Sleep Quality and Daily Living for Elderly Patients Diagnosed with Knee Osteoarthritis

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Abstract

Background: Pain, stiffness, functional limitations are most common features associated with knee osteoarthritis (OA) can lead to challenges in performing activities of daily living (ADLs) and sleep quality. **Aim:** assess sleep quality and daily living for elderly patients diagnosed with knee osteoarthritis. **Design:** was used cross-sectional descriptive study. **Setting:** The study was conducted in the Orthopedic Outpatient Clinic of El-Fayoum General Hospital at Elfayoum City. **Sample**: A purposive sample was used; they were 72 Elderly patients 60 years old and over. **Tool:** Two tools were used to gather the data. Tool I: A self-administered questionnaire or structured interview for assessing socio-demographic data of patients, past & present medical history and knowledge. Second tool consists of 3parts (Pittsburgh Sleep Quality Index, Visual Analog Pain Scale, Knee Injury and Osteoarthritis Outcome Score. **Results:** The study results showed 50.0% were 70 years and more, 61.1% who bad sleeper, 25.3% experiencing always pain, 47.3% had sleep latency, 58.3% had short sleep period and statistically significant correlation among total knowledge, sleep quality and Koos. **Conclusion:** findings of the current study indicate approximately three-quarter of the studied patients had bad score of total score regarding KOOS and patients already had difficult in performing daily activities. **Recommendations:** The study recommended further research to rehabilitate elderly patients to self-manage their condition through creates effective health educational programs.

Keywords: Elderly, Osteoarthritis, Pain, Sleep.

Introduction

Osteoarthritis (OA) is the most prevalent degenerative disorder impacting elderly patients, marked by features such as cartilage breakdown or functional impairment in one or more joints, chronic pain leading to physical limitations; poor sleep quality, interference with daily activities, and psychological issues. The knee is typically the first joint to be affected, followed by the joints of the lumbar spine and hands. This condition may arise from both modifiable and non-modifiable risk factors, including advancing age, gender, obesity, and excessive strain on certain ligaments and joints **(Ali et al., 2022).**

A person's physical health can be significantly impacted by knee osteoarthritis (OA) and affects various aspects of joint tissues and general well-being, greatly affecting everyday activities and mobility. Persistent pain, physical restrictions, and feelings of depression can hinder a person's ability to participate in social, community, and work-related activities **(Wojcieszek et al., 2022).**

Insomnia and inadequate sleep quality are frequently linked with chronic pain disorders, including knee osteoarthritis. A notable proportion of individuals suffering from knee osteoarthritis, were around 60%, report experiencing pain at night. In elderly patients, about 80% express difficulties with both falling asleep and staying asleep, which are typical symptoms of insomnia in those with osteoarthritis (Pham et al., 2024). Over 264 million people of all ages worldwide experience depression. This condition can affect individuals from various backgrounds throughout their lives, but it is particularly pronounced among older adults **(Kumar et al., 2023)**.

Sleep disturbances are major comorbidity of KOA, with a prevalence rate of more than 70% and an emerging target for intervention and increasing quality of life. Pain-catastrophizing may exacerbate poor sleep, particularly short-term and/or fragmented sleep, which is believed to increase pain sensitivity in osteoarthritis. Pre-sleep anxiety is linked to poor sleep quality and is prevalent in both chronic pain and insomnia **(Dai et al., 2020; Riemann et al., 2022).**

Functional limitations related to knee OA that might make it difficult to complete daily living activities (ADLs), such as bathing, dressing, and household chores. Elders with knee OA may be able to bend their knees or maintaining balance, affecting their ability to self-manage these duties. This dependency on others or assistive devices can decrease their overall quality of life and increase the burden on caregivers **(Khalil et al., 2024).**

Elderly knee OA requires a multidisciplinary approach for effective therapy. It involves specialized

exercises that improve joint strength and flexibility, methods for alleviating pain like drugs or injections, mobility devices like walkers or canes, and home environment adjustments to increase accessibility and safety. Elderly people's general well-being can be enhanced and the effects of knee OA on daily activities can be lessened by addressing these concerns thoroughly **(Östlind et al., 2022).**

Health education encourages self-management techniques to help people live well with osteoarthritis. In order cope with daily symptoms and preserve function in spite of joint discomfort, nurses can help senior patients set realistic goals. This method promotes increased independence and a feeling of control over their health by offering helpful advice on how to carry out everyday tasks with the least amount of pain. By using these techniques, patients can enhance their resilience and build a positive attitude, both of which are vital to controlling their illness over many years **(Mihalko et al., 2024). Significance of the study:**

Healthcare systems are heavily burdened by knee OA, led to in substantial expenditures. Whatever the reason for obtaining care for unrelated diseases, research has shown that people with OA are more likely to be hospitalized. With 28% of these costs and 3% of all disease-related expenses, OA is a major contributor to healthcare expenses associated with musculoskeletal disorders **(Kiadaliri & Englund, 2021).**

