity of the disease.

Inclusion criteria:

The subjects were recruited based on the following criteria:

- Newly diagnosed patient with osteoarthritis
- Ambulatory patients
- Age eligible for study: 20 years to 60 year.
- Male and female patient regardless education level.
- Willing to attend an educational sessions.

Exclusion criteria:

- Patient with cognitive impairment.
- Patients with osteoarthritis involving spinal problems (excluded due to the numerous associated signs.
- Patients with recent surgery
- Patients with other rheumatologic or musculoskeletal problems (e.g., fractures, tendinitis, and patient with overlap syndrome.

Over weight patients (weight from 23 to 27.5 kg/m²).

Study Tools: Data pertinent to the study were collected, utilizing four tools:

Tool 1: Pre/post Osteoarthritic patient's knowledge questionnaire sheet, It was constructed by the researcher to assess the exact knowledge level, the same tool was used immediately (immediate post test) and after 2 months later to evaluate the gain in knowledge after implementation of the program.

It consists 2 parts:

First part: Sociodemographic and medical data of the subjects including patient's age, sex, marital status, educational level, residence, height, weight, body mass index, telephone number, occupation, duration of disease and past medical history.

This equation and classification of BMI were adopted from (Eknayan and Garabed, 2008)

Category	BMI range – kg/m ²
Emaciation	less than 14.9 kg/m ²
Underweight	from 15 to 18.4 kg/m ²
Normal	from 18.5 to 22.9 kg/m ²
Overweight	from 23 to 27.5 kg/m ²
Obese	from 27.6 to 40 kg/m ²
Morbidly Obese	greater than 40 kg/m ²

Second part: related to patient's knowledge to assess their knowledge regarding osteoarthritis and its management

Scoring system:

Each right answer was given one score. The total scores were 147. those who obtained less than 60 % were considered having an unsatisfactory knowledge level, equal or more than 60 % were considered having satisfactory.

Tool II- Barthel index scale (Mahony and Barthel, 1965): (Annex B): The Barthel scale or Barthel activities of daily living index is a scale used to measure performance of the basic activities of daily living. It uses ten variables describing activities of daily living (ADL) including, feeding, moving from wheelchair to bed and return, personal toilet, getting on and off toilet, bathing self, walking on level

surface, propelling a wheelchair, ascending and descending stairs, dressing/ undressing, controlling bladder and bowels.

Scoring system:

Used and filled by the researcher, the scores for each items are summed to create a total score 100. The higher score indicate "independent person ". Independence, given score (15), while if the patient is dependent means that the person needs no assistance at any part of the task given score (5). Total scores (0–100): describe as the following

0 = unable

5 = major help (one or two people, physical), can sit

10 = minor help (verbal or physical)

15 = independent. In final Total scores (0–100):

Tool III- Pain scale. (Annex C): it was translated into Arabic used to assess pain level. Pain drawing according to (American Academy of Physical Medicine and Rehabilitation, 2001), through this drawing the patient can understand the location and intensity of their pain. to describe the pain character the patient use this key ////// this means stabbing pain, xxxx burning pain, 0000 pins and needles, = = = = numbness and ++++ aching while to describe pain severity the pain score from 0 to 10 according intensity of the pain, pain classification according to numerical-verbal scale.

Pain level	Score
No pain	0
Mild pain	1
Moderate pain that can tolerate without medication.	2
Moderate pain that requires medication to tolerate	3
More severe pain	4-5
Sever pain	6
Intensely severe pain	7-9
Most severe pain, it may make contemplate suicide.	10

Tool IV- Muscle strength scale (Schilling, 2009): (Annex D):

Rate muscle strength scale from 0 to 5

Rate muscle strength On scale from 0 to 5

Muscle strength	Score
No evidence of muscle contraction (no movement)	0
Visible or palpable contraction but no movement	1
Full muscle movement with force of gravity eliminated	2)
Full muscle movement against gravity but no movement against resistance	3
Full muscle movement gravity partial movement against resistance	4
Full muscle movement against both gravity and resistance (normal strength)	5

Operational design:

Tools testing and pilot study:

A pilot study was implemented on 10 patients to test the clarity of the tools, estimate the time needed

for data collection, and test the feasibility of conducting the research, minimal modifications were done and those patients were excluded from the actual study.

