

# Effect of Nursing Education program on Knowledge, Uncertainty, Mastery, Pain, and Quality of Life for Knee Osteoarthritis Patients

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**Abstract:** Osteoarthritis, a progressively destructive joint disease causing varying degrees of unrelenting pain and excess suffering that affect negatively on patients' quality of life. The study aimed to assess, plan, implement and evaluate the effect of Nursing Education program on Knowledge, Uncertainty, Mastery, Pain, and Quality of Life for Knee Osteoarthritis Patients. **Methods:** Research design: A quasi-experimental research design was utilized. **Subjects and methods:** A purposive sample of (80) adult patients were recruited for the conduction of this study. The study was conducted at orthopedic unit and outpatient clinics at Fayoum University Hospital. **Tools:** tool I: A self-administered questionnaire, tool II: Mishel Uncertainty in Illness, Mastery Scale, and the Arthritis Helplessness Index, tool III: Total quality of life, tool IV: Numerical Pain scale, and tool V: Nursing educational program was developed for patients with knee Osteoarthritis. **Results:** study sample involved 80 patients participants whose mean age was  $47.50 \pm 12.18$  years. More than half of them were females (61.3%), married (67.5%). More than one-third of them were hand workers (37.5%) and living in an urban area (55.0%). more than half of nurses had unsatisfactory knowledge about osteoarthritis before the nursing education while the majority of them (82.5%) had a satisfactory level of knowledge after implementation of the nursing education program. There were a statistically significant differences regarding Mishel Uncertainty in Illness scale, pain intensity, Mastery scale, and quality of life for patients pre and post-implementation of nursing education program. **Conclusions:** there were statistical significant differences regarding patients' knowledge, Uncertainty in Illness, pain intensity, Mastery, and quality of life for patients pre and post-implementation of nursing education. **Recommendation:** Relevant written and visual information to facilitate educating patients about proper coping with osteoarthritis.

**Keywords:** Nursing, Knowledge, Uncertainty, Mastery, Pain, Quality of Life, Osteoarthritis.

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## 1. INTRODUCTION

Osteoarthritis (OA) has been described as a slowly progressive non-inflammatory disorder that is characterized by joint pain, stiffness and limited range of motion, and has been declared an international health burden by the World Health Organization (Altman et al., 2015). Osteoarthritis has high global health and economic burden and will become the fourth leading cause of disability by the year 2020, according to data from the World Health Organization. OA is one of the most common chronic conditions in elderly persons in developed societies, with a significant impact on the quality of life (London, 2016).

More up-to-date statistics from (Li CS et al., 2014) revealed that OA is the most prevalent musculoskeletal condition among people aged 65 years and older, causing limited mobility in 80% and with an additional 25% unable to perform activities of daily living. OA is now considered one of the ten most disabling diseases in developed countries and it is estimated that worldwide 18% of women and 9.6% of men over 60 years of age suffer from OA (Phillips et al., 2016)

OA is a chronic disease characterized by joint pain, tenderness, limitation of movement, crepitus, occasional effusion, and variable degrees of local inflammation. The disease process affects the articular cartilage and also involves the entire joint, including the subchondral bone, ligaments, capsule, synovial membrane, and particular muscles (**Lübbecke et al., 2017**).

OA occurs most frequently in people's hands, hips, knees, back, and neck (**Messier et al., 2015**). The characteristics of the disease are thickening of the joint capsule, progressive cartilage loss, and osteophyte formation, leading to disability (**Fransen, et al., 2015**). At present, the only treatment of the symptoms and treatment to prevent further development of the disease are available (**Hunter and Eckstein, 2018**).

Pain is the most common symptom experienced for patients with OA, often detrimentally impacting on their ability to cope with this progressive condition. Pain is a primary symptom of OA, causing disability among older people. It can create countless stresses and anxieties, particularly concerning reduced mobility or immobility, and the inability to perform everyday tasks (**Culliford et al., 2015**).

Control of pain is essential but depends not only on analgesic treatment but also on the many other aspects of care provided by the health professional (**Parvizi et al., 2014**). Successful pain management in OA requires careful assessment to clarify possible underlying causes and the impact the pain is having on the patient's life. Health promotion can also enhance the quality of life by encouraging and enabling social support and social activities, as well as preventing illness (**Bourne et al., 2018**).

Medication, exercise, and the use of heat and cold treatments are often prescribed to reduce pain and increase the ability to manage daily chores. Such treatment regimens have not only monetary but also psychosocial costs (**Segal et al., 2018**). People with OA frequently are referred to as rehabilitative exercise programs to improve muscle sensorimotor function, thereby reducing pain and disability. However, the pain and disability experienced by people with OA have psychosocial sequelae (**Ferket et al., 2017**).

Quality of life has multidimensional set of component consisting of person's physical well-being which is the control or relief of symptoms and the ability to have physical independence and capable of doing all the basic functions, psychological well-being which is related to sustain a sense of control in the face of life against illness and characterized by altered life priorities, emotional distress, and fear of the unknown as well as positive life change, social well-being is adjusted by the impact of illness on individuals, their roles and relationships and how good they can deal with those factors, and spiritual well-being which is depending on how good an individual can control uncertainty that is created by the hope and derive from the illness experience (**Moyer et al., 2015**).