Approximately eighty-five percent of people over 75 in Egypt have some form of osteoarthritis, with a prevalence of KOA of 8.5% in the population. Forty percent of people with the disease struggle with everyday tasks to the extent that they interfere with their social or job responsibilities. Additionally, about 29.5% of elderly females suffer from knee osteoarthritis due to the postmenopausal osteoporosis is part of age-telated changes among females **(Magni et al., 2021).**

Since they are crucial to the evaluation and treatment of senior patients with knee osteoarthritis, geriatric health nurses should pay closer attention to these patients' issues. According to Hassan et al. (2023), this highlights the necessity of creating an efficient educational program to assist senior citizens with knee osteoarthritis in managing their condition on their own **(Hassan et al., 2023)**.

Aim of the Study:

The aim of this study was to assess sleep quality and daily living for elderly patients diagnosed with knee osteoarthritis, through

1. Assessing elderly patients' knowledge regarding knee osteoarthritis.
2. Appraising sleep quality for elderly patients diagnosed with knee osteoarthritis.

3. Assessing studied patients diagnosed with knee osteoarthritis outcomes (stiffness, pain severity, physical disability, sports and recreational activity difficulty).

Research Questions

1. What is knowledge degree associated with knee osteoarthritis?
2. What is pain severity associated with knee osteoarthritis?
3. What is the sleep quality of studied patients diagnosed with knee osteoarthritis?
4. What is knee osteoarthritis outcomes (stiffness, pain intensity, physical dysfunction, sports and recreational activity difficult.

Subjects and Methods:

I. Technical Item:

Research design:

The study used cross-sectional descriptive research design.

Setting:

The search was carried out at Orthopedic Outpatient Clinic of Fayoum General Hospital at Fayoum City, Egypt. The Hospital composed of 14 clinics in first floor, Orthopedic Outpatient Clinic was included two rooms and four nurses and six doctors. The working in this clinic is 6 days per week from Saturday to Thursday from 9 am until 2 pm.

Type of Sample:

Data for this study was gathered during a three-month period (June 2024 to August 2024) & using a purposive sample. 115 older people with knee osteoarthritis included in the sample who were present at the study location during the study period made up the sample size **Yamane (1967)**. A 95 confidence level and p = 0.5 are assumed.

$$n = \frac{N}{1 + N\,(e)2}$$

n = sample size

N = population size is 115

e = 0, 05 is the level of precision.

$$n = \frac{115}{1 + 115\,(0.05)2}$$

$$n = 72$$

The actual size of sample was 72 elderly patients suffer from knee osteoarthritis through academic year 2022 – 2023.

Inclusion criteria:-

- The study was involved elderly patients who diagnosed with knee osteoarthritis.

-Patient age 60 years and older.

- The patients don't receive corticosteroid injection or past had stroke or other illness led to lower extremity dysfunction, knee replacement, administer sleep medication.

- The patients consented to participate in the trial and were able to answer questions adequately.

Data collection tools:

The researcher created an organized interviewing questionnaire.

Contained six parts:

Part I- Demographic data of studied patients diagnosed with knee

osteoarthritis (OA) such as; age, six, level of education, marital status, occupation before retirement, monthly income, place of living and number of family members.

Part II- Past and present medical history of studied patients diagnosed with knee osteoarthritis (OA) such as: medical history of older individuals with osteoarthritis of the knee, including comorbidities (history of chronic diseases), family history, osteoarthritis duration, symptoms, treatment plan, and body mass index (BMI). Body mass index (BMI) is calculated using the following formulas from **Castillo et al., (2012)** to show the degree of obesity:

- Underweight: less than 18
- Normal BMI: from 18 to 24.9
- Overweight: from 25 to 29.9
- Obese : from 30 to 34.9
- morbid obese : from 35and more

Part III- knowledge of Studied Patients The primary reason of osteoarthritis, risk factors, symptoms, complications, treatment, non-pharmacological intervention, and prevention were all evaluated in the questionnaire.

System of scoring:

The answers have been divided into 2 categories: incorrect and correct. Each incorrect answer received one point, while the right answer received two. The questionnaire consisted of seven questions, the total patients' knowledge scores (14 scores) were categorized as

follows:

- Unsatisfactory knowledge less than 50%
- Satisfactory knowledge more than or equal 50%

Part IV- Pittsburgh Sleep Quality Index) PSQI):-

The developers of the tool were **Buysse et al. (1989)**. A form of self-report was used to measure the amount and quality of sleep. The original version was designed to evaluate sleep reports over a month; the scale showed the frequency of sleep disturbances and whether or not they happened during the preceding month. Data about subjective sleep quality sleep latency, duration, efficacy, disruption, daytime dysfunction, and use of sleep medication.

System of scoring:

The scores of the seven components are gathered after each component's score falls between 0 and 3. A high total score, which ranges from 0 to 21, shows poor sleep quality greater than or equivalent to 5. (5 to 21) and less than five indicates good sleep quality.

