

Assessment of Self-Efficacy among Patients with Knee Osteoarthritis

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Abstract

Background; Osteoarthritis is the most common type of arthritis and one of the chief causes of disability. **Aims of the study;** is to assess self-efficacy among patients with knee osteoarthritis. **Research design;** descriptive, research design was utilized to conduct this study on a sample of 240 adult knee osteoarthritis patient of both sex, the study was conducted at Orthopedic outpatient, rheumatoid clinic, and Orthopedic inpatients ward at Sohag University Hospital. **Tool;** Tool I: Patient's structure interview It consists of two parts: 1 -Socio-demographic Data 2- Medical History, Tool II: Knee Degeneration Scale Kellgren and Lawrence, Tool III: Knee Injury and Osteoarthritis Outcome Score. **Results;** the highest percent of studied sample were females, their age ranged from forty to fifty years with mean (43.29±9.99) , majority of patients were married, more than one third of patients were illiterate and secondary education. As regards to body mass index more than two fifths of patient were obese, regarding the occupation more than two third of patient were office work. **Conclusion;** knee osteoarthritis patients exposed to several problem affected their life and improving patients awareness about self-efficacy can favorable affect the incidence of these problem. **Recommendations:** Organize educational program for meeting patient's information about knee osteoarthritis include causes, risk factor and management of disease and make a booklet include health habits to protect them self

Key words: Knee Osteoarthritis, Osteoarthritis, Self-efficacy

Introduction

Osteoarthritis is a degenerative joint disease, which affects the articular cartilage. It is most likely affect the joints that have been frequently stressed throughout the years including the knees, hips, fingers, and lower spine region. Osteoarthritis is considered one of the ten most disabling diseases in developed countries. **WHO,(2020)**. Knee Osteoarthritis is the most common source of disability and joint pain in adults. **Lee, et al., (2016)**.

Osteoarthritis is associated with pain and disability, high treatment costs, decreased productivity, and absence from work and thus has a substantial and growing burden on society **Sasaki &et al , (2020)**. Osteoarthritis (OA) is the most common type of arthritis and one of the chief causes of disability. This deteriorating and progressive joint disease affects around 250 million people around the world and more than 27 million people in the United States **Mora, Przkora, & Almeida, (2018)**.

Osteoarthritis affects people of all ages with different levels of physical activity and the knee is among the joints most commonly affected **Vos &et al ,(2017)** .Joint pain is the leading clinical symptom of OA, but the pain intensity is not always concordant with the radiological degree of bone alterations in the affected joints. Therefore, another pain generator in addition to the structural changes of cartilage and bone was assumed **Yoo, Kim& Kim (2018)**.

Knee osteoarthritis (KOA) symptoms can vary depending on the cause of the problem. The widespread symptom of KOA is pain around the knee joint. Pain may be dull, sharp, constant, or intermittent. Pain can vary from mild to agonizing, The Range of motion can be decreased and the practitioner may hear grinding sounds and will report muscle weakness, Swelling, locking, and giving way of the knee are common problematic symptoms. **Lespasio, et al. (2017)**.

The increasing prevalence of knee OA may present serious new health issues. Previous studies have reported various risk factors associated with knee OA such as older age, female sex, and hypertension, raised glucose, obesity, history of knee injury, varus/valgus malalignment, quadriceps muscle strength, and physical workload, **Yoo, Kim& Kim (2018)**.

The European League against Rheumatism (EULER) and Osteoarthritis Research Society International (OARSI) recommendations introduced technical aids, adaptations and work in the components to be considered. High-level of analgesics and surgical treatments are a last option. The latest European guidelines recommend a non-pharmacological intervention containing a self-management education program, weight loss and an adapted exercise program for KOA. A pharmacological treatment may be associated if necessary **Coste, et al. (2019)**.

The concept of self-efficacy mean the belief that one can confidently execute a task, the person's

belief in his/her ability to organize, and implement the measures required to achieve the treatment aims which in turn can help with the improvement of social and motor functions. In addition, it has been noted that people with higher self-efficacy make more efforts to manage pain **Mirmaroorfi, et al. (2019)**.

Self-efficacy has been shown to be correlated with many qualities containing self-esteem, conscientiousness, goal setting, and goal commitment. It has been recommended that self-efficacy most closely captures the idea of confidence. Self-efficacy can be employed as a simply quantifiable proxy for the more subjective term confidence. **Elfenbein, (2016)**.

Enhancing self-efficacy has become essential in many chronic diseases and in arthritis management interventions because of its effect on health behaviors and health status and because of its ability to be modifiable. Focusing self-efficacy to improve coping, communication, and control after self-management program, tools are necessary in order to assess and follow self-efficacy in self-management program. **Bareyre, et al. (2019)**.