Technique for data collection:

A structured interview was utilized to fill out the four tools.

Procedure:

The present study was carried out on two phases:

Phase 1: (preparatory phase)

Was concerning formulation of the study tools and proposed an educational program by the researcher based upon extensive review of related literature, educational program was developed according to the patient's needs, then the content validity of the tools & program was checked and revised by 5 nursing and 3 medical experts

Phase II: (Implementation and evaluation phase)

- An official permission to conduct the proposed study was obtained by the researcher from the head of the department.

- Researcher interviewed patients individually.

- To fulfill sociodemographic and medical data, pre-knowledge test and pre-practice test base line assessment for all patients, then the patients were assigned randomly into study and control groups (30 patients each).

- At initial interview, the researcher introduce her self to initiate line of communication, explain the nature, purpose of the program, fill out the four tools of the study and scheduled with them the educational sessions.

- Both study and control groups were exposed to the routine hospital care.

- Then the study group was divided into small groups (5-8 patients in each group)

- The teaching program has been implemented in 5 session's in addition to preliminary session, these 5 sessions were repeated to each group, the duration of each session ranged from 30-45 minutes, including 15 minutes for discussion and feedback, each session usually started by a summary of what has been taught in the previous session and the objectives of the new topic.

- ❖ The first 2 sessions started by theoretical part about knowledge related to osteoarthritis, signs and symptoms, predisposing factors, different diagnostic test, types of management used (pharmacological & Non pharmacological ways) and its complications

- ❖ The later 3 sessions concerning the practical part about exercise, positioning, lifting or carrying object, rest, sleep, sitting, measures for joint protection measures, using assistive devices, range of motion exercise and aerobic exercise, hot & cold applications, healthy diet, monitoring activities of daily living, muscle strength and joint stiffness.

- The sessions were conducted by the researcher in a simple Arabic language using discussion, posters, handout, demonstration and re-demonstration as teaching methods

- **N.B:** Number of session will be variable from patient to patient according to the level of understanding.

- Each patient obtained a copy of the educational program booklet included all theoretical and practical content.

- The last phase is the evaluation immediately after program implementation as well as after 3 months using the four study tools (I.II, III.IV).

- An open channel communication was achieved between the researcher and patients to assure understanding, answer any question and to verify information and practical scales given skills.

- The whole period for teaching program was 1 year. The collection of data began in January 2011 and ended in January 2012.

Ethical and legal consideration:

The patients were informed about the purpose and nature of the study. The researcher emphasized that the participation is voluntary; confidentiality and anonymity of the subjects were assured through coding of all data. Each patient has the right to withdraw from the study at any time without any rational and this data will not be reused without a second permission from them.

3.Results

The aim of the present study is to assess osteoarthritic patient's educational needs, to design an teaching program for their patient and to investigate the impact of implementing the designed teaching program on patient's outcomes. As indicated by knowledge and practices related to osteoarthritis, relive / or prevention of joint pain & stiffness, improvement muscle strength and maintenance activity of daily living

Research hypotheses

To fulfill the aims of the study, the following research hypotheses were formulated:

- 1- The post mean knowledge scores of patients who are exposed to the designed teaching program will be higher than their pre mean knowledge scores as compared to a control group.

- 2- The post mean practice scores of patient who are exposed to the designed teaching program will be higher than their pre mean practice scores as compared to a control group.

- 3- The post mean Barthel index scores of patients who are exposed to the designed teaching program will be higher than their pre mean Barthel index scores as compared to a control group.

4- The mean pain scale scores of patients who are exposed to the designed teaching program will be lower than that of the control group.

5- Mean scores of muscle strength of patient who are exposed to the designed teaching program will be higher than that of the control group.

The first part:

Table (1): Frequency and percentage distribution of Socio-demographic characteristics for both study and control group.

