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Assess Elderly Women Lifestyle Suffering from Knee Osteoarthritis Pain

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Original Research Article

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Abstract: Population growth, aging, and sedentary lifestyles, particularly in developing countries, will create a crisis for population health that requires a multisystem response with musculoskeletal health services as a critical component. The prevalence and impact of musculoskeletal conditions increase with aging. Aim of this study assesses lifestyle elderly women Suffering from knee osteoarthritis pain. A descriptive research design used in this study. Was conducted at out patient orthopedic and rheumatology clinics at Nasr City Hospital and the Nile Hospital, affiliated to the National Health Insurance Organization Cairo Egypt. A purposive sample of 120 elderly women with OA. Tools the investigator will use four tools for collection of the data, namely an interview questionnaire, Lawton scale for the Activities of Daily Life Arthropometne measurement, Measure Body mass index, and a pain. Revealed 85% of study subjects from urban areas, suffered from OA since many years, and 68% Unsatisfactory knowledge and Adequate practices 71.7% and 80% was obese, and 73% suffered from Moderate pain. The results of the study show the lifestyle practices older women are higher than women's knowledge and higher in cases of moderate obesity and moderate pain in most elderly women. Health education about lifestyle modification, practice exercise should be provided to all female with OA attended to orthopedic and rheumatology clinic.

Keywards: Elderly Women, Lifestyle Suffering, Knee Osteoarthritis Pain.

INTRODUCTION

Population growth, aging, and sedentary lifestyles, particularly in developing countries, will create a crisis for population health that requires a multisystem response with musculoskeletal health services as a critical component. The prevalence and impact of musculoskeletal conditions increase with aging [1].

Persistent pain, impaired mobility and function, and reduced quality of life (QOL) and mental wellbeing are the most common experiences associated with musculoskeletal conditions. A strong relationship exists between painful musculoskeletal conditions and a reduced capacity to engage in physical activity resulting in functional decline, frailty, reduced wellbeing, and loss of independence [1]. Thus, Osteoarthritis is one of the most frequent causes of physical disability among Elderly Women [2].

The knee is one of the most commonly affected joints by osteoarthritis. It most often affects middle-aged and older people over 50 years of age, in elderly women [3].

Stiffness, joint pain, and swelling are the earliest symptoms of osteoarthritis. In contrast to inflammatory arthritis, the pain of osteoarthritis is often exacerbated by activity or weight bearing and relieved by rest. Early symptoms are usually an insidious nature and often do not correlate well with radiographic abnormalities. Later, extensive bone changes, muscle weakness, and loss of joint integrity can lead to more-dramatic joint deformity and disability [4].

Old age, women gender, overweight and obesity, knee injury, repetitive use of joints, bone density, muscle weakness, and joint laxity all play roles in the development of joint knee osteoarthritis Determination of risk factors particularly in the weight-bearing joints and their modification may reduce the risk of knee osteoarthritis and prevent subsequent pain and disability [5].

The diagnosis of knee osteoarthritis in the most cases can be made by the clinical findings and physical examination, however identification of joint damages are necessary for both diagnostic confirmation as well as extent of joint involvement [5].

Before age 45, more men than women have osteoarthritis whereas after age 45, it is more common in women [6]. It is estimated that 80% of the population have radiographic evidence of Osteoarthritis although only 60% of those will have symptoms. Some younger people get Osteoarthritis from joint injuries, but it most often occurs in older people [7].

The discomforts of osteoarthritis can be managed with lifestyle changes before medications are introduced. Once a medication choice has been introduced, nurses can review methods to women that will improve their ability to continue activities of daily living and decrease the impact of the discomforts of osteoarthritis. Community health nurse can be instrumental in the management of by providing education about different intervention choices for the management of Osteoarthritis symptoms [8].

Community health nurse can review methods to women that will improve their ability to continue activities of daily life and decrease the impact of the discomforts of osteoarthritis [9]**.**

Significance of the Study

Worldwide Knee Osteoarthritis is also the most common causes of pain and disability in older people about 13% of women and 10% of men aged 60 years and older have symptomatic knee Osteoarthritis. The proportions of people affected with symptomatic knee Osteoarthritis is likely to increase due to the aging of the population and the rate of obesity or overweight in the general population [6].

In Egypt knee osteoarthritis is the most common form of joint disease and prevalence of both radio graphically evident and symptomatic. The females having higher prevalence than males (11.4% vs 6.8%). The gender difference in prevalence has recently been emphasized in a meta-analyses, which provides evidence for a greater risk in women for prevalent and incident knee osteoarthritis. The meta-analysis also reported that females tend to have more severe knee osteoarthritis radio graphically assessed than males and that the gender differences increase with age > 55 years [10].

AIM OF THE STUDY

The aim of this study was to assess elderly women lifestyle. Suffering from knee osteoarthritis pain.

This is will be fulfilled through the following objectives:

- Assessing the knowledge of elderly women suffering from knee osteoarthritis pain.

  Assessing the practice of elderly women suffering from knee osteoarthritis pain.
- Assessing the lifestyle elderly women suffering from knee osteoarthritis pain.