The nurse approaches the individual who has a chronic illness, such as rheumatoid arthritis, as a holistic human being who is greater than the sum of the parts. Knowledge of both the whole and the parts is required to understand a person and to develop nursing educations to increase the quality of life. To understand this wholeness, the nurse must learn about the perceptions of the person who has osteoarthritis (**Sharif et al., 2017**).

Osteoarthritis can affect negatively on activity daily living of patients and their quality of life so, it is an important issue to increase their level of knowledge, coping strategies to their pain, assess their certainty and mastery on their disease and thus clarify the need for designing this educational program.

#### **Significance of the study:**

OA is now considered as one of the ten most disabling diseases in developed countries and it is estimated that worldwide 18% of women and 9.6% of men over 60 years of age suffer from OA (**Phillips et al., 2016**). So, this study was very useful to improve the quality of life to patients and reduce pain to increase productivity and mastery of life and decrease uncertainty and helplessness.

**The study aimed** to assess patients' knowledge about Osteoarthritis, design a nursing educational booklet for patients with Osteoarthritis and evaluate the effect of nursing education on uncertainty, control of pain and quality of life (QOL) of knee osteoarthritis patients.

### Hypotheses

- The mean knowledge score of patients post implementing nursing education will be higher than their score pre-nursing education implementation.
- The patients' scores of certainty of illness and mastery of disease will increase post implementing nursing education than pre-nursing education implementation.
- The level of pain for patients post implementing nursing education will be reduced than pre-nursing education implementation.
- The quality of patient life score post implementing nursing education will be higher than pre-nursing education implementation.

## 2. SUBJECTS AND METHODS

**Study design:** A quasi-experimental (pre-\ post-test) research design was utilized in this study.

**Setting of the study:** This study was conducted in orthopedic unit and outpatient clinics at Fayoum University Hospital. Data collection extended over 10 months from the first of January (2017) until the end of October (2018).

### Study sample:

A purposive sample of (80) adult patients were recruited at the time of admission rate per month conduction of this study regardless of their gender, residence, occupation, or level of education. This study was done from January to septamper 2018. Subjects were recruited for the study with the following inclusion criteria, Adult patients, from both genders, conscious, diagnosed with knee osteoarthritis and free from physical & mental handicapped, and able to communicate with others. Patients who have chronic diseases that interfere with their self-care activities as (cerebral stroke, paralysis, handicapped) were excluded from the study.

The sample size was calculated to detect an improvement in the scores of pain (AIMS, VAS) and QoL with a moderate effect size (0.50 [sd=1.05]) at a 95% level of confidence and 80% power based on *Lakens(2013)*.

### Study tools:

Five tools were utilized to collect pertinent data for this study:

#### Tool (I): A self-administered questionnaire included:

It was developed by the researcher based on the literature review. It consists of three parts:

**Part 1: socio-demographic characteristics of the patients:** age, gender, marital status, family members occupation, and residence.

**Part 2: Medical history of the patients:** it was developed to assess the present medical history of the patients, Medical diagnosis, duration of illness, knee joints and other joints affected characteristics of pain and methods of treatment.

**Part 3: Assessment of patients' knowledge Pre/ Post nursing education:** It was developed to assess patient knowledge about knee osteoarthritis such as definition, causes, risk factors, and treatment. It consisted of (20) true and false questions.

**Scoring system for knowledge;** one grade was given for the correct response while zero was given for unknown or incorrect responses. The total marks were 20, classified into two groups

- *Satisfactory*  $\geq 60\%$  ( $\geq 12$  marks)

- *Unsatisfactory*  $< 60\%$  ( $< 12$  marks)

#### Tool II: Mishel Uncertainty, the Arthritis Helplessness Index, and Mastery Scale:

**Part 1: Mishel Uncertainty in Illness (MUIS):** this tool was selected to measure uncertainty about arthritis. Although the original questionnaire was developed for use with hospitalized patients, **Mishel (1984)** had developed a 28 item

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community versions that she advised being used for this study. The 28 items of the questionnaire were scored on a five-point Likert scale from strongly agree (1) to strongly disagree (5), with a midpoint described as undecided. Some items were recoded so that the intent of the response was accurately measured; that is negatively worded item response was reversed.

**Scoring system for MUIS:** Total scores were calculated by adding all item scores, with the mean item score supplied for any missing value so that a possible range of scores was 28 to 140. Higher scores indicated less uncertainty or greater certainty.

The reliability of the scale was tested in this study and proved to be good with Cronbach alpha coefficients 0.72 for the MUIS scale.

**Part 2: The Arthritis Helplessness Index (AHI);** this tool was developed by Nicassio et al. (1985) to measure perceived control over the specific experience of having arthritis. AHI scale items focus on perceptions of abilities and inabilities to control arthritis. The 15 questionnaire items were rated on a four-point Likert scale from strongly agree to strongly disagree, with scores from 1 to 4 respectively.