Variables	Study (n= 50)		Control (n= 50)		P-value
	No.	%	No.	%	
Sex:					
• Female	40	80.0	36	72.0	0.349
• Male	10	20.0	14	28.0	
Age: (years)					
• < 40 years	5	10.0	11	22.0	0.143
• 40 - < 50 years	14	28.0	8	16.0	
• 50 - 60 years	31	62.0	31	62.0	
Mean \pm SD	53.4 \pm 9.6		52.7 \pm 11.3		0.742
Marital status:					
• Married	44	88.0	42	84.0	0.564
• Single/Widow or divorced	6	12.0	8	16.0	
Residence:					
• Urban	24	48.0	25	50.0	0.841
• Rural	26	52.0	25	50.0	
Occupation:					
• Employer	13	26.0	22	44.0	0.282
• Farmer	4	8.0	4	8.0	
• Housewife	28	56.0	21	42.0	
• Worker	5	10.0	3	6.0	
Level of education:					
• Illiterate	17	34.0	14	28.0	0.532
• Read and write	14	28.0	10	20.0	
• Basic education	2	4.0	1	2.0	
• Secondary education	13	26.0	17	34.0	
• University education	4	8.0	8	16.0	
Body math index					
• Normal body weight	10	20.0	17	34.0	0.999
• Over weight	40	80.0	33	66.0	0.286

Table (1) show that; the majority of both study and control group patients were females, married, come from rural areas (80%,72%,88%, 84%, 50.0%, 52.0%, respectively) and their age ranged between 50 and 62 year, with Mean \pm SD 53.4 \pm 9.6 as compared to 52.7 \pm 11.3 for the control group. The highest percentages of the control group were having secondary school education and employers 34% and 44% as compared to 34%, and 56% of the study group and majority in both study and control group over weight. Also show no statistical significant difference between study and control groups as regards to socio-demographic variables.

The second section related to hypotheses testing

The post mean knowledge & practice scores of patients who were exposed to the designed teaching program would be higher than their pre mean knowledge scores as compared to a control group

Table (2) shows that. The highest mean knowledge score was after implementation of the program in study group compared to control group and show high statistical significant differences in the study group.

This hypothesis can or cannot be supported.

Table (3) show that, the least mean score for pain was after 3 months, followed by the after one month, and high mean score in the pre-

implementation of the program (1.68 ± 1.10 , 1.60 ± 0.99 , 3.48 ± 1.62 respectively) for the study group, compared to highest mean score for control group pre, after one month and after three months (3.42 ± 1.68 respectively) and show high statistical significant differences in the study group regard the muscle strength and Barthel index and pain

This hypothesis can or cannot be supported.

Table (4) show that, the majority of study group were walk and rest to relieve pain and swelling, use local lotion to relive stiffness pre program with percentage 42%, 26%, 33.3%, 33.3%, 61.5%, 33.3%

Hypotheses one states that:

and after program implementation, the majority with highly significant differences were applied hot or cold application, massage, and take medication to relive pain with percentage 64.0% and $p < 0.0001$ while no statistical significant with control group .

Table (5) show that; statistical significant difference between patient's knowledge and educational level in control group at $p < 0.024$ while no statistical significant difference in study group $p < 0.065$

This hypothesis can or cannot be supported.

Table (2): One-way ANOVA test for the mean of total and subtotal knowledge scores obtained by study and control patients pre, post, and follow up after 3 months after implementation of the teaching program

