Coping Intervention Strategies among Elderly Women Suffering from Knee Osteoarthritis Pain at Beni-Suef

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Abstract

Background: Knee osteoarthritis is a musculoskeletal condition that affects older adults and causes pain, physical disablement, and life quality reduction. ***Aim:*** This study aimed to evaluate the effect of Coping Intervention Strategies on Pain level among Elderly Women with Knee Osteoarthritis at Beni-Suef. ***Design:*** A pretest- posttest quasi-experimental research design was used in this study. ***Setting:*** The current study was conducted at Beni Suef university hospital in orthopedics outpatient clinic and the physiotherapy unit. ***Sample:*** A purposive sample of 150 elderly women was included in the current study were attended in the above mentioned setting. **Tools**: One tool were used in this study: An interview questionnaire which composed of six parts; elderly women's demographic characteristics, medical history of knee joint disease, knowledge assessment of the studied elderly women about knee joint pain and coping intervention strategies, Katz scale for independence in the activities of daily living, Visual Analoge Scale for pain severity and Pain Coping Inventory. ***Results:*** Demonstrates that, there was a statistically significant improvement among the studied elderly women regarding their total knowledge, pain level, function level, and coping level during posttest in comparing with pretest. Also, more than one quarter of the studied elderly women had full function during pretest which improved posttest to become more than two thirds of them. Also, minority of the studied elderly women had no pain during pretest which improved posttest to become less than half of them. Moreover, minority of the studied elderly women had high coping level during pretest which improved to become less than two thirds of them during posttest. ***Conclusion:*** There was strong positive correlation between total levels of independence in activity of daily living, total pain levels and total coping levels with pain. ***Recommendations:*** Studying coping intervention strategies among the elderly women suffering from knee osteoarthritis pain more broadly in the nursing specialty.

Keywords: Coping Intervention Strategies, Elderly, Knee, Osteoarthritis, Pain

Introduction:

Knee osteoarthritis is a musculoskeletal condition that affects older adults and causes pain, physical disablement, and life quality reduction. Severe osteoarthritis is painful and it may result in disability, and even affect life expectancy. Population aging has been accompanied by a rise in non-communicable diseases including osteoarthritis. Most patients suffer from pain, muscle stiffness, weakness, inability to climb and come down stairs, and reduced performance, which reduces the quality of the patient's life due to its chronic, painful, and weakening nature ***(Tschon et al., 2021)***.

Also, because pain and performance reduction blunt the walking speed of patients, the purpose of osteoarthritis treatment is to reduce the pain by improving performance and saving the mobility of joints. By modifying this issue, the improvement of the motion and walking velocity of the

patient will increase. Age, body weight, type of job, metabolic diseases, and trauma are significant factors causing knee osteoarthritis. This disease negatively affects walking, climbing stairs, and bearing weight disorders, limiting older people's mobility *(Morowatisharifabad et al., 2020).*

Other symptoms include the reduction of general performance, especially in osteoarthritic organs, stiffness, mobility reduction, instability, and buckling of knees. Pain is the most common and debilitating symptom experienced by people with osteoarthritis (OA), and difficulty coping with pain has been associated with increased pain severity and greater emotional distress, muscle and joint tenderness, and pain-related disability, as well as poorer outcomes from treatment. People with OA may also reduce their physical activity because they fear that movement will exacerbate their pain *(Jormand et al., 2022).*

Limitations in activity may cause limitations in social performance and problems in internal organs, such as the heart and lungs, various muscles, house-keeping, shopping, traveling, exercising, and working. Lack of exercise is the major cause of chronic disease. In old age, osteoarthritis patients are mostly exposed to continual limitations in daily life activities (ADL). As such, the development of effective and accessible psychological interventions that help people with OA cope with their pain is important *(Malkoço et al., 2024).*

One such psychological intervention is pain coping strategies which a form of skills training informed by cognitive behavioral principles. Pain coping strategies helps patients reconceptualise how thoughts, feelings,

and behaviors influence pain and systematically trains them in skills such as relaxation, goal setting, and the use of positive coping thoughts to reduce pain catastrophizing *(Che Hasan et al., 2021).*