Part V- The Visual Analog Pain Scale (VAS):-

Hayes and Patterson applied the pain rating scale for the first time in 1921, and **Delgado et al. (2018)** developed it. Validated severity of pain scale was based on self-reported assessments of symptoms and was administered using a composite line A 10-cm with the two ends of the scale—"no pain" at the left

end (0 cm) and "worst pain" at the right..

System of scoring: Calculated by the distance between the patient's recorded number and the zero point along a 10-cm length of pain intensity.

Part VI- Knee Injury and Osteoarthritis Outcome Score (KOOS):

This was a trustworthy and legitimate instrument. The origin of it **was (Roos et al., 1998)**. Five patient-relevant outcomes consisted of pain, symptoms, activities of daily living (ADL), sport and pleasure function, and quality of life It was designed to evaluate the results of the patients.

System of scoring:

Symptoms (7 items), stiffness (2 items), pain (9 items), ADL function (17 items), sport and recreation function (5 items), and quality of life (4 items) are the five patient-relevant features of the KOOS that are assessed independently. Every item on the Likert scale had five different answers, ranging from 0 (no problems) to 4 (severe problems). The sum of the five values is determined for each item.

Validity:

Three-person expert panel Review of community health nursing Face and content validity are tested using the data gathering tools field. The tools' accuracy, comprehension, relevance, phrases, length, framework, and overall appearance were all to be assessed by the experts for the comments, adjustments were made.

Reliability:

In order to estimate Cronbach's Alpha, the research instruments were examined for internal consistency using the pilot study reliability. The findings involved 0.745 for knowledge and 0.78 for the Pittsburgh Sleep Quality Index (PSQI). Also, the Knee Injury and Osteoarthritis Outcome Score (KOOS) was 0.82 and the Visual Analog Pain Scale (VAS) was 0.89.

Ethical consideration:

Before beginning, the suggested study was officially approved by Helwan University's Faculty of Nursing's Scientific Research Ethics Committee. In order to gain the trust and confidence of the nurses involved in the study, the researcher showed the goal of the investigation. Also, the study setting encourages effective learning, and the nurses gave their consent to take part.

II. Operational Item:

Pilot Study:

To evaluate the tools' usefulness, comprehensibility, and effectiveness, a Trial study work was carried out on % of the study pateints (7). And was excluded from the total sample No significant changes were discovered. The pilot's reliability was really high.

Field work:

- Helwan University's Dean of the Faculty of Nursing offered an official letter of consent for the study, which was addressed to the management of

the Orthopedic Out-patient Clinic at Fayoum General Hospital in Fayoum City. highlighting the study's goal of obtaining consent after building an atmosphere of trust

-At the start, the researcher announced her- self and describes the goal of study them to get their consent and cooperation. Each subject interviewed individually by the researcher.

-From June 2023 to September 2023, data was gathered twice a week (Monday through Wednesday) from 9 a.m. to 12 p.m. until the required sample was obtained.

-Elderly patients were interviewed, subjects gave their oral consent, and the study's purpose was explained. Each tool took around 20 minutes, and the researcher saw patients twice a week.

-The researcher took about 3 patients every day, which amounts to about six patients per week, or 24 patients per month, for a total of 72 patients.

Administrative item:

After description of the study goal and purposes, an informed consent was gained from the Dean of college of Nursing, Helwan University of higher education and manager of Elfayoum General Hospital ordering for collaboration and agreement to perform the research work.

IV. Statistical analysis:

After complete gathering the necessary data, evaluated using statistical Bundle for the Societal Discipline (SPSS), version 24 for examination. The P value

was set at 0.05. Descriptive statistics analyses as numbers, ratio, mean ±standard deviation (± SD), were used to illustrate the grades. Suitable inferential statistics such as ―F‖ test or t‖ test was used as well. Chai-square test (x)2 was taken for appraisal between qualitative variables. Spear mean association measures the strong point and the track of association between two graded variables. Regression analysis was hand-me-down after measuring for normal distribution, familiarity, and homoscedasticity and examination of variance for the complete regression models were finished.

Significance of findings:

-When P above 0.05, it is statistically insignificant difference.

-When P less than 0.05, it is statistically significant difference.

-Highly significant at p-value less than 0.01.

Results:

Table (1): Reveals that, demographic characteristics of studied patients who suffered from knee osteoarthritis. About 50.0% were 70 years and more, 74.01+ 6.043 is mean age ± SD. While sexes 63.9% of them were female, but education level 27.8% read and write, 25% had secondary education. Also marital statuses 38.9% were widow. Regarding to occupation before retirement 27.8 % of them employee also27.8% of them Manual work. 38.9% their income enough and

residence in urban. Regarding number of family members 30.6% of them no one.