Significance of the study

The lifetime risk of developing symptomatic knee OA is estimated to be 45% (40% in men and 47% in women) based upon Johnston County OA Project data, with risks increasing to 60.5% among the obese, which are double the risk of those who are of normal or underweight. It is reported that 6% of adults suffer from clinically significant knee OA with the prevalence increasing with each decade of life **Mohamed & Mohamed, (2019)** ; see also **Murphy, et al. (2008)**

The total age-standardised prevalence of knee osteoarthritis increased from 2.0% in 1996 to 3.6% in 2015. In 2015, the prevalence rates in the 10 year age groups from the 45–54 years age group onwards were (3.1 - 13.9%). **Spitaels, et al. (2019)**. Prevalence in Egypt is unknown because there is no recording system in the hospitals and it is one of limitation that forces the researchers.

Osteoarthritis brings discomfort and disability due to chronic joint pain, the range of motion can be decreased and the practitioner may hear grinding sounds, and may report muscle weakness, swelling, locking, and giving way of the knee are common problematic symptoms. **Iespasio , et al. (2017)**. All of this will affect patients ADL and self-efficacy. So this study will be carried out to evaluate self-efficacy among patients with knee osteoarthritis.

Aim of the study

The aim of this study is: To assess self-efficacy among patients with knee osteoarthritis.

Research design

Descriptive, research design was utilized to conduct this study on a sample of 240 adult knee osteoarthritis patient of both sex, the study was

conducted at Orthopedic outpatient, rheumatoid clinic, and Orthopedic inpatients ward at Sohag University Hospital.

Inclusion criteria

- Patients diagnosed with knee osteoarthritis for more than six months
- Age ranged from 18 years to till 65 years old.

Exclusion criteria

- Patients on a rehabilitation program and who have medical disorders as mental deterioration, dementia or delirium, neurovascular disorders, osteoporosis, metabolic disorders as thyroid and parathyroid dysfunction will be excluded from this study.

Tools of Data Collection

Three tools will be used to collect the necessary data for this study:

Tool I: Patient's structure interview: this tool will be developed by researcher based on national and international literature. It consists of two parts:-

- I- Socio-demographic Data: This part will include information about patient's age, sex, marital status, occupation and level of education.
- II- Medical History: Involve both medical & surgical history information.

Tool II: Knee Degeneration Scale Kellgren and Lawrence, (1954) (KL)

The system uses four grades (0-4) to assess the severity of disease (Kellgren, & Lawrence, 1957). It was done by doctor to confirm the subjects in the study who was diagnosed with Knee OA.

Grade 0: No abnormal finding

Grade 1: Mild degenerative changes, minute osteophytes

Grade 2: Mild knee OA, definite osteophytes

Grade 3: Moderate knee OA, moderate joint-space narrowing and definite osteophytes

Grade 4: Severe knee OA, severe joint-space narrowing with subchondral sclerosis

Tool III: Knee Injury and Osteoarthritis Outcome Score (KOOS)

The KOOS is self-administered questionnaire with five domains namely: Pain and contain nine items, Symptoms and contain seven items, ADL function and contain 17 items, Sport and recreation function and contain five items, Quality of life and contain four items.

Knee Injury and Osteoarthritis Outcome Score (KOOS) meets basic criteria of outcome measures and can be used to evaluate the course of knee injury and treatment outcome. Knee Injury and Osteoarthritis Outcome Score (KOOS) is patient administered, the format is user-friendly and it takes about 10 minutes to fill out.

Almangoush et al, 2013 translated the English version of KOOS into Arabic version and revealed that the Arabic KOOS is a reliable and valid instrument that can be self-administered to Egyptian patients.

KOOS: The KOOS's five patient-relevant dimensions are scored separately; Pain (nine items); Symptoms (seven items); ADL function (17 items); Sport and recreation function (five items); and Quality of life (four items).

Scoring system: Likert scale is used and all items have five possible answer options scored from 0 (no problems) to 4 (extreme problems) and each of the five scores is calculated as the sum of the items included.

Validity and Reliability

Content validity of the tools was reviewed by jury members of seven experts in the field of Medical-Surgical Nursing. While reliability was measured by using Alpha Cronobahch s' coefficient test.

Pilot study

A pilot study conducted on 10% of total number of patients to investigate and measure the feasibility, objectivity, applicability, clarity, adequacy, content validity and internal consistency of the study tools and to determine possible problem in the methodological approach or instrument. There was no modification were done in the tools after the pilot study was conducted, so that the involved numbers of pilot sample were added to the entry of the study sample.