Studies have shown that pain coping strategies leads to improvements in pain, physical function, and psychological distress in people with OA and rheumatoid arthritis. Although pain coping strategies is generally delivered by a psychologist specializing in pain management, there is more recent evidence that a combined exercise and pain coping strategies intervention delivered by physiotherapists significantly improves pain and function in people with knee OA to a greater extent than either exercise or pain coping strategies alone *(Lawford et al., 2020).*

Significance of the study:

Osteoarthritis is one of the major causes of disablement. Globally, the prevalence of knee osteoarthritis among people aged 65 or more is 60–90%; however, women tend to need more healthcare, have higher osteoarthritis prevalence, and more pain and inflammation. These estimations are higher in radiological knee OA; 22.8% for females and 14.1% for males at a younger age; 45 years and over. The incidence of OA ascends parallel with the increase of obesity in the population *(Malkoço et al., 2024).*

In Egypt prevalence of OA is 8.5% in the total adult population, approximately 85% of individuals over the age of 75 years of age experience some symptoms of osteoarthritis. 40% of individuals with the disorder experience significant difficulties with daily activities to the point of interfering with work related or social roles. Also, 29.5% most prevalent diseases among elderly

females. This might be due to the postmenopausal osteoporotic changes among females *(Shamekh et al., 2022)*.

Aim Of The Study

This study aimed to evaluate the effect of Coping Intervention Strategies on Pain level among Elderly Women with Knee Osteoarthritis at Beni-Suef through:

1- Assessing pain level among Elderly Women with Knee Osteoarthritis pre and post coping intervention strategies.

2- Evaluating activities of daily living level among Elderly Women with Knee Osteoarthritis pre and post coping intervention strategies.

3- Assessing coping level among Elderly Women with Knee Osteoarthritis pre and post coping intervention strategies.

Research hypothesis:

H1; Coping Intervention Strategies will reduce pain level among Elderly Women with knee Osteoarthritis.

H2; Coping Intervention Strategies will improve activities of daily living among Elderly Women with knee Osteoarthritis.

H3; Coping Intervention Strategies will improve coping level among Elderly Women with knee Osteoarthritis.

A quasi experimental design aims to establish a cause-and-effect relationship between an independent and dependent variable. A quasi-experimental design is a quantitative research method using pre-post testing. It involves numerical data collection and statistical analysis *(Miller et al., 2020)*.

Subject And Methods

The subject and methods for the current study were portrayed under the four main items as the following:

I. Technical item.
II. Operational item.
III. Administrative item.
IV. Statistical item.

I) Technical item:

The technical item included research item, setting, subjects and tools of data collection used in this study.

Research design:

A pretest- posttest quasi-experimental research design was used in this study.

Setting:

The current study was conducted at Beni Suef university hospital in orthopedics outpatient clinic and the physiotherapy unit. The orthopedics outpatient clinic was located on ground floor and consisted of two rooms. While, physiotherapy unit were located on third floor and consisted of three rooms.

Subjects:

Sample type: A purposive sample of 150 elderly women was included in the current study were attended in the above mentioned setting.

Sample size:

The sample size was calculated to determine the prevalence of any type of strategy of 50% or higher prevalence, with 5% absolute precision, at 95% of confidence. Using the software package for single proportion estimation dichotomous variables with finite population correction, the estimated sample size was 150 elderly women.

Sampling Technique:

The subjects for the study were selected by simple random sample to recruit elderly women.

Total number of elderly women with knee osteoarthritis in one year begins of January 2023 to end of December 2023 were 246 elderly women

in Beni Suef University Hospital. So, the target populations of this study are 150 elderly women who have knee osteoarthritis. The sample size calculation will be calculated by using the following equation:

$$N= \qquad N/\{1+N(e)^2\}$$

(Chandrasekharan, et al., 2019)

Where n = sample size,

N = population size is 246

e= 0.05 is the level of population

n= 246/{1+246(0.0025)} = 150

Sample criteria:

Any elderly women suffering from knee osteoarthritis (OA) pain and attending the study settings was eligible for being selected in the study sample.

Exclusion criteria:

✓ Cognitive impairment

✓ Life-threatening or functionally severely limiting health problems other than OA (e.g., cancer, chronic Obstructive, pulmonary disease, etc.).

Tools of data collection:

Data were collected using the following tool:

Tool I: An interview questionnaire: (Appendix I)

This questionnaire was designed by the researcher based on reviewing related literatures and it was written in simple Arabic language, it consists of five parts:

Part I: Elderly women's demographic characteristics: -

It was concerned with demographic characteristics of the studied elderly women which included; age, educational level, occupational level, marital status and residence place.