Research question

- What is the knowledge and practice of elderly women suffering from knee osteoarthritis pain?
- Are elderly women suffering from knee osteoarthritis pain affected by lifestyle?

SUBJECTS AND METHODS

Research design

A descriptive cross-sectional research design was used in carrying out this study.

Setting

The study was carried out in the outpatient elderly women clinics of Orthopedics and Rheumatology Nasr City and the Nile Hospitals affiliated to the National Health Insurance Organization, Cairo, Egypt. In the first hospital, it is a 4-room clinic with all necessary supplies and examination equipment, served by 4 nurses 4 doctors. In the second hospital, it is a 2-room clinic with all necessary supplies and served by 2 nurses and 2 doctors.

Subjects: *Sampling population*

The sampling population consisted of (120) elderly women attending the study settings during the time of the study with a diagnosis of osteoarthritis (OA).

***Sampling criteria*:** Women were eligible to be selected in the study sample according to the following eligibility criteria.

Inclusion criteria

o Age 60 years or older;
o Diagnosed as having mild early stage knee OA;
o Receiving treatment and follow-up in the outpatient clinics of the study settings.

Exclusion criteria

The only exclusion criterion was the presence of severe inflammation of the knee as recorded in the medical file of the patient.

Sampling technique

A purposive sampling technique was used to recruit elderly women in the study sample according to the eligibility criteria until the required sample size was fulfilled.

Data collection tools

A structured interview questionnaire including four tools was used to collect the necessary data to achieve the study aim. It consisted of the following parts.

Tool-1: Interview questionnair**e** This will be developed by the, investigator it will include two parts:

Part I

This part was intended to collect data pertaining to the **socio-demographic** characteristics of the study women. It involved questions about age, residence, marital status and number of children, educational level, current and previous job, income sufficiency and source, and crowding index.

Part II

This covered the medical profile of the elderly woman. It involved a detailed history of knee OA, such as the duration, symptoms and signs particularly pain, treatment, and family history. It also included questions about the history of chronic diseases and their duration.

Tool-2: **This will be included three parts (assessment elderly woman knowledge- practices - Lawton scale)**
Part I

This was for assessment of woman's knowledge of OA. It covered areas of OA definition, causes, risk factors, symptoms, diagnosis, treatment, and prevention. Scoring: For each knowledge item, a correct response was scored 1 and the incorrect zero. For total knowledge, (7questions) the scores of the items were summed-up and the total divided by the number of the items, giving a mean score. This was converted into a percent score. Knowledge was considered satisfactory if the percent score was 50% or more, and unsatisfactory if less than 50%.

Part Il

This served to measure woman's practices related to OA. It involved practices such as regular body weighing, its frequency, and the action taken in case of increased body weight. It also asked about the physical effort of the woman, and whether activities were modified according to current abilities. This part also included questions about the practices of regular follow-up, compliance with medications, and the use of compresses, physiotherapy, and assisting aids.

Scoring

For each type of practice, the items reported to be done were scored "1" and the items not done were scored "0". For each area, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into percent scores. The practice was considered adequate if the percent score was 60% or more, and inadequate if less than 60%.

Part lll (Lawton scale)

This scale was used to assess the woman's independence in the practice of the activities of daily living (ADL). It was developed by *Lawton and Brody (1969).* The scale examines fourteen different activities such as bathing, dressing, toileting, mobilizing, continence, feeding, phone use, shopping, preparing food, cleaning home, laundry, taking medications, use of transport means, and managing finances. Each of the functions is measured and scored according to the elderly actual performance, whether dependent, partially independent, or independent.

Scoring

The responses scored dependent, partially independent, and independent were scored 0, 1, and 2 respectively. The scores of the items are summed-up so that a higher score indicates more independence. The total score was converted into a percent score. The woman was considered independent in the practice of ADLs if the percent score was 66.7% or more, partially dependent if less than 66.7% and above 33.3%, and dependent if 33.3% or less. None of the women in the sample had a score 33.3% or lower so that none of them was dependent.

Tool-3: Arthropometne measurement, Body Mass Index (BMI)

At this part, the woman's height and body weight were measured and recorded, and the Body Mass Index (BMI) was calculated according to Castillo-Martinez et al (2012) by dividing the body weight in Kg by the squared height in meters. The BMI was then categorized as follows.

Underweight: <18.5
Normal: 18.5-<25
Overweight: 25-<30
Obese: 30-<35
Morbid obese: 35+

*__Tool 4__: ***(Visual Analog Scale** *[VAS] for pain.* This is a standardized uni-dimensional tool to measure pain intensity. It was designed by McCormack *et al.*, [31] and is widely used in diverse adult populations, including those with knee OA. It consists of a horizontal line, 10 centimeters in length, anchored by 2 verbal descriptors from "no pain" (score of 0) and to "worst imaginable pain" (score of 10).

Scoring

Using a ruler, the score is determined by measuring the distance on the 10-cm line between the "no pain" anchor and the elderly woman mark, providing a range of scores from 0-10. A higher score indicates greater pain intensity. For categorical analysis, the pain is considered mild if the score is <3, moderate for score 4-6, and severe for a score of 7 or more.