**Scoring system for AHI:** Scores for several items were recoded to reverse-scored so that higher scores indicate greater control. Mean item scores were substituted for any missing value.

The reliability of the scale was tested in this study and proved to be good with Cronbach alpha coefficients 0.82 for the AHI scale.

**Part 3: Mastery Scale:** this scale has seven items for which the subject is asked to rate the strength of agreement or disagreement with each statement (Pearlin & Schooler, 1978).

**Scoring system for Mastery Scale:** Items were coded so that strongly disagrees to strongly agree were scored as 1 to 4 respectively. Two items were recorded so that higher scores represented greater mastery. The seven-item scores were added with a possible range of scores from 7 to 28.

The reliability of the scale was tested in this study and proved to be good with Cronbach alpha coefficients 0.66 for the mastery scale.

### **Tool III: Total quality of life (QOL–RANDSF-36):**

The RAND-36 is perhaps the most widely used health-related quality of life (HRQoL) survey instrument in the world today. It was developed by (WHO, 1996). It is comprised of 36 items selected from a larger pool of items used in the RAND Medical Outcomes Study (MOS). Twenty of the items are administered using a past 4 weeks' reporting interval. RAND-36 assesses eight health concepts with multi-item scales (35 items): physical functioning (10 items), role limitations caused by physical health problems (4 items), role limitations caused by emotional problems (3 items), social functioning (2 items), emotional well-being (5 items), energy/fatigue (4 items), pain (2 items), and general health perceptions (5 items). An additional single item assesses change in perceived health during the last 12 months. Physical and mental health summary scores are also derived from the eight RAND-36 scales.

### **Scoring system for total quality of life (QOL–RANDSF-36):**

The most common scoring approach for the RAND-36 items was transforming every item linearly to a 0–100 possible range (percent of total possible score) and then averaging all items on the same scale together. However, the Medical Outcomes Trust and the Health Outcomes Institute versions of the RAND-36 have minor deviations in scoring for one or both of the pain and general health scales.

The reliability of the scale was tested in this study and proved to be good with Cronbach alpha coefficients 0.62 for the QoL scale.

**Tools IV: Numerical Pain scale:** This tool was used to assess the level of pain for patients. It was developed by Downie et al. (1978). It is the most familiar scale used by the emergency medical system for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.

**Tool V: Nursing educational program for patients with knee Osteoarthritis (teaching booklet):**

A nursing educational program was based on patient's needs, researcher experience and opinion of the medical and nursing expertise. This booklet aimed at providing osteoarthritis patients with sufficient amount of knowledge and skills for helping them dealing effectively with their problem.

It includes:

- Definition of osteoarthritis.
- Causes of osteoarthritis
- Signs and symptoms of osteoarthritis
- Physiotherapy, hydrotherapy, and the most important exercise that should be done.
- Dietary treatment of osteoarthritis and Food that should be avoid
- Alternatives treatment of osteoarthritis as the role of essential oils in osteoarthritis

**Content validity:**

The tool was rigorously revised by (5 experts) one expert in community health nursing and 2 experts in medical - surgical nursing department, 2 experts in psychiatric nursing department. Who reviewed the tools for clarity, relevance, comprehensiveness, understanding, applicability, and easiness, minor modifications were required.

**Ethical considerations:**

All research ethics principles were fulfilled according to *Helsinki Declaration(1983)*. The patients were briefed with the purpose of the study and the data collection procedures. They informed about their rights to refuse or withdraw at any time with no consequences. They were reassured about the confidentiality of any obtained information. Their agreement to fill the questionnaire was considered as consent to participate in the study. Data were assured anonymity and confidentiality by using code numbers

**Pilot study:**

A pilot study was done on 10% (8 pts.) of the sample to test the clarity and feasibility of the developed tool. It had also provided an estimate of the time needed to fill out the tools. The purpose of the pilot study was:

- Ensure the clarity of designed study tools.
- Examine the utility of designed tools.
- Identify any difficulties or problems needed to handle before applying it.

**Procedures**

The study proceeded using the following phases:

**▪ Assessment phase:**

- In this phase, the researchers were using the constructed tools to collect data about the patient's knowledge and experience related to osteoarthritis. The purpose of the study and its expectations were explained by the researchers to the studied patients before starting interviewing and data collection.
- Socio-demographic and medical data were established using tool I (parts 1 and 2).
- Assessment of patient's knowledge was done using (tool I part 3) pre and post nursing education.
- Assessment of Mishel Uncertainty in Illness, patient's Arthritis Helplessness Index and Mastery Scale were done using (tool II parts 1, 2, and 4) pre and postnursing education.
- Assessment of the patient's quality of life was done using (tool III) pre and postnursing education.

▪ **Planning phase :**

After determining the objectives of nursing education, the educational program was designed by the researchers in Arabic language in light of the literature review. It was revised, organized and the content validity was checked and it prepared according to patients' educational needs. It included knowledge about osteoarthritis and majors guidelines to control of pain (four sessions).