Part II: Medical history of knee joint disease: -

It was concerned with medical history of knee joint disease of the studied elderly women which included; duration from knee joint problem, knee joint problem place, nature of pain, current treatment and previous treat knee osteoarthritis.

Part III: Knowledge assessment of the studied elderly women about knee joint pain and coping intervention strategies:

This tool was developed by the researcher after reviewing related recent literature review *(Kamsan et al., 2020 & Hamid et al., 2022),* and was used to assess elderly women's knowledge regarding knee joint pain and coping intervention strategies. It was consisted of (30) questions and reflecting (5) parts:

Part 1: Different meanings of knee joint pain **(2 items with 2 scores)**.

Part 2: Symptoms of knee joint pain **(4 items with 4 scores).**

Part 3: Causes of knee joint pain **(4 items with 4 scores).**

Part 4: Diagnosis and treatment of knee joint pain **(7 items with 7 scores).**

Part 5: Coping strategies to deal with knee joint pain **(13 items with 13 scores).**

Scoring system: Total global score of 30 questions with 30 scores, formed of multiple choice (incorrect= Zero and correct = 1). These scores were summed and converted into a percent score. It was classified into two categories according to the following:

➢ Unsatisfactory knowledge if total score < 65% which mean (< 19.5 score).

➢ Satisfactory knowledge if total score from ≥ 65% which mean (≥ 19.5 score).

Part IV: Katz scale for independence in the activities of daily living (ADL): (Appendix II)

It was adapted from *(Rathnayake et al., 2023),* and aimed to assess independence in the activities of daily living (ADL) among elderly women with knee osteoarthritis. It included the 6 items; shower, getting dressed, use the toilet, mobility, output control and nutrition.

The scoring system:-

Total global score of 6 for 6 items, were rated on two ranks as (with supervision, guidance, and personal assistance or complete care = Zero and without supervision or direction or personal assistance=1).

The total score of this scale classified into three categories based on the following:

Full function = 6

Moderate impairment = 4-5

Severe functional impairment = ≤3

Part V: Visual Analogue Scale (VAS) for pain severity: (Appendix III)

It was adapted from *(Åström et al, 2023),* and aimed to assess pain severity among elderly women with knee osteoarthritis and include numbers from 1 to 10 in box that described how much knee pain patient feel.

The scoring system:-

The total score of this scale was 10 and classified into three categories based on the following:

No pain = 0

Moderate pain = 1<6

Sever pain = 6-10

Part VI: Pain Coping Inventory (PCI): (Appendix IV)

It was adapted from *(Hocaoğlu, 2019).* It aimed to assessment of the coping strategies used in dealing with the OA pain among elderly women with knee osteoarthritis. It included the following items:

Part I: Pain transformation: it included pretend the pain is not present, pretend pain does not concern body, imagine pain to be less violent than it really is and think of other people's difficulties (4 items with score 16).

Part II: Distraction: it included take a bath or shower, think of pleasant things of events, distract by undertaking a physical activity and distract by reading, listening to music (5 items with score 20).

Part III: Reducing demands: it included continue activities with less effort continue activities with a slower pace and continue activities less precisely (3 items with score 12).

Part IV: Retreating: it included make sure that I don't get upset, retreat into a restful environment, avoid bothering sounds and avoid light (7 items with score 28).

Part V: Worrying: it included focus on the pain all the time, self-administration of other physical stimuli, think of things that remain undone because of pain and start worrying (9 items with score 36).

Part VI: Resting: it included stop activities, confine self to simple activities, do not exert self physically and rest sitting or lying down (5 items with score 20).

The scoring system:-

Total global score of 132 for 33 sub items, were rated on four ranks as:

- Part I, II & III (rarely = 1, sometimes few = 2, sometimes a lot = 3 & almost always = 4).

- Part IV, V & VI (rarely = 4, sometimes few = 3, sometimes a lot = 2 & almost always = 1).

The total score of this scale classified into three categories based on the following:

- Low coping level ≤60% of total score (≤ 79.2 scores)

- Moderate coping level >60% - <80% of total score (> 79.2 - <105.6 scores)

- High coping level ≥ 80 % of total score (≥ 105.6 scores)

II-Operational design:

The operational design includes preparatory phase, tools validity and reliability, pilot study and field work.