Operational Design
Preparatory phase

A review of current and past, local and international literature was done to get in-depth

theoretical knowledge of the various aspect of the study topic. This was achieved using textbooks, articles, internet search, periodicals and scientific journals. This helped the researcher to develop the structured interview questionnaire with all its parts.

Validity of the tool

Once prepared in its preliminary form, the data collection tool was presented to a jury group of five experts from the Faculty of Nursing (geriatric nursing department) and Faculty of Medicine (public health department) to test its face and content validity. They examined the tool for clarity, relevance, comprehensiveness, and applicability. All their recommendations were done.

Pilot study

Before performing the main study, a pilot study was carried out on 10% of the study sample. It served to assess the clarity and understandability of the interview form, and to estimate the time needed for carrying out the interview. As some modifications were done in some items, those who shared in the pilot study were not included in the main study sample.

The pilot study also helped in testing for reliability of the Lawton scale. This was done through examining its internal consistency. It demonstrated a high level of reliability with Cronbach's alpha coefficient 0.928.

Fieldwork

Upon fulfilling all required administrative steps, the researcher visited the study settings, and met with the women in the waiting area to select those eligible according to the inclusion and exclusion criteria. Those who fulfilled these criteria were invited to participate in the study. The researcher explained to each one the aim of the study and the process of data collection. They were also informed about their rights, and those who gave their verbal consent to participate were interviewed.

Then, the researcher started the interview individually using the structured questionnaire form. This was done in the outpatient clinics and the woman's privacy was complied with. The data collection phase lasted for three months, from the beginning of May 2017 to the end of July 2017. The work was done two days per week from 9:00 am to 1:00 pm.

Administrative Design

Permissions to collect data in the orthopedic and rheumatology outpatient clinics at the study hospitals were obtained from the General Organization for Health Insurance. This was done through submission of a formal letter from the Dean of the Faculty of Nursing,' University explaining the aim of the study, along with copies of the data collection tool. Meetings and discussion were held between the researcher and the hospital management to make them aware about the objectives of the study and gain their cooperation.

Ethical considerations

The study protocol was approved by the research and ethics committee. A verbal consent to participate was obtained from each participant after a simple and full explanation of the aim of the study and its procedures. They were given the opportunity to refuse or withdraw at any time without any reasons to be given. They were reassured that the information obtained would be confidential and used for research purpose only.

STATISTICAL DESIGN

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for quantitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the scale used through its internal consistency. Qualitative categorical variables were compared using chi-square test. Whenever the expected values in one or more of the cells in a 2x2 tables was less than 5, Fisher exact test was used instead. In larger than 2x2 cross-tables, no test could be applied whenever the expected value in 10% or more of the cells was less than 5. Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. In order to identify the independent predictors of the scores of knowledge, practice, ADL, pain, and BMI, multiple linear regression analysis was used and analysis of variance for the full regression models done. Statistical significance was considered at p-value <0.05.

RESULTS

The study sample consisted of 120 elderly women whose age ranged between 60 and 88 years, median 67.0 years as presented in Table-1. About (51.7%) had basic/intermediate education and were currently unmarried, whether single, divorced, or widows. The great majority were having children (86.2%), and had their income from pension (90.0%), but this was sufficient for only 59.2% of them. Only one (0.8%) of them was currently working.

Table-1: Socio-demographic characteristics of elderly women in the study sample (n=120)

	Frequency	Percent
Age:		
60-	81	67.5
70+	39	32.5
Range	60.0-88.0	
Mean±SD	68.0+6.0	
Median	67.0	
Education:		
No formal education	38	31.7
Basic/intennediate	62	51.7
University	20	16.7
Marital status:		
Unmarried (s ingle/divorcedAvido w)	62	51.7
Married	58	48.3
Have children (n=109)		
No	15	13.8
Yes	94	86.2
No. of children:		
0	15	13.8
1	14	12.8
2	34	31.2
3+	46	42.2
Income source:		
Pension	108	90.0
Help	12	10.0
Income:		
Insufficient	49	40.8
Sufficient	71	59.2
Crowding index:		
<2	114	95.0
2+	6	5.0
Currently work:		
No	119	99.2
Yes	1	0.8

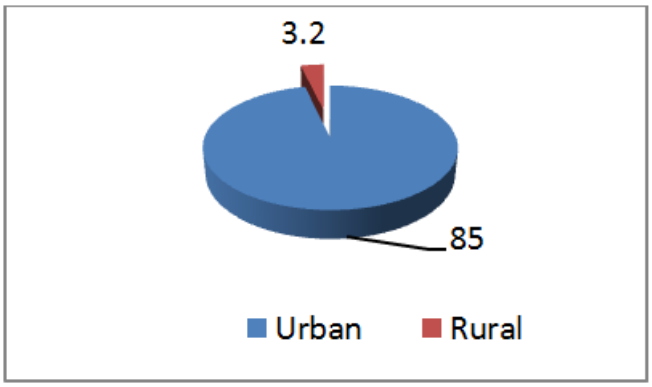

Fig-1: Distribution of elderly women in the study sample by residence (n= 120)

Figure-1 demonstrates that the majority of the elderly women in the study sample were living in urban areas (85.0%).