Ethical considerations

Acceptance from the ethical committee at the Faculty of Nursing, Sohag University was obtained to conduct the proposed study. Participants have voluntary decision to participate in the study. Each participant was informed about the nature process on expected outcome. Participants have complete right to withdraw at any time without adverse impact and also obtaining the study results after its completion. Confidentiality was maintained as the information was coded using initials or numbers and wasn't accessed by anyone without taking permission of the participants and it was used only for the research purpose.

Data analysis

The collected data were coded for entry into the PC, scored, tabulated, computed and analyzed using statistical package for the social science (SPSS) program version 23 software. Descriptive statistics were used such as; frequency, percentages and variables mean to identify the average of the scores, and standard deviation, and inferential statistics such as person correlation to identify the relationship between these determinants.

Results

Table (1) Shows that patients' age ranged from 20 to 60 years. One third of patients were (34.6%) age group 40- >50 years. more than half of patients were females (64.6%). As regards to body mass index more than two fifths of patient were obese (44.2%), as regards to their level of education more than one third of patients (35%) were

illiterate, and (35%) secondary education, regarding the occupation more than two third of patient were (69.6 %) office work, majority of the sample (82.5%) was married, as regards to their length of time of work more than half patients had full time work (56.2%), regarding the level of physical activity majority of the sample (87.1%) was regular sport activity.

Table (2) Shows that more than one quarter of patient (29.2%) their duration of disease were ≥ 5 years, while more than three quarter of patients (75.8%) had family history of osteoarthritis, and more than three quarter of patients (77.9%) took analgesics as medical drugs for OA.

Table (3) Reveals that half of patients had moderate knee OA (50%), while more than one quarter of patient had mild knee OA (30%).

Table (4) Represents that there were highly significant difference between symptoms, activities of daily living and sport and recreation function domain and knee degeneration level $p=0.000$, while there were no significant statistical difference between pain, quality of life domain and knee degeneration level $p=(0.306), (0.075)$ respectively.

Table (5) Demonstrates that there were highly significant difference between age and all knee injury osteoarthritis outcome domains (pain, symptoms, activities of daily living, sport and recreation function, quality of life) $p=0.000^{**}$, respectively.

Section (I): Demographic characteristics of the studied sample.**Table 1: Frequency distribution of the studied sample regarding demographic characteristics of patients (n=240).**

	D	No.	%
Gender	Male	85	35.4
	Female	155	64.6
Age Mean ± SD	20<30 years	30	12.5
	30<40 years	54	22.5
	40<50 years	83	34.6
	50<60 years	73	30.4
	(43.29±9.99)		
Length of time of work	Full time	135	56.2
	Part time	105	43.8
BMI	≤ 18	6	2.5
	19 – 24	79	32.9
	25 – 29	36	15.0
	30 – 39	106	44.2
	≥40	13	5.4
Marital Status	Married	198	82.5
	Single	24	10.0
	Widow	18	7.5
Level of education	Illiterate	84	35.0
	Read and Write	30	12.5
	Secondary	84	35.0
	University education	11	4.6
	Post education studies	31	12.9
Occupation	Technical work	23	9.6
	Office /clerical	167	69.6
	House wife	35	14.6
	Other work	15	6.2
Level of physical activity	Professional sports activity	6	2.5
	Intensive sports activity	25	10.4
	Regular sport activity	209	87.1

-BMI: Body mass index.

Section (II): Medical data for patients.**Table (2): Frequency distribution of medical data of the study sample (n=240)**

	D	No.	%
Duration of disease	< 1 year	67	27.9
	1 ≤3 year	47	19.6
	3 ≤5 year	56	23.3
	≥5 years	70	29.2
Family history of osteoarthritis	Yes	182	75.8
	No	58	24.2
Medical drugs for OA	Analgesics	187	77.9
	Non steroidal anti-inflammatory drugs	77	32.1
	Slow-acting drugs for OA	6	2.5

OA: osteoarthritis.

(Table 3): Frequency distribution of the study sample regarding levels of knee degeneration (n= 240).

	No.	Percent %
Mild degenerative changes, minute osteophytes	36	15.0
Mild knee OA, definite osteophytes	72	30.0
Moderate knee OA, moderate joint-space narrowing and definite osteophytes	120	50.0
Severe knee OA, severe joint-space narrowing with subchondral sclerosis	12	5.0
Total	240	100.0

OA: Osteoarthritis, KL: Kellgren and Lawrence.

Table (4): Relation between knee injury and osteoarthritis outcome score (KOOS) and knee degeneration level. (n=240).