A) Preparatory phase:

It was included reviewing of related literature and theoretical knowledge of various aspects of the study using books, articles and internet's periodicals and journals to develop tools for data collection.

B) Tool validity:

Face and content validity was ascertained by a panel of five experts 2 assistant professor & 3 Lecturer of Geriatric Health Nursing from Faculty of Nursing, Helwan University. The expertise reviewed the tools for clarity, relevance, comprehensiveness, simplicity, and applicability; minor modifications were done and the final forms were developed.

Reliability:

In the present study, reliability was tested using Chronbach's Alpha coefficients for Knowledge assessment of the studied elderly women about knee joint pain and coping intervention strategies (part III) which was 0.715, Katz scale for independence in the activities of daily living (ADL) (part IV) which was 0.677, Visual analogue Scale (VAS) for pain severity (part V) which was 0.686 and Pain Coping Inventory (PCI) (part VI) which was 0.770.

C) A pilot study:

A pilot study was carried out on 10% (15 elderly women) of sample size to test the applicability, clarity and efficiency of the tools. Depending on the results of the pilot study no modifications or refinements were done and the elderly women were included in the actual study sample.

D) Field work:

Data were collected in the following sequence:-

- Once the permission was obtained, the investigator was interviewed with the elderly women in waiting room of orthopedics outpatient clinic and explained the aim of the study and took their approval to participate and cooperate in the study through oral consent.

- Data collection took a period of 6 months started from the beginning of January 2024 to the end of Jun 2024. The sessions of current study was done in orthopedics outpatient clinic waiting room and physiotherapy waiting room.

- Data collection was included 3 phases as the following:

Phase I: Assessment phase:

- The data was collected by the investigator throughout assessing elderly women's demographic characteristics, medical history of knee joint disease, knowledge assessment of the studied elderly women about knee joint pain and coping intervention strategies, Katz scale for independence in the activities of daily

living (ADL), Visual Analogue Scale (VAS) for pain severity and Pain Coping Inventory (PCI) as a baseline data assessment pre implementation of coping intervention strategies.

Phase II: Planning and implementation phase (Intervention):

Once the initial assessment finished, the investigator planned the sessions of individualized elderly women for start explanation of coping intervention strategies and the investigator was presented in hospital 3 days/week.

- Elderly women were divided into small groups (5 elderly women/session) each group perceived the same content using the same teaching strategies and handout.

- The total number of sessions was 6/week for each group and each session take 30-45 minutes, and from 3 hours to 4 hours for all sessions.

- The media was used in coping intervention strategies sessions as following: power point presentation, discussion, demonstration and re-demonstration as a method of teaching were also conducted during each session.

- During each session the investigator used simple, brief and clear words. At the end of each session, a brief summary was given by the investigator, emphasizing the most important points included in each session and ask each woman to follow this coping intervention strategies in the home.

- Before starting of each session, elderly women were asked questions related to the topics discussed in the previous session to ensure that they remember the instruction was given and to reinforce the knowledge.

Missed or unclear points were re-emphasized by the investigator.

- Coping intervention strategies was given to each patient in the study to grasp their attention, motivate, help for reviewing at home to reduce their pain and support teaching and practicing which included exercise, weight management, and pain management techniques. Low-impact exercise, as walking, strengthens muscles and improves joint function by applying range of motion for legs three times per day. Losing weight can reduce stress on the knees, and pain reducing strategies such as heat compresses.

- The phone number of all elderly women was obtained to follow with them implementation of coping strategy in home.

- The consultant help only in encourage elderly women to engage and implement coping strategyies.

Phase III: Evaluation phase (post implementation of coping intervention strategies):

It was done post 3 months of implementation of coping intervention strategies and included reassessment using the same tools of data collection which aimed to evaluate the effect of coping intervention strategies on elderly women suffering from knee osteoarthritis pain; it was done by the investigator as following:

- Evaluation of elderly women post implementation coping intervention strategies using elderly women's knowledge, Katz scale for independence in the activities of daily living (ADL), Visual Analogue Scale (VAS) for pain severity and Pain Coping Inventory (PCI) by

comparison of each elderly women's findings with the preceding one by comparing between pre-test results with post findings to evaluate the effect of coping intervention strategies.