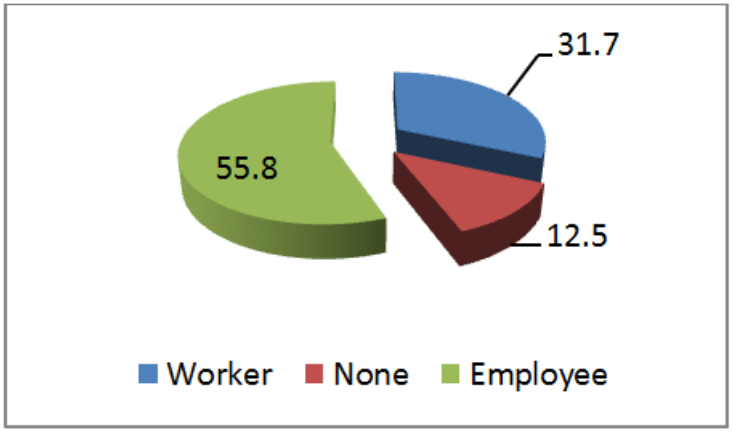

Fig-2: Distribution of elderly women in the study sample by previous job (0=120)

As illustrated in Figure-2, that slightly more than a half of the elderly women were previously working as employees (55.8%), while only 12.5% had no previous job.

Table-2: History of osteoarthritis (OA) among elderly women in the study sample (n=120)

	Frequency	Percent
OA duration (years):		
1-3	49	40.8
4+	71	59.2
Range	1.0-4.0	
Mean±SD	3.3±1.0	
Median	4.0	
Treatment: [a)]		
Medications	114	95.0
Physiotherapy	41	34.2
Compresses	36	30.0
Weight watching	17	14.2
Diet	3	2.5
No. of treatments:		
Range	1-4	
MeaniSD	1.8±0.5	
Median	2.0	
Symptoms/signs:		
Pain	112	93.3
Cracking	73	60.8
Impaired mobility	48	40.0
Cramps	9	7.5
Stiffness	6	5.0
Redness/inflammation	2	1.7
Joint disfigurement	2	1.7
Effusion	1	0.8
Other	1	0.8
No. of symptoms:		
Range	1-5	
Mean±SD	2.1 ±0.6	
Median	2.0	

(a) Not mutually exclusive

Table-2 indicates that the duration of OA among elderly women ranged between one and four years, median 4.0. The majority had medical treatments (95.0%), whereas only 14.2% were watching their body weight, and 2.5% followed^dietary regimen. The most common symptoms reported were pain * (93*2%), cracking (6QJ8%), and impaired mobility (40.0%). The

number of symptoms reported ranged between one and five, median 2.0 symptoms.

As Figure-3 shows, slightly more than one-third of the elderly women in the study sample (35.8%) were having a positive family history of OA.

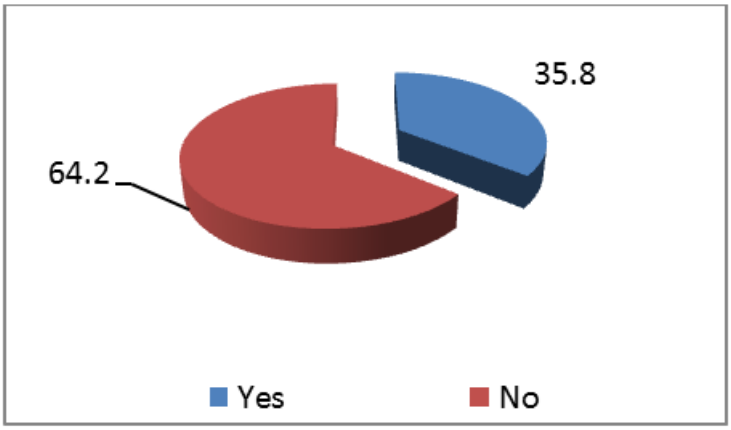

Fig-3: Family history of Osteoarthritis (OA) among elderly women in the study sample (n=120)

Part III. Knowledge and practices of elderly women

Table-3: Knowledge of osteoarthritis among elderly women in the study sample (n=120)

Correct knowledge of OA:	Frequency	Percent
Definition	85	70.8
Causes	70	58.3
Risk factors	54	45.0
Symptoms	94	78.3
Diagnosis	109	90.8
Treatment	114	95.0
Prevention	78	65.0

Concerning the knowledge of OA disease among elderly women in the study sample, Table-5 shows that the majority of them were having correct knowledge of its diagnosis (90.8%) and treatment((95^0%)) On the other hand, only 45.0% had correct knowledge of the risk factors of OA.