Groups		Study	Control
		Mean \pm SD	Mean \pm SD
Knowledge about osteoarthritis	Pre	3.84 \pm 3.56	1.60 \pm 3.00
	post	13.48 \pm 1.93	3.04 \pm 3.66
	Follow up	15.04 \pm 1.29	3.12 \pm 3.64
	<i>F/P-value</i> ¹	0.0001*	0.049*
	<i>P-value</i> ²	0.0001*	0.038*
	<i>P-value</i> ³	0.0001*	0.029*
Knowledge about management (drugs and Exercise)	Pre	21.34 \pm 8.35	18.40 \pm 8.94
	post	40.38 \pm 5.02	19.52 \pm 9.57
	Follow up	42.34 \pm 3.71	21.06 \pm 8.50
	<i>F/P-value</i> ¹	0.0001*	0.336
	<i>P-value</i> ²	0.0001*	0.535
	<i>P-value</i> ³	0.0001*	0.142
Knowledge about management (nutrition)	Pre	11.86 \pm 3.58	10.60 \pm 3.83
	post	20.02 \pm 2.15	11.08 \pm 4.10
	Follow up	20.86 \pm 1.59	11.74 \pm 3.64
	<i>F/P-value</i> ¹	0.0001*	0.331
	<i>P-value</i> ²	0.0001*	0.555
	<i>P-value</i> ³	0.0001*	0.141
Knowledge about management (pain, stiffness, inflammation)	Pre	12.48 \pm 4.77	10.80 \pm 5.11
	post	23.36 \pm 2.87	11.44 \pm 5.47
	Follow up	24.48 \pm 2.12	12.32 \pm 4.85
	<i>F/P-value</i> ¹	0.0001*	0.306
	<i>P-value</i> ²	0.0001*	0.553
	<i>P-value</i> ³	0.0001*	0.122
Total knowledge score	Pre	49.52 \pm 18.14	41.40 \pm 19.2
	post	97.24 \pm 10.53	45.08 \pm 20.8
	Follow up	102.72 \pm 7.68	48.2 \pm 18.5
	<i>F/P-value</i> ¹	0.0001*	0.220
	<i>P-value</i> ²	0.0001*	0.349
	<i>P-value</i> ³	0.0001*	0.083
	<i>P-value</i> ⁴	0.035*	0.421

ANOVA test

* Statistical significant difference ($P < 0.05$)

1: Comparison among pre, post and follow-up

3: Comparison between pre and follow-up

2: Comparison between pre and post

4: Comparison between post and follow-up

Table (3): One-way ANOVA test for the mean of practice scores regarding pain, muscle strength, Barthel Index among study and control group

		Study	Control
		Mean ± SD	Mean ± SD
Pain	Pre	3.48 ± 1.62	3.42 ± 1.68
	Post	1.60 ± 0.99	3.42 ± 1.68
	Follow-up	1.68 ± 1.10	3.42 ± 1.68
	<i>F/P-value</i> ¹	0.0001*	1.000
	<i>P-value</i> ²	0.0001*	1.000
	<i>P-value</i> ³	0.0001*	1.000
	<i>P-value</i> ⁴	0.752	1.000
Muscle Strength	Pre	4.10 ± 0.86	3.98 ± 0.87
	Post	4.38 ± 0.70	4.04 ± 0.86
	Follow-up	4.72 ± 0.45	4.00 ± 0.88
	<i>F/P-value</i> ¹	0.0001*	0.940
	<i>P-value</i> ²	0.045*	0.730
	<i>P-value</i> ³	0.0001*	0.818
	<i>P-value</i> ⁴	0.752	0.908
Barthel Index	Pre	90.50 ± 7.97	86.70 ± 8.90
	Post	93.70 ± 5.13	86.70 ± 8.90
	Follow-up	94.90 ± 5.39	86.70 ± 8.90
	<i>F/P-value</i> ¹	0.002*	1.000
	<i>P-value</i> ²	0.012*	1.000
	<i>P-value</i> ³	0.001*	1.000
	<i>P-value</i> ⁴	0.342	1.000

ANOVA test

* Statistical significant difference ($P < 0.05$)

1: Comparison among pre, post and follow-up

2: Comparison between pre and post

3: Comparison between pre and follow-up

4: Comparison between post and follow-up

Table (4): Frequency and percentage distribution of pain, stiffness, and swelling measures for both study and control group. Pre, post and follow up after 3month after implementation of the teaching program