- There were no limitations in implementing coping strategies.

Coping Intervention Strategies among the Elderly Women Suffering from Knee Osteoarthritis Pain: (Appendix V): It aimed to enhance elderly women's knowledge about knee joint pain and coping intervention strategies, improve activity of daily living and reduce and manage the pain among elderly women suffering from knee osteoarthritis pain and it was developed and designed by the researcher through a review of recent and related literature as: definition of knee osteoarthritis, causes, risk factors, signs and symptoms, complications, treatment and coping strategies to deal with knee osteoarthritis pain (*Farinelli et al., 2024), (Fahmy et al., 2023) & (Alhamo et al., 2019)*.

Ethical Considerations:

The research approval was obtained from the Faculty Scientific Ethical Committee before starting the study (number of acceptance 35, 20 May 2023). The investigator clarified the objectives and aim of the study to the nursing elderly women included in the study before starting. Researcher assured the anonymity and confidentiality of the elderly women included in the study. The elderly women in the study was informed that they are allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time without any reasons.

III-Administrative design:

An official permission was obtained by submission of official letters issued from the dean of faculty of nursing, Helwan University to the manager of Beni Suef University Hospital. The title and aim of the study was explained as well as the main data items and the expected outcomes.

4) Statistical design

Data were summarized, tabulated, and presented using descriptive statistics in the form of means and standard deviations as a measure of dispersion. A statistical package for the social science (SPSS), version (26) was used for statistical analysis of the data, as it contains the test of significance given in standard statistical books. Qualitative data were expressed as a percentage. For quantitative data, a comparison between two variables was done using a student's t-test. Probability (P-value) is the degree of significance, less than 0.05 was considered significant. The smaller the P-value obtained, the more significant is the result (*), less than 0.001 was considered highly significant (**) and the correlation coefficient was done by using the Pearson correlation test. T- test is used when the cell sizes are expected to be large. If the sample size is small (or you have expected cell sizes <5). Chi-square (X2) test of significance was used in order to compare proportions between qualitative parameters.

Results

table (1): frequency and percentage distribution of the studied elderly women regarding to their demographic characteristics (n=150).

Items	No.	%
Age		
50 ≤ 60 year	57	38.0
60 > 70 years	72	**48.0**
> 70 year	21	14.0
Mean ± SD	63.11±6.04	
Educational level		
Not read and write	56	**37.3**
Read and write	36	24.0
Primary education	30	20.0
Intermediate education	28	18.7
Occupational status		
Does not work	107	**71.3**
free business	11	7.3
Governmental job	14	9.3
Retired	18	12.0
Marital status		
Married	78	**52.0**
Divorced	21	14.0
Widow	51	34.0
Residence place		
Rural	90	**60.0**
Urban	60	40.0
Monthly income (from elderly women' view)		
Adequate	55	36.7
Inadequate	95	**63.3**

Table (2): Frequency and percentage distribution of the studied elderly women regarding to their medical history related to knee joint disease (n=150).

Items	No.	%
Suffering duration from knee joint problem		
<One year	15	10.0
1 – < 2 years	25	16.7
2 - <5 years	60	**40.0**
≥ 5 years	50	33.3
knee joint problem place		
One knee	60	40.0
Two knees	90	**60.0**
Nature of pain		
In increasing	120	**80.0**
Doesn't change	30	20.0
Current treatment		
Medication*		
Tablets	30	20.0
Injections	60	**40.0**
Ointment	15	10.0
All of them	45	30.0
Physiotherapy *		
No	67	**44.7**
By self	36	24.0
Physiotherapist	47	31.3
Previous treat knee osteoarthritis*		
No	93	**62.0**
Surgery	17	11.3
Injection	40	26.7
Problems in other joints		
Yes	61	40.7
No	89	**59.3**

Table (3): Frequency and percentage distribution of the studied elderly women regarding to their sub-items knowledge about knee joint pain and coping strategies to deal with knee joint pain (n= 150).