Figure-4 illustrates that slightly less than one-third of the elderly women in the study sample were having satisfactory total knowledge of OA (31.7%)

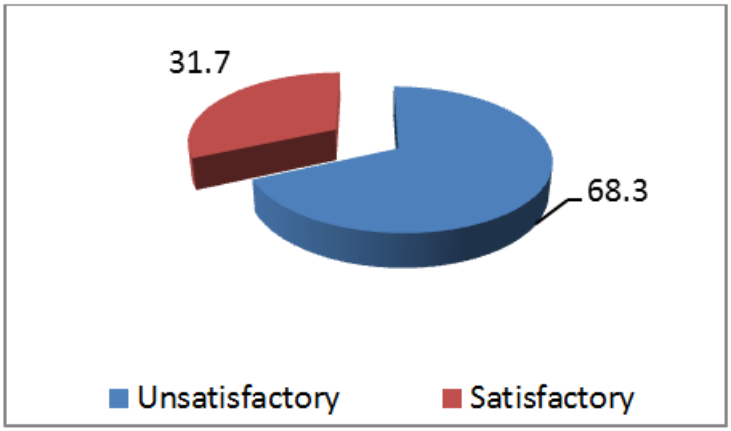

Fig-4: Total knowledge of osteoarthritis among elderly women in the study sample (n=120)

Table-4: Practices of body weighing and regulation of efforts among elderl/women in the study sample (n=120)

Regular body weighing	48	40.0
When weighing is done:		
None	3	2.5
Daily	10	8.3
Monthly	21	17.5
At doctor visit	86	71.7
Action in case of increased body weight:		
See doctor	24	20.0
Follow prescribed regimen	36	30.0
Exercise	8	6.7
Nothing	44	36.7
Not applicable	8	6.7
Effort: Only home chores	79	65.8
Modify activities according to current abilities:		
No	28	23.3
Sometimes	52	43.3
Yes	40	33.3
Type of modification:	23	19.2
Avoid long standing	31	25.8
Take rest periods	49	40.8
Avoid knee flexion for long time	18	15.0

Table-5: Practices of follow-up and compliance among elderly women in the study sample (n=120)

Practices of follow-up	Frequency	Percent
Regular follow-up:		
No	4	3.3
Sometimes	25	20.8
Yes	91	75.8
Follow-up time:		
None	1	0.8
Weekly	97	80.8
When in pain	21	17.5
Other	1	0.8
Comply to medications:		
No	1	0.8
Sometimes	23	19.2
Yes	96	80.0
Medications:[1]^		
Tablets	116	96.7
Injections	10	8.3
Local	113	94.2
Herbs	1	0.8
Use compresses	106	88.3
Type.		
None	13	10.8
Hot	106	88.3
Cold	1	0.8
Use physiotherapy	95	79.2
Regular physiotherapy	42	35.0
Use aid:		
No	31	25.8
Sometimes	17	14.2
Yes	72	60.0
Type:"		
Cane	58	65.2
Walker	29	32.6
Wheelchair	0	0.0
Other	1	1.1

(a) Not mutually exclusive

Table-6 indicates that only two-fifth (40.0%) of the elderly women in the study sample were practicing regular body weighing. This was mostly done at doctor visit (71.7%).

When body weight is increased, of the elderly women (36.7%) took no action. Meanwhile, 30.0% followed the prescribed regimen. As regards physical effort, approximately two-thirds of the women reported only home chores (65.8%), and 33.3% modified their activities according to current abilities, mostly through taking rest periods (40.8%).

As shown in Table-7, the majority of the elderly women in the study sample reported having regular follow-up for their OA and this was done weekly (80.8%). Moreover, the majority were complying with medications (80.0%), which were mostly in the form of tablets (96.7%) and/or local medications (94.2%). Additionally, 88.3% were using compresses, and 192% physiotherapy. Lastly, around two thirds of the women were using aids (60.0%), mostly canes (65.2%).

Table-6: Total practices related to OA among elderly women in the study sample (n=120)

Adequate (60%) practice of:	Frequency	Percent
Watching weight	79	65.8
Modifying activities	41	34.2
Follow-up	89	74.2
Compliance to medications -	96	80.0
Compresses	106	88.3
Physiotherapy	42	35.0

Overall, Table-8 shows a wide variation in elderly women's practices related to OA. The highest reported practices were related to compliance to medications (80.0%) and the use of compresses (88.3%). Conversely, the practices related to modifying activities and physiotherapy were the lowest, 34.2% and 35.0% respectively.

As displayed in Figure-5, slightly more than two-thirds of the elderly women in the study sample were having adequate reported total practices (71.7%).

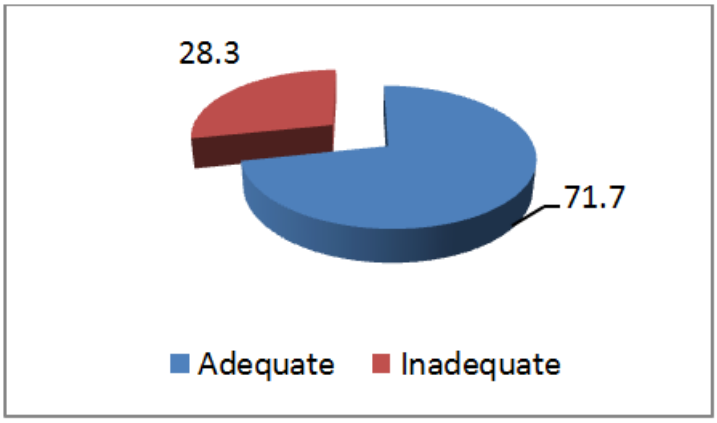

Fig-5: Total practices related to OA among elderly women in the study sample (n=120)