	Study						Control					
	Pre		Post		Follow-up		Pre		Post		Follow-up	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Pain												
Apply hot or cold application, massage, take medication	1	2.0	32	64.0	32	64.0	4	8.0	4	8.0	4	8.0
Massage or support joint and take medication	12	24.0	12	24.0	10	20.0	7	14.0	7	14.0	7	14.0
Walk and rest	21	42.0	0	0.0	0	0.0	26	52.0	26	52.0	26	52.0
Take medication oral medication or local medication and exercise	8	16.0	6	12.0	8	16.0	4	8.0	4	8.0	4	8.0
Exercises	1	2.0	0	0.0	0	0.0	2	4.0	2	4.0	2	4.0
Take medication or local	7	14.0	0	0.0	0	0.0	7	14.0	7	14.0	7	14.0
P-value	0.0001*						1.000					
Stiffness												
Cold application	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Local lotion	1	33.3	0	0.0	0	0.0	1	33.3	0	0.0	0	0.0
Rest	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Take medication	1	33.3	0	0.0	0	0.0	2	66.7	3	100.0	3	100.0
P-value	0.172						0.325					
Swelling:												
Hot application and exercises	1	7.7	7	53.8	0	0.0	5	27.8	3	16.7	5	27.8
Exercises	0	0.0	0	0.0	0	0.0	1	5.6	1	5.6	1	5.6
Local treatment and exercises	3	23.1	2	15.4	2	40.0	6	33.3	6	33.3	6	33.3
Rest	8	61.5	3	23.1	3	60.0	6	33.3	8	44.4	6	33.3
Hot application and warm bath	1	7.7	1	7.7	0	0.0	0	0.0	0	0.0	0	0.0
P-value	0.099						0.985					

Table (5): Relation between knowledge and level of education

Knowledge	Study				Control			
	Educational level				Educational level			
	Illiterate/ R & W (n= 31)		Basic education or higher (n= 19)		Illiterate/ R & W (n= 24)		Basic education or higher (n= 26)	
	No.	%	No.	%	No.	%	No.	%
Unsatisfactory	31	100.0	17	89.5	24	100.0	21	80.8
Satisfactory	0	0.0	2	10.5	0	0.0	5	19.2
<i>P</i> -value	0.065				0.024*			

Table (6): Correlations coefficient between patient' knowledge and Barthel Index, Pain Index and Muscle Strength

		r-value	<i>P</i> -value
Control	Barthel Index	0.023	0.871
	Pain Index	0.088	0.541
	Muscle Strength	-0.345	0.014*
Study	Barthel Index	-0.067	0.643
	Pain Index	0.019	0.896
	Muscle Strength	0.083	0.568

Table (6) show that, Correlations coefficient between patient' knowledge and Barthel Index, pain Index and muscle strength and show statistical significant difference between patient' knowledge and muscle strength.

This hypothesis can or cannot be supported.

4. Discussion

The result of the present study revealed that, no statistical significant difference between knowledge score level and subject's age in both study and control group. This result disagree with (Timby, 2005) who reported that, teaching takes place differently depending on a person's age and developmental level, and added that, for the person to receive, remember, analyze, and apply new information, he or she must have a special amount of intellectual ability

After implementation of the teaching program, patient's knowledge and practice score level were significantly an improved. This finding supported by; Arokoski JP. (2005) & Dieppe and Brandt (2008), who stated that, patient teaching is one of the primary therapeutic approaches to OA, has been shown to be helpful in the self-management; they require the skills, knowledge and motivation to effectively manage their day to day health needs. Access to information, teaching and social support is vital. Research suggests that, patient teaching is feasible and valuable for achieving improvements in quality of life in function, well-being and improved coping. Teaching and reassurance for the patient, their family, and caregivers is recognized as an important

component of OA therapy. It is important to understand the benefits of taking an active role in the management of their disease.

Joyce B, and Jane H, (2009), Hairon N., NICE (2008) reported that, teaching is the key to successful treatment of the disease, and the nurse plays important role as patient educator. Patient and their families need accurate information about the disease and about strategies to minimize its impact. Effective teaching can alter behavior, empowering patient to make a positive change in their health status. Important areas in patient teaching include pain management, rest-activity balance, nutrition, weight loss, teaching patient about their medication is an important part of the nurse's role in successful long- term pain management.