▪ **Implementation phase:**

- Patients were divided into small groups (3-5 patients/session) each group perceived the same nursing education content using the same teaching strategies and handout.
- Each session lasted for not less than one hour.
- Explanation of nursing educational booklets using PowerPoint presentation, discussion, demonstration, and re-demonstration was also conducted during each session.
- Implementation of nursing education content divided into two types of sessions: educational and training sessions.
- The first two sessions were covered general and specific objectives of nursing education, knowledge about osteoarthritis was covering; types, causes, complications both early and late complications, adaptation for life with diseases.
- The second two sessions covered nursing education on nutrition for patients, managing physiological and psychological problems with diseases, and how to cope with pain.
- After each session, there was 5-10 min for discussion & feedback.
- The researcher used pictures and diagrams to help them retain the learned material.
- and were collected using the same study tools.

▪ **Evaluation phase:**

- It aimed to reassess patients after the implementation of a nursing educational program to identify progress in terms of differences in their level of response from baseline.
- It was done 3 months after the implementation of nursing education for knowledge and practice and after 3 months for the quality of life by using the same tools used in the pretest period.
- Comparison between the collected data before and after the implementation of nursing education was done to determine the effectiveness of nursing education in the improvement of quality of life for patients with osteoarthritis.
- Follow up and assessing patients help to detect transient changes, increase patients' adaptation and compliance to the nursing education.

**Statistical design:**

The data were tested for normality using the Anderson-Darling test for homogeneity variances before further statistical analysis. Categorical variables were described by number and percent (N, %), where continuous variables described by the mean and standard deviation (mean, SD). Chi-square and Fisher exact tests used to compare categorical variables where compare continuous variables by t-test. A two-tailed  $p < 0.05$  was considered statistically significant. All analysis was performed with the IBM SPSS 23.0 software.

**3. RESULTS**

**Table 1: Percentage distribution of demographic data for patients participant n=80**

Variables	N	%
<b>Age</b>		
Mean ±SD	47.50±12.18	
<b>Sex</b>		
• male	31	38.8
• female	49	61.3

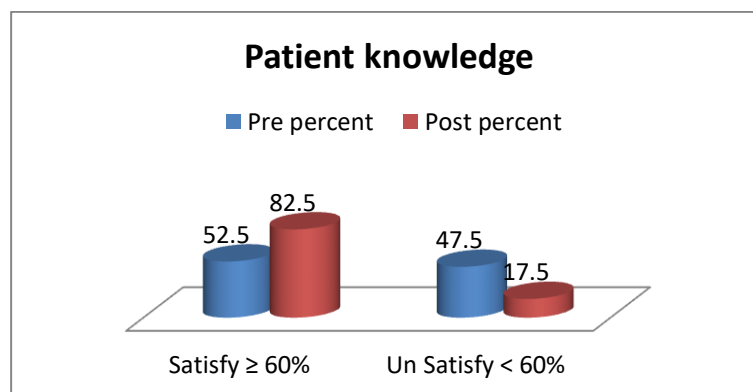
Marital status		
• single	11	13.8
• married	54	67.5
• wid\divorce	15	18.8
Occupation		
• no working	27	33.8
• office work	23	28.8
• handwork	30	37.5
Residence		
• urban	44	55.0
• rural	36	45.0
Number of children		
	3.72±1.55	

**Table 1:** This table showed that: The study sample involved 80 patients participants whose mean age was 47.50±12.18years. More than half of them were females (61.3%), married (67.5%). More than one-third of them were hand workers (37.5%) and living in an urban area (55.0%).

**Table 2: Percentage distribution of medical data for a patient participant (n=80)**

Variables	N	%
Pain level		
• continuous	28	35.0
• Intermittent	52	65.0
Pain with		
• movement	58	72.5
• rest	22	27.5
Pain level		
• mild	10	12.5
• moderate	48	60.0
• sever	22	27.5
Treatment		
• medication	71	88.8
• physiotherapy	9	11.3

**Table (2):**indicated that more than half of patients experiencedintermittent pain (65.0%), the pain increased with movement (72.5%) and (88.8%)of them their pain relieved with medication.



**Figure (1):** Percentage distribution of total knowledge for the patient participant before and after nursing education n=80

**Figure (1):** indicated that more than half of patients had unsatisfactory knowledge about osteoarthritis before the nursing education while the majority of them (82.5%) had a satisfactory level of knowledge after implementation of the nursing education.