Table-7: Practice of activities of daily living (ADL) among elderly women in the study sample (n=120)

Lawton ADL	Dependent		Partially independent		Independent	
	No.	%	No.	%	No.	%
Bathing	11	9.2	45	37.5	64	53.3
Dressing	8	6.7	41	34.2	71	59.2
Toileting	0	0.0	39	32.5	81	67.5
Mobilizing	2	1.7	33	27.5	85	70.8
Continence	0	0.0	16	13.3	104	86.7
Feeding	1	0.8	32	26.7	87	72.5
Phone use	0	0.0	23	22.3	80	77.7
Shopping	13	11.1	61	52.1	43	36.8
Preparing food	3	2.6	56	48.3	57	49.1
Cleaning home	3	2.6	46	40.0	66	57.4
Laundry	6	5.0	82	68.3	32	26.7
Take medications	0	0.0	54	45.0	66	55.0
Use transport means	2	1.7	53	44.5	64	53.8
Finances	0	0.0	45	37.5	75	62.5

Concerning the independence in the practices of the Activities of Daily Living (ADL), Table *9* demonstrates generally high percentages of independence in most activities. This was most evident in the activities related to continence (86.7%), phone use (77.7%), feeding (72.5%), and mobilizing (70.8%). On the other hand, only 26.7% were independent in the activities related to laundry, and 36.8% in shopping.

In total, Figure-6 illustrates that 59.2% of the elderly women in the study sample were independent in total ADL practices.

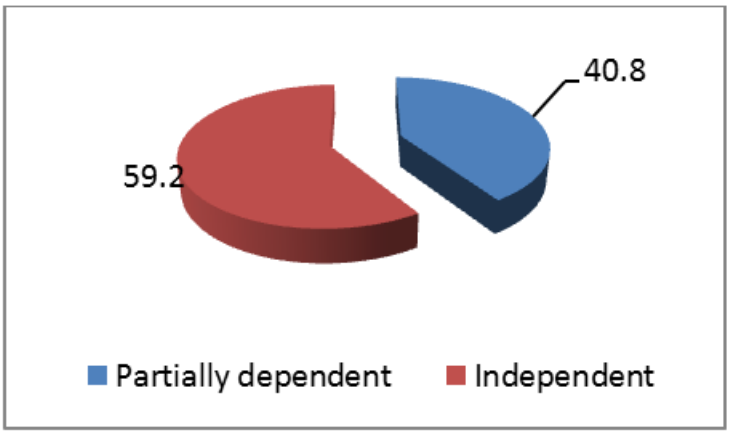

Fig-6: Total practice of ADL among elderly women in the study sample (n=120)

Table-8: Correlations between elderly women scores of knowledge, practice, Lawton independence, pain, and BMI and their characteristics

Characteristics	Spearman's rank correlation coefficient				
	Knowledge	Practice	Lawton	Pain	BMI
Age	-.318**	-0.07	.444* *	.216*	0.07
Education	.183*	.203*	0.09	-0.17	-0.10
Income	.246**	0.13	.186*	-.274**	-0.02
Crowding index	0.05	-0.06	-0.07	0.13	.181*
No. of children	0.16	0.04	0.12	-0.08	-0.03
OA duration	.247**	0.04	-.209*	0.12	0.10
No. of treatments	-.513**	0.15	-0.09	0.14	-0.18
Number of symptoms	0.03	0.03	.184*	0.04	-0.01

(*) Statistically significant at p<0.05 (**) Statistically significant at p<0.0t

As displayed in Table 22, elderly women' knowledge scores had statistically significant positive correlations with their education, income, and OA duration, and negative correlations with their age and

the number of treatments. Their practice scores had a statistically significant weak positive correlation with their education (r=0.203). As for the Lawton score, it had statistically significant weak positive correlations with their income and the number of symptoms, and negative correlations with their age and OA duration. The pain score had a positive correlation with age and a negative correlation with the income. Lastly, BMI had a positive correlation with the crowding index (r=0.181).

DISCUSSION

The condition affects approximately one-fifth of the world population, and is increasing in many countries due to aging and obesity. Pain is a universal symptom in this disorder [11]. Knee OA is also associated with the risk of falling, with its deleterious consequences in the elderly [12]. This would lead to more dependence in the performance of the Activities of Daily Living (ADLs), with consequent negative impact of patients' quality of life [13]. The treatment includes medication and exercise. Community health nurses have an important role to play with these patients through education about lifestyle modification and weight loss [14].

The aim of this study was to assess elderly women lifestyle suffering from knee osteoarthritis (OA) pain. The study results indicate generally deficient knowledge about the disease among them, with slightly better related practices and independence in ADL practices. Their pain is increased by their BMI.