Table (2): shows, 91.7% of these patients had comorbidities, with hypertension (47.2%), diabetes mellitus (55.6%), cardiac diseases (52.8%), obesity (50.0%). The duration of osteoarthritis was 41.7% for more than five years. Common symptoms included pain (25.0%), joint stiffness (11.1%), physical limitation (13.9%), redness and inflammation (25.0%). Regarding treatment, 30.6% followed a drug regimen.

Figure (1): reveals that, the total knowledge of patients regarding osteoarthritis of knee. Total knowledge of 70.6% of patients were unsatisfactory (less than 50%), but 29.4% had satisfactory total knowledge related to osteoarthritis ($\geq 50\%$).

Table (3): Shows that, patients' pain severity by using the Visual Analog Scale (VAS), represented 62.5%who suffered from moderate pain, while 30 % suffered from severe pain.

Table (4): shows that, 47.3% of the elderly patients in the current study went to bed every day between 8 and less than 10 am, according to the Pittsburgh Sleep Quality Index. Every night, 50.0% of them take you one to three hours to fall asleep. Additionally, 52.7% of them woke up between 5 and 7 am. However, 47.3% of older adults have a sleep latency of 30 to 60 minutes

each day, and 58.3% of them get less than 6 hours of true sleep at night.

Table (5) demonstrates the number of both good and bad sleepers based on PSQI. According to the results, 61.1% of people had poor sleep quality. (PSQI ≥ 5 scores)

Table (6): reveals that, the prevalence of swelling, always joint noises (grinding or clicking), and knee catching or hanging significantly (27.8, 27.8% and 19.4%), respectively. Additionally, the ability to straighten and bend the knee fully improved markedly, with "always" responses 25.0% and 27.8, respectively. And severity of joint stiffness after sitting, lying, or resting about 27.8%.

Figure (2): clarifies that; 7.0% of the elderly patients reported absence of knee pain, 25.3% of the elderly patients reported continuously feeling knee pain (always).

Table (7): Illustrates that, elderly patients who reported severe and extreme knees pain during different movements such as (twisting/pivoting, during in bed, sitting or lying, and standing straight), (25.0%, 28%, 30.6%, 36.1%, 27.8% and 30.6%) respectively.

Table (8): shows that, 75.0% of severe knee pain experienced during ascending or descending stairs, moving from sitting, standing and lowering to the ground or carrying something.

Table (9): shows that, High-impact exercises like squatting, racing, leaping, turning or pivoting on an injured knee,

and kneeling cause 72.2% of people to have significant knee discomfort.

Table (10): The results indicate significant correlations between the KOOS score and these elements. The relation between knowledge is positive (r = 0.452, p = 0.001**). There is a significant negative correlation between pain and p < 0.001** (r = -0.634).

Table (1): Frequency Distribution of Demographic Data among patients diagnosed with knee osteoarthritis (n=72)

Demographic Data			No	%
Age	**60 < 65 years**		24	33.3
	65 < 70 years		12	16.7
	≥ 70 years		36	50.0
	Mean ± SD	74.01+ 6.043		
sex	**Male**		26	36.1
	Female		46	63.9
level of Education	**No read and write**		10	13.9
	Read and write		20	27.8
	Primary education		12	16.7
	Secondary education		18	25.0
	University education		12	16.7
Marital Status	**Single**		12	16.7
	Married		14	19.4
	Divorced		18	25.0
	Widow		28	38.9
Occupation	**Employee**		20	27.8
	Manual work		20	27.8
	Farmer		8	11.1
	Not work		24	33.3
Monthly income	**Enough and saved**		20	27.8
	Enough		28	38.9
	Not enough		24	33.3
Residence	**Rural**		28	38.9
	Urban		44	71.1
Number of family members	**≤ 2member**		20	27.8
	3 – 4 members		18	25.0
	> 4 members		12	16.7
	No one		22	30.6

Table (1): Past and present medical history of sudy patients diagnosed with osteoarthritis of knee (n=72).