**Table 3: Percentage distribution of Mishel Uncertainty in Illness scale pre and post-implementation of nursing education (n=80):**

Items	Follow up	Mean±SD	p.v
1. I do not know what is wrong with me	Pre	3.75±0.803	.483ns
	Post	3.83±.770	
2. I have many questions without answers	Pre	3.82±.689	.175ns
	Post	3.96±.583	
3. I'm not sure if my illness is getting better or worse	Pre	3.53±.927	.050*
	Post	3.81±.828	
4. It is not clear to me how bad my symptoms maybe	Pre	3.66±.899	.001**
	Post	4.125±.801	
5. The explanation they give about my situation seems unclear to me	Pre	3.46±.953	.028*
	Post	3.08±1.171	
6. The purpose of care provided to me is obvious to me	Pre	3.47±.967	.013*
	Post	3.85±.929	
7. When I suffer symptoms, they continue to change unexpectedly	Pre	3.80±.801	.547ns
	Post	3.87±.769	
8. My symptoms are still changing in a way I do not expect	Pre	3.67±.838	.388ns
	Post	3.78±.806	
9. I understand everything explained to me	Pre	3.15±.956	.027*
	Post	3.51±1.090	
10. Doctors tell me things can have many meanings	Pre	3.60±1.050	.538ns
	Post	3.70±.998	
11. The care I receive is so complex that it is unimaginable	Pre	3.43±1.100	.141ns
	Post	3.68±1.038	
12. It is difficult to tell if the care or medications that I am receiving help	Pre	3.32±1.099	.049*
	Post	3.65±.969	
13. Because of my unpredictability, I cannot plan for the future	Pre	3.38±1.024	.537ns
	Post	3.28±1.021	
14. My illness is always changing: I have good days and bad ones	Pre	3.72±.856	.005**
	Post	4.05±.571	
15. I have received many different opinions about what my problem is	Pre	3.65±.994	.422ns
	Post	3.77±.967	
16. I do not know exactly what will happen to me	Pre	3.63±.917	.218ns
	Post	3.81±.872	
17. I usually know whether my day would be good or bad	Pre	3.37±.932	.274ns
	Post	3.53±.940	
18. The results of my tests are not consistent in one format	Pre	3.17±1.122	.188ns
	Post	3.40±1.026	
19. The effectiveness of care provided to me is not specific	Pre	3.38±1.108	.002**
	Post	3.88±.885	
20. I can generally predict the course of my case	Pre	2.96±1.072	.001**
	Post	3.88±.616	
21. What I can do and what I cannot do is changed because of my condition	Pre	3.68±.922	.007**
	Post	4.03±.664	
22. I'm sure they will not find anything abnormal for me	Pre	3.33±.856	.001**
	Post	3.81±.713	
23. The probability of success of the care I receive here is known	Pre	3.33±.745	.001**
	Post	4.07±.309	



24. They did not give me a specific diagnosis	Pre	3.37±.862	.018*
	Post	2.92±1.438	
25. Physical fatigue is predictable, I know when things will get better or worse	Pre	3.20±1.048	.001**
	Post	4.01±.490	
26. Diagnosing a specific case will not change	Pre	3.150±.901	.001**
	Post	4.01±.435	
27. The seriousness of my case has been determined	Pre	3.00±1.031	.001**
	Post	4.01±.463	
28. Doctors and nurses use everyday language so that I can understand what they are saying	Pre	3.35±1.021	.001**
	Post	4.07±.382	
<b>Total Mishel uncertainty in illness total score (28 to 140)</b>			
<b>Less uncertainty or greater certainty</b>	Pre	96.43±12.44	.001**
	Post	105.48±7.99	

**Independent t-test**      \*\*= highly significance, p≤0.01   \* = highly significance, p≤0.05   ns = not significance, p>0.0

**Table 3:** This table showed that there were a statistically significant differences regard all items of Mishel Uncertainty in Illness scale pre and post-implementation of nursing education except 1, 2, 7, 8, 10, 11, 13, 15, 16, 17, 18, with ns = not significance, p>0.0

**Table 4: Percentage distribution of Arthritis Helplessness Index for patient participant before and after education (n=80)**

Variables	Follow up	Str. disagree		disagree		Agree		Strong agree		P.v
		N	%	N	%	N	%	N	%	
1. Arthritis controls my life	pre	-	-	18	22.5	38	47.5	24	30.0	.05*
	Post	-	-	7	8.8	46	57.5	27	33.8	
2. Dealing with myasthenia is largely my responsibility	pre	-	-	14	17.5	49	61.3	17	21.3	0.001**
	Post	-	-	0	0	61	76.3	19	23.8	
3. I can relieve my pain by calm and relaxing	pre	-	-	23	28.8	46	57.5	11	13.8	0.001**
	Post	-	-	3	3.8	64	80.0	13	16.3	
4. Often, it seems to me that pain hurts me in terms of I do not know	pre	-	-	15	18.8	56	70.0	9	11.3	0.001**
	Post	-	-	0	0	70	87.5	10	12.5	
5. If you do all the right things, I can treat my arthritis successfully	pre	-	-	22	27.5	40	50.0	18	22.5	0.001**
	Post	-	-	2	2.5	60	75.0	18	22.5	
6. I can do a lot of things myself to deal with arthritis	pre	7	8.8	28	35.0	36	45.0	9	11.3	1.00NS
	Post	7	8.8	28	35.0	36	45.0	9	11.3	
7. When it comes to arthritis, I feel that I can only do what my doctor asks me to do	pre	-	-	24	30.0	43	53.8	13	16.3	0.33ns
	Post	-	-	16	20.0	50	62.5	14	17.5	
8. When I manage my personal life well, the inflammation of my joints does not ignite much	pre	3	3.8	36	45.0	24	30.0	17	21.3	0.002**
	Post	0	0	19	23.8	46	57.5	15	18.8	
9. I have a great ability to control my pain	pre	10	12.5	28	35.0	28	35.0	14	17.5	0.002**
	Post	8	10.0	10	12.5	50	62.5	12	15.0	
10. I will feel helpless if I cannot rely on other people to help my arthritis	pre	-	-	33	41.3	37	46.3	10	12.5	0.001**
	Post	-	-	9	11.3	61	76.3	10	12.5	
11. Usually, I can tell when my arthritis will start	pre	-	-	35	43.8	30	37.5	15	18.8	0.001**
	Post	-	-	13	16.3	52	65.0	15	18.8	
12. No matter what I do or how difficult it is to try, I do not seem to be comfortable with my arthritis	pre	-	-	31	38.8	31	38.8	18	22.5	0.002**
	post	-	-	12	15.0	50	62.5	18	22.5	
13. I adapt effectively with myositis	pre	4	5.0	35	43.8	29	36.3	12	15.0	0.001**