| Items	Pretest				Posttest				X^2	p value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	No.	%	No.	%	No.	%	No.	%		
Different meanings of knee joint pain	24	16.0	126	84.0	106	70.7	44	29.3	11.860	0.001**
Symptoms of knee joint pain	46	**30.7**	104	69.3	130	**86.7**	20	13.3	13.839	0.000**
Causes of knee joint pain	39	26.0	111	74.0	119	79.3	31	20.7	13.729	0.000**
Diagnosis and treatment of knee joint pain	29	19.3	121	80.7	132	88.0	18	12.0	4.091	0.043*
Coping strategies to deal with knee joint pain	25	16.7	125	83.3	134	89.3	16	10.7	6.205	0.013*
Total	11	7.3	139	92.7	144	96.0	6	4.0	8.398	0.004**

* Statistically significant at p≤0.05   ** Highly statistical significant at p≤0.01
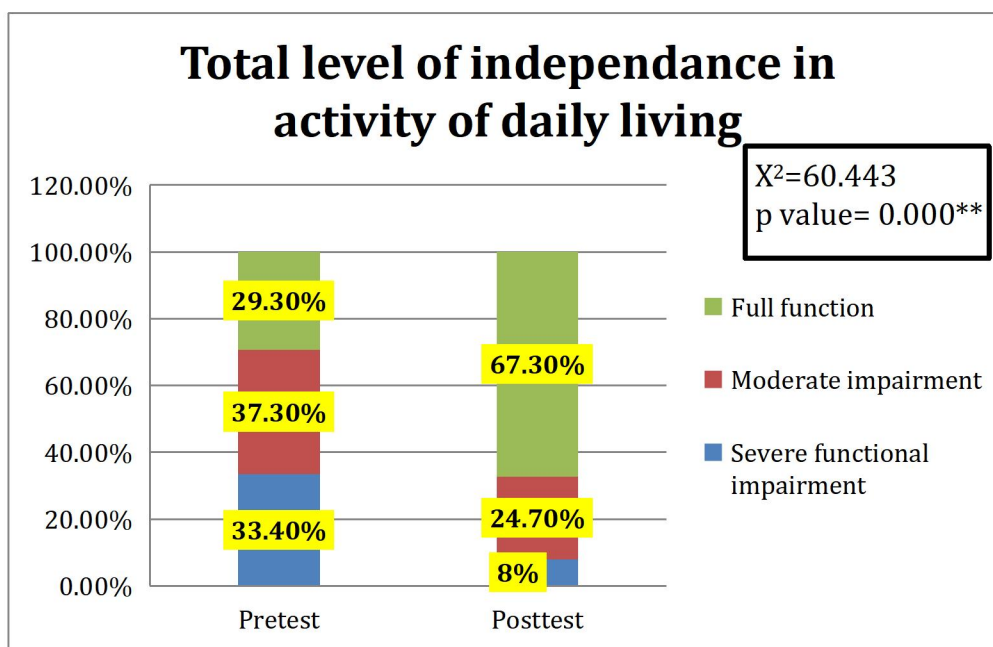
* Statistically significant at p≤0.05   ** Highly statistical significant at p≤0.01

Figure (1): Percentage distribution of the studied elderly women regarding to their total level of independence in activity of daily living (n=150).

Table (4): Frequency and percentage distribution of studied elderly women regarding their level of pain (n= 150).

Level of pain	Pretest		Posttest		X^2	p value
	No.	%	No.	%		
No pain	12	8.0	66	44.0	61.808	
Mild pain	18	12.0	32	21.4		0.000**
Moderate pain	37	24.7	29	19.3		
Severe pain	83	**55.3**	23	**15.3**		
Mean±SD	6.200±3.07		2.680±3.035		t test 14.476	0.000**