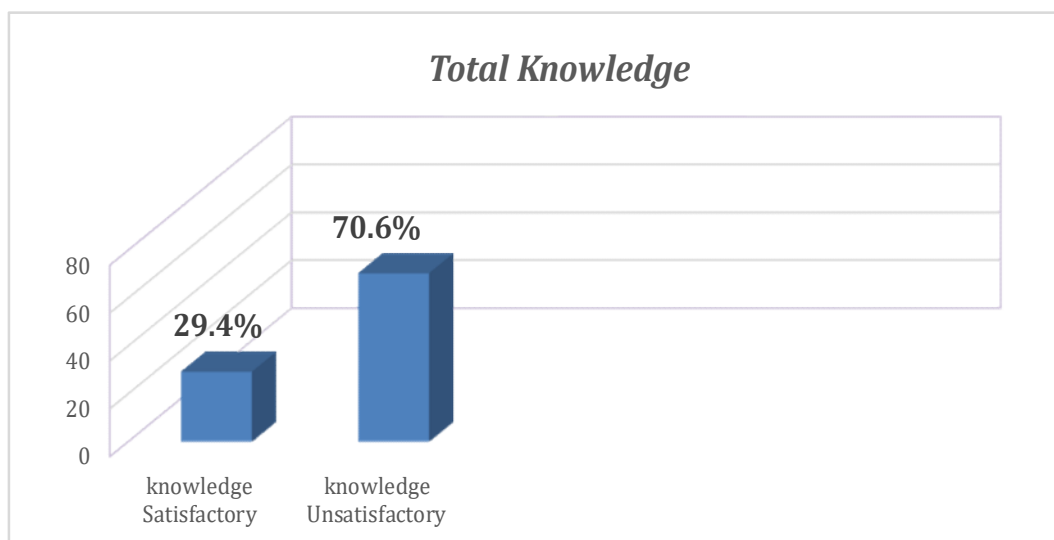| Items		(n=72)	
		N	**%**
Comorbidities		66	91.7
Hypertension disease		34	47.2
Diabetes mellitus		40	55.6
Cardiac diseases		38	52.8
Obesity		36	50.0
Renal diseases		30	41.7
Family history	**Yes**	32	44.4
	No	40	55.6
Duration of osteoarthritis	**< 3 years**	24	33.3
	3 to 5 years	18	25.0
	> 5 years	30	41.7
Signs and symptoms of the disease that you have	**Pain**	18	25.0
	Joint stiffness	8	11.1
	Physical limitation	10	13.9
	Redness and inflammation	18	25.0
	crackling sound	8	11.1
	all of the above	10	13.9
Treatment regimen that you follow	**Drug treatment**	22	30.6
	Physical therapy	14	19.4
	Making compresses	20	27.8
	All of above	16	22.2
Body mass index (BMI)	**Underweight < 18**	7	19.4
	Normal weight ≥18 - 24.9	6	16.6
	Over weight ≥ 25 – 29.9	13	36.0
	Obese 30 -<25	36	50.0
	Morbid obese ≥ 35	10	27.7

Figure (1): Frequency Distribution of Elderly patient's score of Total knowledge related to osteoarthritis (n=72)

Table (3): Frequency Distribution of patient's severity of the pain (n= 72)

severity of Pain	(n=72)	
Median (IQR)	6 (2-8)	
Range	1 – 10	
	N	%
Mild	5	6.9
Moderate	45	62.5
Severe	22	30.6

Table (4): Frequency Distribution of the Elderly Patients with knee osteoarthritis (n=72).

Components	No.	%
1-during Past month, one typically goes to bed		
8-10 pm	34	47.3
11-12 am	25	34.7
-≥ 1 am	13	18.0
Time taken to fall a sleep each night :		
10-12 minutes'	32	44.4
1-3 hours	36	50.0
more than one hours	4	5.6
Time gotten up in the morning		
5-7 am	38	52.7
7-<10 am	26	36.2
≥10 am	8	11.1
Hours of truly sleep at night		
Short < 6 hours/day	42	58.3
Normal 7-8 hours/day	23	31.9
.Long ≥ 9 hours	7	9.8
5- Sleep latency		
Less than 30 min	31	44.3
30-<60 min	34	47.3
≥ 60 min	6	8.4

Table (5): Sleep Quality Total Score of Elderly Patients with Knee Osteoarthritis (n=72)

Sleep Quality	No	%	P
Good Sleep Quality (PSQI < 5 scores)	28	38.9	0.00**
Bad SleepQuality (PSQI ≥ 5 scores)	44	61.1	0.00**
PSQI Global Scores Median (min-max)	12.0 (6-17)		

** $p \leq 0.01$ (high significant)

Table (6): Frequency Distribution of Elderly Patient's KOOS Symptoms (n=72)