The result of the present study revealed that, majority of the subjects in study and control group complain from aching, burning pain. This result agree with (McAlindon, 2007) who stated that, pain is the main symptom of Osteoarthritis, which causing loss of ability and often stiffness. "Pain" is generally characterized as a sharp ache, or a burning sensation in the associate muscles and tendons, and painful sensation such as rubbing or grating within the joint may be felt when a person perform specific activities as bending, stair climbing.

Pope, (2008) reported that, 40% of arthritis patients said that they cannot do, or it is "very difficult" to do, at least one of nine important activities of daily living. Such deterioration and impairment interferes with their ability to work,

function in their community, and care for their family. Besides the impact of pain and disability, OA often has a negative impact on other aspects of lifestyle, causing depression, anxiety, feelings of helplessness and difficulty taking part in everyday personal and family activities and responsibilities.

Hill J and H. Bird H (2007), & Thomas H,m,(2009) reported that, Pain management makes use of an integration of pharmacologic (analgesics, muscle relaxants, and steroids) and nonpharmacologic as methods (moist heat and cold, massage, and rest.

Lane (2000) and Zhang W, Moskowitz RW, Nuki G, et al. (2008); supports the finding of the present study, who reported that, The patient must balance rest and activity to prevent further injury. An inflamed joint should rest until the inflammation subsides. Using a splint or brace that maintain the joint in functional position or using assistive devices (cane, walker) can relieve joint strain. The nurse must teach the patient to protect the affected joint; if the knee is affected, for instance, should avoid kneeling or long periods of standing. Immobilization of a joint should not exceed one week because prolonged immobilization can increase stiffness.

Also added that, heat therapy (warm bath, compresses, and shower) is effective to relieve stiffness and may be used 2 to 3 times a day for a half hour each time. Using heat therapy before activities can increase endurance. Cold therapy (compresses, ice packs) is often effective to relieve discomfort when a joint is inflamed and swelling.

Lack of adherence to home exercises in more than half of the study and control group subjects pre educational program application while post educational program most the subjects of study group adhere to home exercise. Physical activity plays a vital role in the management of OA, helping to improve muscle strengthen around the affected joints, and control joint swelling and relive pain. Strong muscles will reduce stress on the joints and absorb shock to protect joints from injury. **(Institute for Clinical Systems Improvement, 2007). Centers for Disease Control and Prevention, (2008)**

Thomas, (2009). Support the result of the present study, joint function is kept joint protection measures, such as reduce weight, using assistive devices, avoiding forceful or undesirable repetitive movement, using good body mechanics and erect posture. Joint stability can be enhanced by actions such as avoiding soft chairs, using recliners, and put pillows under knees; wearing sturdy, low-heeled shoes; removing environmental hazards and kept using mobility aids and joint support devices. We need increase ability to perform ADL by decrease pain and increase joint flexibility

Findings may be informing for nurses to understand self-caring of patients with OA, nurses may use findings to assist patients with OA to care for themselves. And findings may also be useful to nurses in the development and improvement of interventions to promote independent living with osteoarthritis. **(Carol, 2012)**

Conclusion

Based on the results of the present study; the researcher can conclude that

- Patient's knowledge and practices regarding osteoarthritis and its management are unsatisfactory.
- Application of teaching program for patient with osteoarthritis showed an improvement in patients' knowledge and practice.
- Patient's independence in relation to activities of daily and showed an improvement with reduction in pain level and improvement in muscle strength.

Recommendations

Based on results of the present study the following can be recommended:

For patients:

- A continuous teaching and training need to be offered on regular basis to patients in the Rheumatology and Rehabilitation unit.
- Written, simple instructional illustrated booklet about osteoarthritis and its management should be provided & available for patients

For further study and research:

- Replication of the current study on larger probability sample is recommended to achieve generalize ability and wider utilization of the designed program.
- It is recommended that similar studies should be replicated on longitudinal bases to be conducted to assess the compliance and deterioration for such group of patients.

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