The study sample consisted of a group of elderly women who represent a typical middle class urban community. Thus, around a half of them were having basic/intermediate education, with sufficient income. The majority were having a previous job, although mostly employee jobs, which are sedentary in nature. This might explain the very high prevalence of obesity among them. These socio-demographic characteristics do influence their knowledge, practices, and pain sensation as the study findings revealed. In line with this, Etemadifar *et al.,* [15] in a study in found that lack of exercise and sedentary life are significant risk factors for bone loss and knee OA in [16].

According to the present study results, a great majority of the elderly women with knee OA were morbidly obese. This could have more than one explanation. The first is the sedentary life since the only physical activity they reported was the home chores. The second is that only one of them is having a current job. The third and most important is the knee pain, which would lead to restrictions and limitations of movement and daily life activities, leading to more increases in body weight, and the woman enters a vicious circle. In congruence with this, Ragucci *et al.*, [17] in a study in Cambridge highlighted that immobilization causes loss of bone density, with negative impacts particularly on the weightbearing bones leading to increased risk of knee OA.

Moreover, only a few of the elderly women in the current study reported watching their weight and following a dietary regimen. Additionally, the majority had no regular measurement of their body weight, and even these mostly did not take an appropriate action. This would add to the causation of greatly increased BMl and morbid obesity among them. In congruence with this, the Centers for Disease Control and Prevention mentioned that obesity is a strong risk factor for knee OA, with very obese people being 14 times more likely to be affected [18]. On the same line, a study in United Arab Emirates demonstrated the close association between BMI and knee OA. Moreover, a recent study in the United States provided evidence of the cost-effectiveness of diet and exercise in improving the symptoms of knee OA among overweight and obese patients [19].

The duration of OA among the elderly women in the present ranged between one and four years, with a median of 4.0 years, indicating that at least one-half of the women had their disease for four years. This is a relatively short duration of OA, which is due to the inclusion criterion of a recent diagnosis of the disease. This also explains the finding of mostly moderate pain among them. The duration of the disease is in fact an important determinant of the pattern of pain in knee OA as reported in a recent study in France.

The present study findings have also demonstrated a deleterious effect of BMI on the pain sensation among the elderly women. Thus, BMI and the pain scale scores were positively correlated. Additionally, the multivariate analysis identified BMI as a main significant independent positive predictor of the pain score. This is quite plausible given the pressure exerted by the body weight on the knees, leading to more shearing of their cartilages and internal structures. In agreement with this, Vancampfort *et al.*, [20] in a study in Florida, United States, demonstrated a significant association between BMI and pain and stiffness symptoms among obese patients with knee OA.

Moreover, according to the current study results, the women in older age group and the currently unmarried ones were suffering more severe pain. The effect of older age is conceivable given the effects of aging on the knee joint. As for the effect of being unmarried, it could be explained by the more effort the woman needs to exert to perform her daily life activities alone. Added to this is the possible psychological effects of lack of support and loneliness. In fact, being currently married was identified as a negative

independent predictor of the pain score. This might be improved by increasing physical activity, which would improve woman's mood. In line with this, Rizzoli *el al.*, [21] showed that exercise program can result in positive benefits and improve quality of life of OA patients.

Additionally, a Japanese study demonstrated the effect of psychological health on pain and physical functioning among patients with knee OA Apart from the pain, the other most common symptoms reported by the women in the current study were cracking and impaired mobility. The median number of symptoms was 2.0, indicating that at least one-half of the women had two different symptoms. Similar symptoms of OA were reported in previous studies Meanwhile, the cracking or crepitus sensation symptom has been shown to predict symptomatic knee OA in a study in Rhode Island [13].

The present study assessed elderly women's knowledge of OA. The results demonstrated a wide variation in their knowledge. Thus, a majority of them had correct knowledge of the diagnosis and treatment, which is expected given that they are recruited from outpatient clinics where the diagnosis and treatment do occur. On the other hand, their knowledge of the risk factors of OA was much lower. This indicates deficient patient education in the healthcare settings. Overall, only less than one-third of the elderly women in the current study had satisfactory total knowledge of OA. This is quite low and indicates the need for urgent patient education interventions. Such lack of knowledge has been identified as barriers impeding the use of various treatment modalities by knee OA patients in a study in the Netherlands [22].

The factors influencing women's knowledge of OA included a number of socio-demographic as well as a number of disease characteristics. The socio-demographic characteristics included age, residence, marital status, education, previously job, and income. Apart from age, all these factors had a positive influence on women's knowledge.

These factors indicate a better socioeconomic level, which would certainly associated with a better level of knowledge. However, in multivariate analysis, only age, married status, and income were independent predictors.

In congruence with these foregoing present study findings, a study in Malaysia revealed deficient knowledge of knee OA among respondents, and this was influenced by their age Moreover, a study in California, United States, identified knee OA patients' socioeconomic factors as having significant impacts on their awareness and choice of various treatment modalities [13].

The present study has also examined elderly women's practices related to their knee OA. Overall, the majority of them reported practices compliance with medications and with the use of compresses and follow-up. On the other hand, their practices related to modifying activities and physiotherapy were much less. Such practices are essential in dealing with this incurable disease to alleviate the related symptoms. In agreement with this, the National Institute of Arthritis and Musculoskeletal and Skin Diseases stated that there is no cure for OA. However, therapeutic exercises could reduce joint pain and improve mobility; the use of hot compresses to manage pain may also help [23].