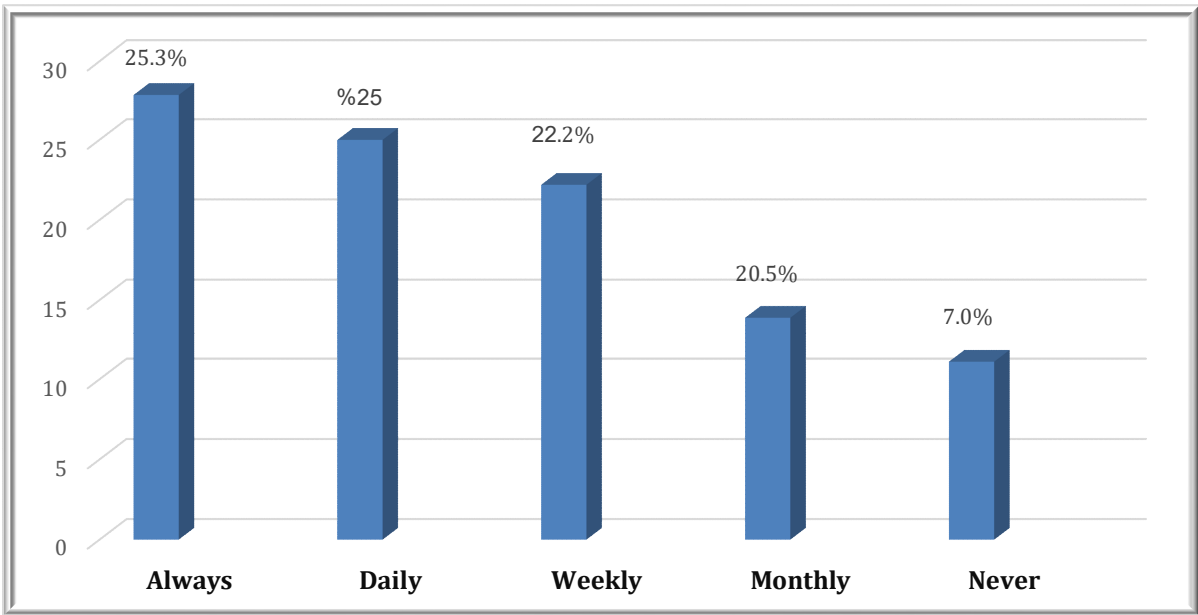| Symptoms	N	%
Severity of stiffness in the morning		
Always	23	31.8
Often	19	24.2
Sometimes	11	14.0
Rarely	14	19.4
Never	7	9.6
Degree of swelling in your knee		
Never	12	16.7
Always	20	27.8
Often	16	22.2
Sometimes	10	13.9
Rarely	14	19.4
Never	12	16.7
Presence of grinding, hearing clicking, or any other type of noise during knee movement		
Always	20	27.8
Often	16	22.2
Sometimes	10	13.9
Rarely	16	22.2
Never	10	13.9
knee catching or hanging up when moving		
Always	20	27.8
Often	14	19.4
Sometimes	14	19.4
Rarely	10	13.9
Never	14	19.4
Capacity of preforming fully knee straighten		
Always	21	28.0
Often	13	19.0
Sometimes	14	19.4
Rarely	16	22.2
Never	14	19.4
Ability of preforming fully knee bending		
Always	18	25.0
Often	16	22.2
Sometimes	16	22.2
Rarely	10	16.7
Never	10	13.9
Severity of knee joint stiffness after first getting up in the morning		
Extreme	20	27.8
Severe	16	22.2
Moderate	12	16.7
Mild	16	22.2
None	8	11.1
Severity of knee joint stiffness after sitting, lying, or resting later in the daytime		
Extreme	20	27.8
Severe	16	22.2
Moderate	12	16.7
Mild	16	22.2
None	8	11.1

Figure (2): Distribution of Elderly Patients According to Reported Pain Frequency (n-72)

Table (7): Frequency Distribution of Elderly patient's regarding Degree of Pain during Knee Movement by Using KOOS (n=72).

Degree of pain during knee movements	(n=72)	
	N	**%**
Twisting/pivoting on your knee		
Extreme	18	25.0
Severe	16	22.2
Moderate	14	19.4
Mild	14	19.4
None	10	13.9
Straightening knee fully		
Extreme	21	28.0
Severe	11	16.0
Moderate	18	25.0
Mild	12	16.7
None	10	13.9
Bending knee fully		
Extreme	22	30.6
Severe	14	19.4
Moderate	6	8.3
Mild	12	16.7
None	18	25.0
Walking on flat surface		
Extreme	26	36.1
Severe	14	19.4
Moderate	12	16.7
Mild	12	16.7
None	8	11.1
Going up or down stairs		
Extreme	20	27.8
Severe	16	22.2
Moderate	10	13.9
Mild	16	22.2
None	10	13.9
At night while in bed		
Extreme	18	25.2
Severe	16	22.2
Moderate	12	13.9
Mild	16	22.2
None	12	16.7
Sitting or lying		
Extreme	20	27.8
Severe	16	22.2
Moderate	12	16.7
Mild	8	11.1
None	16	22.2
Standing upright		
Extreme	22	30.6
Severe	16	22.2
Moderate	14	19.4
Mild	8	11.1
None	12	16.7

Table (8): Frequency Distribution of Elderly Patients with Knee Osteoarthritis According to their Degree of Difficulty during daily living (n=72)

Daily Living		(n=72)	
		N	%
Daily Living Subscale Score	Not experienced Difficulty	18	25.0
	experienced Difficulty	54	75.0

Table (9): Frequency distribution of elderly Patients According to their Difficulty in Sport and Recreation Activities (n=72)

Sports and Recreation		(n=72)	
		N	%
Sports and Recreation Subscale score	Not experienced Difficulty	20	27.8
	experienced Difficulty	52	72.2

Table (10): Correlation between Total KOOS score and Knowledge, sleep quality, and pain for Elderly Patients with Knee Osteoarthritis (n= 72)

Item	KOOS Score	
	R	P-value
Knowledge	0.452	0.001**
Sleep quality	0.569	<0.001**
Pain	-0.634	<0.001**

Discussion:

Osteoarthritis (OA) is a progressive degenerative joint disease that significantly impacts the quality of life, functional mobility, and sleep patterns of elderly individuals. Knee OA, in particular, is associated with chronic pain, joint stiffness, and sleep disturbances, leading to decreased physical activity and a reduced ability to perform daily tasks. Furthermore, poor sleep quality has been directly linked to increased pain sensitivity and functional decline in OA patients, making sleep management a crucial component of osteoarthritis care **(Jastreboff et al., 2024)**.