	post	2	2.5	13	16.3	52	65.0	13	16.3	
14. It seems that fate and other factors beyond my control affect my arthritis	pre	5	6.3	24	30.0	38	47.5	13	16.3	0.09ns
	post	0	0.0	20	25.0	47	58.8	13	16.3	
15. I want to know as much as I can about arthritis	pre	-	-	23	28.8	39	48.8	18	22.5	0.75 ns
	post	-	-	19	23.8	43	53.8	18	22.5	
<b>Feeling Arthritis Helplessness( total score) 15-60</b>										
<b>Feeling Arthritis Helplessness</b>		Means ±SD								0.001**
	Pre	42.137±6.135								
	post	45.237±4.531								

**Chi-Square Tests and Independent t-test**      \*=Significant difference, \*p≤0.05      Ns= Non significant difference p<0.05      \*\*= highly significance , p≤0.01

**Table 4:** This table indicated that there was a statistically significant difference regarding all items of Arthritis Helplessness Index pre and post-implementation of nursing education with p≤0.001.

**Table 5: Percentage distribution of Mastery Scale for patient participant before and after education (n=80)**

Variables	Follow up	Str. disagree		disagree		Agree		Strong agree		p.v
		N	%	N	%	N	%	N	%	
I have little control over things that happen to me	pre	2	2.5	15	18.8	49	61.3	14	17.5	0.008**
	Post	0	0.0	3	3.8	63	78.8	14	17.5	
There is no way I can address some of the problems I face	pre	2	2.5	22	27.5	47	58.8	9	11.3	0.001**
	Post	0	0.0	2	2.5	69	86.3	9	11.3	
I cannot do much to change many important things in my life	pre	2	2.5	34	42.5	37	46.3	7	8.8	0.03*
	Post	0	0.0	20	25.0	53	66.3	7	8.8	
I often feel very helpless in dealing with the problems of life	pre	2	2.5	31	38.8	28	35.0	19	23.8	0.62ns
	Post	1	1.3	25	31.3	35	43.8	19	23.8	
Sometimes I feel driven in life	pre	3	3.8	24	30.0	41	51.3	12	15.0	0.37ns
	Post	1	1.3	17	21.3	50	62.5	12	15.0	
What will happen to me in the future depends on myself often	pre	5	6.3	23	28.8	39	48.8	13	16.3	0.001**
	Post	0	0.0	2	2.5	65	81.3	13	16.3	
I can do almost anything I decide in myself to do	pre	3	3.8	29	36.3	39	48.8	9	11.3	0.001**
	Post	0	0.0	2	2.5	69	86.3	9	11.3	
<b>Mastery Scale total score7-28</b>										
<b>Mastery Scale total score</b>		Means ±SD								0.001**
	pre	19.33±3.260								
	Post	21.10±2.452								

**Chi-Square Tests and Independent t-test**

\*=Significant difference, \*p≤0.05      Ns= Non significant difference p<0.05      \*\*= highly significance , p≤0.01

**Table 5:** This table shows that there was a statistically significant different regard all items of the Mastery Scale for patient participants pre and post-implementation of nursing education with p≤0.001.

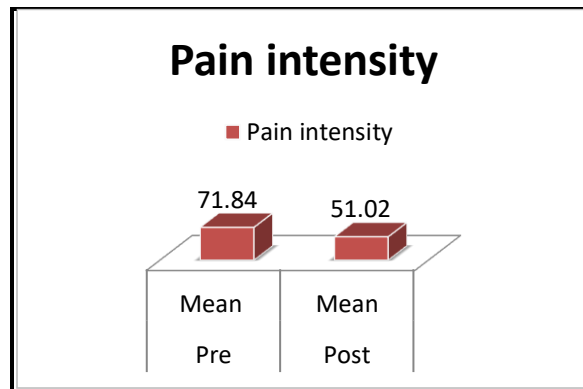


Figure (2) Percentage distribution of pain intensity in osteoarthritis patients before and after education n=80

Figure (2):this figure indicates that the mean score of pain intensity post implementing nursing education was reduced compared with the mean score pre-nursing education implementation.