Overall, more than two-thirds of the elderly women in the present study had adequate reported total practices. Although this might seem a positive finding, it could be an overestimate of the true practices since it reflects what they reported rather than what was observed. Thus, it could be due to an over-reporting bias as women may give positive responses just to please the interviewer or to give a good impression about herself. A similar bias has been reported in many previous studies assessing various conditions such as neurocognitive evaluation.

Concerning the factors significantly related to elderly women's practices, the current study bivariate analyses could not reveal any association with any of their socio-demographic or disease characteristics. The correlation analysis identified a positive association between woman's practice score and her level of education. Meanwhile, in multivariate analysis, having an urban residence and a previous job were positive predictors of the practice score. These again reflect a better socioeconomic level, which would have a positive impact on women's health behavior. In agreement with this, a study demonstrated the significant influence of sociocultural factors on the care for knee OA among Asians in Canada [24].

As regards the performance of the Activities of Daily Living (ADLs), the present study results demonstrated that most women were independent in most activities, particularly the instrumental basic ADLs. On the other hand, they were more dependent in the activities that need a higher level of effort and more pressure on their knees such as laundry and shopping. Overall, more than half of the women were independent in total ADL practices. The relatively high proportion of elderly women who were dependent in the performance of their ADLs could be attributed to their decreased balance confidence and high fear of falls. This has been associated with more physical difficulties and more dependence in the ADLs as shown in a study in Croatia [25].

As for the factors influencing women's independence in ADLs, age was one of the most important of these factors as revealed in bivariate and multivariate analyses. This is expected given the loss of physical abilities associated with the process of aging, which could be accentuated by the knee OA problem. Other personal factors positively influencing women's independence in ADLs were the income and the previous work. A similar negative association was reported between the score of independence in ADLs and age among Chinese elderly [26].

The current study has also revealed a positive association between women's independence in ADLs and their positive family history of OA. This might be explained by the fact that co-living with a person suffering knee OA would certainly lead to gaining more information and experience in dealing with such activities independently. In congruence with this, a study carried out in Boston, United States, demonstrated the importance of family history on the perception of knee OA among respondents [27].

Another factor of major importance in its effect on women's independence in ADLs was their BMI. The multivariate analysis identified it as a significant negative predictor of Lawton independence score. This could be explained by the previously discussed effect of BMI on increasing the pain sensation, which would decrease women's abilities to perform ADLs independently. In line with this, a study in India revealed a significant negative correlation between the score of ADL and BMI among knee OA patients [28].

The duration of OA also seems to have an influence on women's independent performance of ADLs. Thus, the Lawton score had a significant negative correlation with OA duration. This is quite plausible given that the disease is chronic and progressive in nature. Hence, with a longer duration of the disease, the internal structure of the knee joint is more and more disturbed, with a negative influence on woman's ability to move and perform ADLs independently. In congruence with this, Mascarin *et al.*, [29] highlighted that OA is a chronic condition that gradually worsens over time, although certain measures may slow its progression and control symptoms.

The present study has also demonstrated significant associations among elderly women's knowledge, practice, and independence in ADLs. Thus, significantly more women independent in ADLs were among those watching weight, modifying their activities, having physiotherapy, and having adequate total practice. Moreover, significant positive correlations were revealed between women' Lawton scores and their scores of knowledge and practice. The findings indicate the importance of improving women's knowledge about OA to improve their related practices. This would ultimately lead to more independence in their performance of ADLs. Similar findings were reported by Ibrahim [30] in a study at Suez Canal University about the effectiveness of health education program for elderly with OA in improving their knowledge and practices as well as their lifestyle.

CONCLUSION

The study results lead to the conclusion that elderly women with knee osteoarthritis (OA) have insufficient knowledge about the disease. However, their practices are generally adequate, particularly regarding compliance with medications, but less with physiotherapy and modifying their activities. Moreover, more than a half of them are independent in ADL practices. Their pain is mostly moderate and is increased by increased BMI. Their knowledge, practice, and independence in ADLs are influenced by their age, marital status, income, residence, previous job, and OA duration. These women need to improve their knowledge and practices and watch their body weight.

RECOMMENDATIONS

- In the light of the results, the study recommends the following.
- Health education programs should be provided to all women attending the orthopedic and rheumatology clinics for knee osteoarthritis. Such programs should include:
- Simple basic knowledge about the disease etiology and its risk factors, symptoms, and aggravating conditions.
- The importance of body weight reduction, regular body weighing, and the appropriate actions to be taken in case of increased weight.
- The practice of regular physical exercises suitable for the condition of the knees, with proper modification of the type and level of activities.
- The value of keeping independence in the practice of ADLs in improving their physical and psychological wellbeing.
- The importance of compliance to various types of treatments, not only medications, as well as regular follow-up.
- Booklets, posters, and illustrated handouts in Arabic language containing simple information about OA of the knee should be available in each healthcare setting.
- Further research is needed to examine the value of multifactorial interventions in improving elderly women's knowledge and practices related to knee OA.

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