Regarding studied patients' demographic data, study findings indicate that about half of the participants were aged 70 years or older. From the researcher's point of view, this could be due to the fact that osteoarthritis (OA) is a degenerative joint disease that

primarily affects the elderly, particularly those above 70 years. The aging process contributes to cartilage wear and tear, leading to increased prevalence with age. This finding is consistent with a study by **Hunter et al. (2020)** entitled "Epidemiology of osteoarthritis," conducted in the United States, which reported that the prevalence of symptomatic knee OA approximately doubled among women (67%) and tripled among men (33%) aged 70 years and older over a 22-year period.

Regarding gender distribution, more than half of elderly patients were female. From the researcher's opinion, this may be caused by the fact that women are at a higher risk of developing OA, especially after menopause, due to endocrinal changes that affect joint health, functions and cartilage integrity. This result is in agreement with a research work by **Haq et al. (2023)** entitled "Hand Osteoarthritis in Elderly Women with Primary Knee Osteoarthritis," conducted in the UK, which found that 70% of women above 60 years of age had a higher prevalence of hand OA, suggesting a gender predisposition.

Regarding education level, the majority of studied patients had low educational attainment, with a significant proportion being able to read and write (more than one quarter). From the researcher's perspective, this could be related to the fact that OA is more prevalent among elderly populations who had limited access to higher education in

earlier decades. Additionally, lower education levels may contribute to poor health literacy.

The research finding is supported by a study by **Kim et al. (2021)** entitled "Effects of education, income, and occupation on prevalence and symptoms of knee osteoarthritis," conducted in South Korea, which found that 32% of participants with lower education levels were significantly more likely to have higher prevalence and symptom severity of knee OA.

Regarding marital status, less than half of studied patients more than one third were widowed. From the researcher's point of interpretation, this may be explained by the fact that OA primarily affects older individuals, and widowhood is more common in elderly populations, especially among women due to their longer life expectancy. This outcome is in line with a study by **Ayres et al., (2025)** conducted in the US in a study entitled "A brief patient-centred multidisciplinary educational program for knee osteoarthritis," which found that social support, including marital status, plays a significant role in managing OA symptoms and improving patient outcomes. Health care services may have a more substantial impact on OA outcomes.

Regarding occupation, less than half of participants were unemployed, while others engaged in manual labor or farming. From the researcher's point of view, this could be due to the physical demands of these occupations,

which may contribute to joint overuse and increased OA risk. Additionally, unemployment in elderly populations may be linked to functional limitations caused by OA. This finding is consistent with a study by **Kim et al. (2021)** conducted in South Korea, which highlighted that 45% of participants in non-managerial occupations and the unemployed group experienced higher prevalence and symptom severity of knee OA.

Regarding monthly income, more than one third of participants reported having either "enough" income. From the researcher's point of view, financial constraints can impact healthcare access, leading to delayed diagnosis and inadequate management of OA. This study finding is in the similar line with a study by **Lee et al. (2021)** entitled "Effects of education, income, and occupation on prevalence and symptoms of knee osteoarthritis," which reported that lower income levels (36%) were associated with higher incidence and symptom seriousness of knee OA.

Regarding past and present history of studied patients, the majority of studied patients had comorbidities bad more than half of then suffered from diabetes mellitus, while half of them were obese. From the researcher's point of opinion, the higher prevalence of comorbidities considered part of age-related degeneration and the progressive nature of osteoarthritis (OA). Elderly patients with OA often present with multiple chronic conditions, such as hypertension, diabetes, and cardiovascular diseases, due to shared risk factors like systemic inflammation, obesity.

This finding is consistent with a research work by **Swain et al. (2020)** conducted in India, entitled "Osteoarthritis and comorbidities: a systematic review and meta-analysis," which reported that OA patients have a significantly higher risk of developing cardiovascular diseases (48%), diabetes (37%), and renal impairments (30%).

Regarding family history to OA, study presented, less than half had family history of OA, and less than half of them the duration of osteoarthritis more than five years. the study with the same line the **Peat et al (2020)** the study accomplished in USA about "Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care". Who described that, near to half of elderly patients had family members with OA and the duration of osteoarthritis more than five years.