Table (6): Frequency distribution of total QOL domains for patient participant before and after education n=80

Variables	N	pre	Post	p.v
		Means ± SD	Means ± SD	
Activities during a normal day	80	17.51±5.96	20.45± 5.03	0.001**
Physical health	80	1.33±1.51	2.66± 1.33	0.001**
Psychological health	80	1.01± 1.71	1.09±1.17	0.001**
Physical and psychological health	80	40.87±8.93	45.40±12.83	0.01*
Total score QOL	80	89.00±13.093	95.41±15.922	.006**

Independent t-test\*=Significant difference, \*p≤0.05 Ns= Non significant difference p<0.05 \*\*= highly significance , p≤0.01

Table (6):This table declared that there were a statistically significant differences regardingto all domains of QOL for patient participants pre and post-implementation of nursing education with p≤0.01.

Table (7): Correlation between demographic data, Mishel Uncertainty,pain intensity and quality of life. n =80

Variable's	Spearman's rho Correlations								
	Follow up	Knowledge		Mishel Uncertainty		pain intensity		quality of life	
		Cor.	Sig.	Cor.	Sig.	Cor.	Sig.	Cor.	Sig.
Age	Pre	.137	.225	.113	.317	.312	.027	.501**	.000
	Post	-.192	.087	.088	.435	.126	.339	.483**	.000
Sex	Pre	-.154	.173	-.101	.372	-.172	.233	.145	.201
	Post	.116	.308	-.071	.533	-.044	.739	-.033	.773
Marital status	Pre	.276*	.013	.062	.584	.367**	.009	.273*	.014
	Post	-.045	.689	.068	.547	.058	.660	.167	.138
Occupation	Pre	.036	.752	-.061	.591	-.262	.066	-.339**	.002
	Post	.317**	.004	-.011	.921	.051	.701	-.296**	.008
Residence	Pre	.318**	.004	.331**	.003	.070	.629	.142	.210
	Post	-.126	.266	.324**	.003	-.173	.186	.360**	.001

Correlation is significant at the 0.01 level (2-tailed).\*\* Correlation is significant at the 0.05 level (2-tailed).\*

Table (7): This table showed that: A positive correlationsamong age, occupation, residence and quality of life at pre and post implementing nursing education, with knowledge.While there was no relation betweenpain intensity and demographic dataexcept with marital status at pre-intervention.

**Table (8): Correlation between patients’ knowledge, Mishel Uncertainty, pain intensity, and quality of life scales(n=80).**

Variable's	Spearman's rho Correlations								
	Follow up	Knowledge		Mishel Uncertainty		pain intensity		quality of life	
		Cor.	Sig.	Cor.	Sig.	Cor.	Sig.	Cor.	Sig.
Mishel Uncertainty	Pre	.092	.416	-----	-----	.122	.401	.131	.245
	Post	-.112	.323	-----	-----	-.185	.157	.181	.109
pain intensity	Pre	.084	.560	.122	.401	-----	-----	.600**	.000
	Post	.509**	.000	-.185	.157	-----	-----	-.121	.357
quality of life	Pre	.042	.712	.131	.245	.600**	.000	-----	----
	Post	-.215*	.056	.181	.109	-.121	.357	-----	----

**Table (8):** This table declared that a Positive correlations among knowledge, pain intensity and quality of life pre and post implementing nursing education was detected. Also, a Positive correlation was found between quality of life and pain intensity pre implementing nursing education.

#### 4. DISCUSSION

Osteoarthritis, a progressively destructive joint disease causing varying degrees of unrelenting pain and excess suffering is highly prevalent among all older populations (Sinusas, 2017). The study aimed to assess patients’ knowledge about Osteoarthritis, design a nursing educational program for patients with Osteoarthritis and evaluate the effect of nursing education on uncertainty, mastery, control of pain and quality of life (QOL) of knee osteoarthritis patients.

Eighty patients were involved in the study their mean age was 47.50±12.18 years. More than half of them were females, married. More than one-third of them were hand workers and living in an urban area. Amoako and Pujalte (2014) were agreed with the study results and revealed that, the patients' participant' mean age was 40+ years old, most of the cases of (OA) occur in women, frequently starting at childbearing age. Also, Kozora et al. (2015), indicated that the majority of the sample were females whereas only a few were males. The current study revealed that just more than half of the sample were married, which constituted a big problem for their future a consequence would affect their self-esteem. This result was agreeable with Bennell et al., (2018), whose sample showed that just more than half of the sample was married.

The current study revealed that more than half of patients experienced intermittent pain, the pain increased with movement and the majority of them their pain relieved with medications. Creedon and O’Regan, (2010) agreed with the current study results as they mentioned that “Pain is the most common symptom experienced for patients with OA, often detrimentally impacting on their ability to cope with this progressive condition. Control of pain is essential, but depends not only on analgesic treatment but also on the many other aspects of care provided by the health professional”. Hunter and Riordan (2014) disagreed with this results as they reported that “Eighty-seven percent of respondents reported that their pain tended to change in intensity, with exercise and cold weather producing significantly increased levels of pain”.