	Mild degenerative changes,	Mild knee OA,	Moderate knee OA,	Severe knee OA,	F	P. Value
	Mean±SD	Mean±SD	Mean±SD	Mean±SD		
-Pain	44.3±12.21	47.1±13.82	45.8±17.23	38.2±16.16	1.212	0.306
-Symptoms	52.0±14.80	51.3±15.84	45.7±17.69	30.4±15.34	6.859	0.000**
-Activities of daily living	46.1±12.68	43.9±10.86	38.0±13.13	37.3±9.07	6.201	0.000**
-Sport and recreation function	43.5±17.84	44.3±16.04	36.9±16.86	30.4±9.64	4.900	0.003**
-Knee-related quality of life	46.4±22.33	41.4±19.52	37.5±19.24	34.4±16.75	2.334	0.075

*Significant difference ($P \leq 0.05$). ** Highly significant difference ($P \leq 0.01$).

Table (5): Relation between age and knee injury and osteoarthritis outcome score (KOOS) among knee osteoarthritis patients (n=240).

	Age					F	P.value
	20<30 years	30<40 years	40<50 years	30 – 39	≤40		
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD		
Pain	60.6±14.2	53.3±9.4	43.8±13.6	36.9±13.6	26.7±4.3	44.59	0.000*
Symptoms	58.6±6.7	58.3±14.9	43.8±15.5	35.4±11.7	21.7±3.7	122.70	0.000*
Activities of daily living	52.9±8.5	49.5±6.3	39.5±13.5	35.5±10.8	20.8±3.1	41.25	0.000*
Sport and recreation function	55.0±10.7	51.2±10.6	38.0±17.1	29.7±9.5	10.4±5.2	86.85	0.000*
Knee-related quality of life	53.8±12.5	56.7±8.7	38.1±20.3	29.4±15.6	6.7±6.5	63.23	0.000*

*Significant difference ($P \leq 0.05$). ** Highly significant difference ($P \leq 0.01$). SD: standard deviation.

Discussion

The highest percentage of the studied patients their age ranged from forty to fifty years with mean age 43.29 ± 9.99 years. This result disagree with **Yoo, Kim & Kim (2018)** who reported that majority of studied patients their age was fifty to sixty years old. That may related to more than one third of patients were illiterate.

The present study findings showed that majority of patients were female and married. Regarding level of education it was found that more than one third of patients were illiterate. These finding was in line with **Mirmarooft et al (2020)** who showed that majority of studied patients were female and married and two third of them were illiterate.

The present study findings showed that more than two fifths of patients were obese. More than three quarter of patients had a family history of knee osteoarthritis. These finding was in line with **Ali (2019)** who showed that more than two third of patients were obese and one third of patients had past history of disease. That may related to majority of sample were female and illiterate and don't know the health habits of eating.

This study represents that more than one quarter of patient their duration of disease was ≥ 5 years and more than three quarter of patients took analgesics as medical drugs for OA. That reflects the sociocultural for majority of participant who seek to have medical treatment only one have moderate or severe manifestation due to poor financial status, and take analgesic as over the counter drug to decrease the symptoms.

As regarded level of physical activity the present study stated that the majority of the sample was regular sport activity. This result disagree with **Georgiev & Angelov (2019)** who showed that three quarter of patients with KOA do not achieve the recommended levels of physical activity. That reflects the sociocultural for majority of participant who prefer to walk to work.

As regarded level of knee degeneration level the present study stated that half of patients had moderate knee OA. These finding was in line with **Yoo, Kim & Kim (2018) and Foucher, Chmell, Courtney (2018)** who showed that majority of participants had moderate to severe OA, defined as a K-L grade of ≥ 3 .

This study represents that there were highly significant difference between symptoms, activities of daily living and sport and recreation function domain and knee degeneration level $p=0.000$, while there were no significant statistical difference between pain, quality of life domain and knee degeneration level $p=(0.306), (0.075)$ respectively. These finding disagree with **Kim, Park, (2019)** who showed that Kellgren-Lawrence scores were significantly correlated with KOOS scores for knee pain ($\rho=-.49, p<.01$), daily living function ($\rho=-.52, p<.01$), sports/recreation function

($\rho=-.46, p<.01$), and quality of life ($\rho=-.36, p<.01$). That may related to dissimilarity of symptoms and X ray among patients with knee osteoarthritis.

The present study findings showed that there were highly significant difference between age and all knee injury osteoarthritis outcome domains (pain, symptoms, activities of daily living, sport and recreation function, quality of life) $p=0.000^{**}$, respectively. These finding was in line with **Pitta, & et al, (2019)** who showed a significant difference between age and all knee injury osteoarthritis outcome domains ($P < .05$). that may related to positive relation between all KOOS domain and age.

Conclusion

Knee osteoarthritis patients exposed to several problems affected their life and improving patient's awareness about self-efficacy can favorable affect the incidence of this problem.

Recommendations

Organize educational program for meeting patient's information about knee osteoarthritis include causes, risk factor and management of disease and make a booklet include health habits to protect them self.

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