Concerning patient's total knowledge related to knee osteoarthritis before and after the treatment, The current study findings revealed, elderly patients' total knowledge related to knee osteoarthritis, the present study revealed that, more than two third of the study sample had unsatisfactory knowledge regarding knee osteoarthritis. From the researcher inspection hat, most of the patients there had no available chances to attend workshops or raise awareness

about the disease, their lack of knowledge can lead to worsen of illness. The study is in agreement with **Ingvarsson et al (2020)** the study performed in Pakistan about "Assessment of primary hip osteoarthritis: comparison of radiographic methods using colon radiographs". Found that, two third of study sample unsatisfactory knowledge regarding knee osteoarthritis.

Regarding severity of pain in studied patients, the present study shown that , most of them complain moderate to severe pain, the study agreement by **Ali et al (2022)** the study conducted in El-Fayoum City, Egypt about "assessment of sleep quality in elderly patients diagnosed with osteoarthritis at Orthopedic outpatient Clinic". Found that, majority of elderly complain worse pain. From the researcher point of view, the pain is the main cause to poor sleep quality and physical dysfunction.

Regarding studied patients' sleep quality, the current study results demonstrated Sleep onset latency less than 30-60 minutes were less than half of participants. This result is in similar contract with this study accomplished by **Ali et al (2022).** Found that near to half of the study sample the sleep latency less than 30 -60 minutes.

Regarding total scores of sleep quality of elderly patients with knee osteoarthritis, showed that, patients who "Good sleepers" approximately one third and two-third who "bad sleepers". From the

researcher's point of view, the knee pain had significant impact on sleep quality, so suggests that the structured health education program played a crucial role in enhancing sleep quality. The intervention likely introduced participants to effective sleep hygiene practices, relaxation techniques, and strategies for managing pain-related sleep disturbances, all of which contributed to more restorative sleep patterns.

The research finding is consistent with a study by **Luik et al. (2021)** entitled "Cognitive behavioural sleep interventions for older adults with chronic pain: a meta-analysis," which reported that enhanced sleep quality (38%), sleep efficiency (25%).

Also, agreement by **Rangasamy et al (2021)** entitled "Assessment of Sleep Quality in Patients with Osteoarthritis" included 150 patients with osteoarthritis in India, found that near to two third experiencing sleep disturbances.

Regarding knee pain frequency showed that; about one-quarter of the elderly patients reported always feeling knee pain. This result in the same line with **Osman et al (2024)**, included 80 patients diagnosed with knee osteoarthritis in Egypt, assessed osteoarthritis outcomes and found one-quarter of patients experienced high intensity of pain at all time.

Regarding patients' symptoms related to OA, one-third of the studied patients had severe knee inflexibility after awakening in the

sunrise and after sitting, lying, or resting later. Those results in the line with **Chen et al.(2019),** in a quasi-experimental study of171 Chinese reported, 40.3% has severe knee stiffness

Regarding pain severity during knee movement, one third of studied patients who reported severe and extreme knee during (twisting/pivoting, full knee straightening, walking on a flat surface, experiencing pain in their knees at night while in bed, sitting or lying, and standing upright).at the same line with those study **Osman et al (2024),** found about one third of patients sever difficulties during movements

Regarding the degree of difficulty in acting sporting and entertaining activities, three-quarter of patients who reported difficulty in squatting, running, twisting on knees. In the same line with those of **Patel et al.(2022),**who in a 12-week evidence-based program, to assess outcomes, noticed that majority of patient bad scores for knee function in daily function.

Regarding the association between total KOOS grade and knowledge, sleep quality, and pain .for elderly patients with knee osteoarthritis. The findings of the present study indicated a significant relationship between these variables and the KOOS score. This study result is consistent with a study by **Simick Behera et al., (2024)** entitled "How does osteoarthritis education influence knowledge, beliefs, and behaviour in people with knee and

hip osteoarthritis" which found that patients with chronic sleep disturbances experienced worsened pain symptoms, leading to decreased functional mobility and lower KOOS scores.

Conclusion

Based on the consequences and outcomes of the study, the current research work settled that,

About three-quarter of the elderly patients had unacceptable knowledge about osteoarthritis. Nearly two-third of knee osteoarthritis elderly patients had poor sleep quality (PSQI $\geq$ 5) regarding to subjective sleep quality, sleep latency, sleeping period, sleep efficiency, daytime dysfunction and use of sleep medication. Significant relationships between these variables and the KOOS score. Knowledge has a positive correlation. Pain has a significant negative correlation, severe pain leading to worsen KOOS and knee dysfunction. Also knee OA has significant impact on all aspects of daily living

Recommendations:

Constructed on the results of this research study the next advices are derived and suggested:

– Increase public awareness and knowledge about Osteoarthritis pain and complications of osteoarthritis through directed program to persons in community 2. Periodic assessment for elderly patients with osteoarthritis

- More studies measuring more health outcomes for long-term follow-up and larger samples are suggested for

knee osteoarthritis elderly patients to generalize the findings

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