Also, there was a positive correlation between the quality of life and pain intensity pre implementing nursing education. Bartley et al, (2017) reported that “It is essential to determining the limitation in physical activity of any individual with OA, as pain plays a significant role in how an individual copes with this condition daily”.

More than half of nurses have unsatisfactory knowledge about osteoarthritis before the nursing education while the majority of them had a satisfactory level of knowledge after the implementation of nursing education. This result was supported by a study carried out by Sinikallio et al., (2018) who observed that nearly two-thirds of patients having osteoarthritis having statistically significant differences regarding their knowledge about osteoarthritis. Also, Witjeset al., (2017) stated that more than half of the mothers having osteoarthritis gain knowledge about the osteoarthritis after program intervention

There were a statistically significant differences regarding all items of Mishel Uncertainty in Illness scale pre and post-implementation of nursing education except some insignificant questions with  $p > 0.01$ . From the researcher's point of view, this may occur because the patients gain knowledge and practice regarding the disease and became having self-confidence that increases their quality of life. This result was supported by a study carried out by van Asselt (2016) who

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observed that nearly two-thirds of patients with osteoarthritis having statistically significant difference regarding their Mishel Uncertainty scale after program intervention.

Regarding the Arthritis Helplessness Index and Mastery Scale, the results of the current study illustrated that the sample had a highly statistically significant difference =  $P < 0.001$ . From the researchers' point of view, patients felt helpless when they believe that they have little control over a situation and any efforts they may be made to resolve their problems will be unsuccessful. High levels of helplessness are associated with greater pain, depression, and disability. The chronic nature of OA, our poor understanding of its cause, and our inability to correct entrenched health beliefs about the prognosis and management of OA foster feelings of helplessness. So, patients have osteoarthritis stay away from society to avoid embarrassment. Besides, patients have social isolation as well as financial needs, suffer from the unavailability of suitable treatment, suffer from the high cost of medications and suffer from high prices of physical therapy.

This result was supported by *Fiatarone, (2017)* who clarified that two-thirds of the patients have osteoarthritis improved their condition and gain more tolerance to face their problem after an intervention. Also, the results revealed that the sample has a highly statistically significant difference  $P < 0.001$  regarding Mastery Scale after intervention before than the program because the patients have increased self-confidence in their ability to perform tasks, achieve certain goals and increase independence after the program.

Regarding the quality of life, the current study revealed that, there was a statistically significant difference regarded to all domains of QOL for the participants pre and post-implementation of nursing education with  $p \leq 0.01$ . *Veale et al., (2008)* were disagreeing with the present study as they found that, patients diagnosed with OA reported a significantly reduced quality of life relative to people who fulfilled the criteria for OA but had not yet been informed of their 'diagnosis'. This would appear to indicate that psychological factors play a major role in the pain and disability associated with arthritis, and highlights the need to address psychosocial health in any effective patient-centric management program.

However, *Sakalauskien and Jauniaikien, (2010)* agreed with the study results as they reported that "Given that osteoarthritis, the fourth most common cause of loss of function leading to disability among adults in most developed countries is irreversible, and does not respond well to medical intervention, efforts to limit, reduce, or prevent osteoarthritis disability appear essential in efforts to avert undue suffering, and to foster the patient's desire to remain independent". Also, *Bennell et al, (2012)* mentioned that "This is borne out in the finding that almost half of the patients regard their inability to carry out activities of daily living as the worst impact of their arthritis. Stairs, jar lids, cleaning, and dressing were singled out as being particularly problematic, with the majority of respondents requiring help performing the activity, or avoiding it entirely".

## 5. CONCLUSION

Based on the results of the present study, it can be concluded that:

- More than half of nurses have unsatisfactory knowledge about osteoarthritis before the nursing education, while the majority of them have a satisfactory level of knowledge after the implementation of nursing education.
- There was a statistically significant differences regarding all items of Mishel Uncertainty in Illness scale pre and post-implementation of nursing education with  $p \leq 0.001$ .
- There was a statistically significant difference with all items of Arthritis Helplessness Index pre and post-implementation of nursing education with  $p \leq 0.001$ .
- There was a statistically significant differences related to all items of Mastery Scale for patient participants pre and post-implementation of nursing education with  $p \leq 0.001$ .
- The mean score of pain intensity post implementing nursing education was reduced compared with the mean score pre-nursing education implementation.

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- There was a statistically significant differences regarding all domains of QOL for patient participants pre and post-implementation of nursing education with  $p \leq 0.01$ .
- A Positive correlation between knowledge, pain intensity and quality of life pre and post implementing nursing education was detected. Also, a Positive correlation was found between quality of life and pain intensity pre implementing nursing education.

### 6. RECOMMENDATIONS

- Availability of relevant written and visual information in OA clinics or out patients to facilitate educating patients about proper coping with osteoarthritis.
- Further studies on larger samples from different geographical areas in Egypt to generalize the results.

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