*Statistically significant at p≤0.05   ** Highly statistical significant at p≤0.01
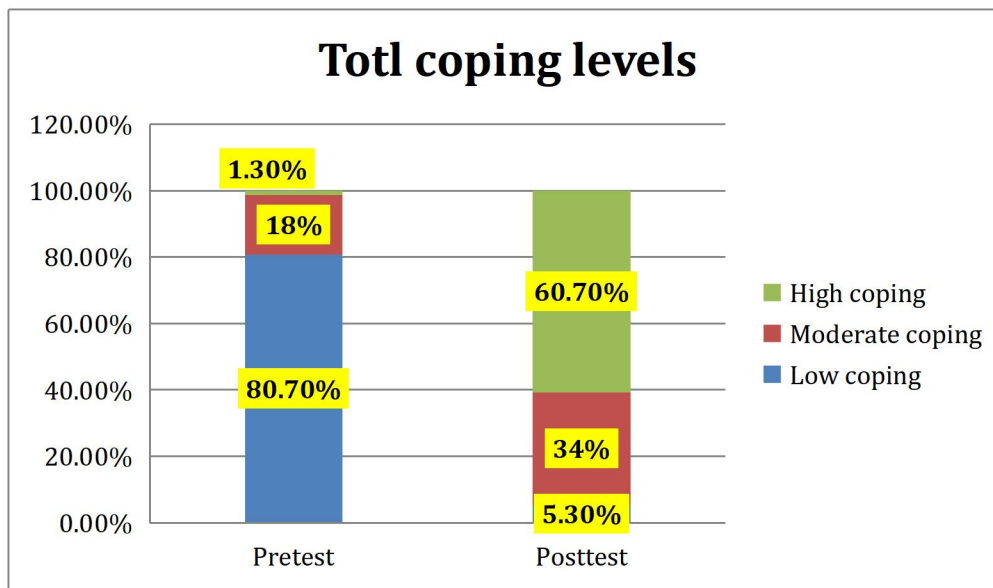
Figure (2): Percentage distribution of the studied elderly women regarding to their total coping levels with pain (n= 150).

Table (5): Correlation between total knowledge, levels of independence in activity of daily living, total pain levels and total coping levels with pain during pretest and posttest.

		Pretest			Posttest		
		Total knowledge	Total levels of independence in activity of daily living	Total pain levels	Total knowledge	Total levels of independence in activity of daily living	Total pain levels
Total knowledge	r						
	p						
Total levels of independence in activity of daily living	r	.035			.019		
	p	0.673			0.820		
Total pain levels	r	.152	.256		.182	.261	
	p	0.064	0.002**		0.026*	0.001**	
Total coping levels with pain	r	.198	.022	.235	.055	.242	.395
	p	0.015*	0.788	0.004**	0.506	0.003**	0.000**

r Pearson Correlation   * Statistically significant at p≤0.05   ** Highly statistical significant at p≤0.01

Results

Table (1): shows that, 48% of the studied elderly women their age group was 60 > 70 years with mean age 63.11±6.04 years, 37.3% of them didn't read and write, 71.3% didn't work, 52% of them were married, 60% of them were from rural areas, and 63.3% of them had inadequate monthly income.

Table (2) reveals that, 40% of the studied women were suffered from knee joint problem from 2 - <5 years, 60% of them had knee joint problem in two knees, 80% of them their knee joint pain in increasing, 40% of them were used injection for treat knee joint problem, 44.7% weren't performed physiotherapy, 62% of them weren't treat knee osteoarthritis previously and 59.3% of them weren't have any problems in other joints.

Table (3) reveals that, there was a statistically significant improvement during posttest among the studied elderly women regarding sub-items knowledge about knee joint pain and coping strategies to deal with knee joint pain comparing with pretest and noticed that, 30.7% of the studied elderly women had correct knowledge level regarding symptoms of knee joint pain during pretest which improved posttest to become 86.7% of them.

Figure (1): illustrates that, 29.3% of the studied elderly women had full function during pretest which improved posttest to become 67.3% of them.

Table (4): presents that, there was a statistically significant improvement during posttest among the studied elderly women regarding level of pain comparing with pretest and noticed that, 55.3% of the studied elderly women had severe pain during pretest which improved posttest to become 15.3% of them.

Figure (2): shows that, 1.3% of the studied elderly women had high coping level during pretest which improved to become 60.70% of them during posttest.

Table (5): reveals that, there was strong positive correlation between total pain levels and total levels of independence in activity of daily living and between total coping levels with pain and total pain levels. Also, there was positive correlation between total knowledge and total coping levels with pain. While, there was negative correlation between total knowledge, total levels of independence in activity of daily living and total pain levels and between total coping levels of pain and total levels of independence in activity of daily living during pretest.

Additionally, there was strong positive correlation between total levels of independence in activity of daily living, total pain levels and total coping levels with pain and between total pain levels and total coping levels with pain. Also, there was positive correlation between total knowledge and total pain levels. While, there was negative correlation between total knowledge, total levels of independence in activity of daily living and total coping levels with pain during posttest.

DISCUSSION

Knee osteoarthritis (OA) is a common degenerative joint disease that significantly impairs mobility and quality of life, particularly among elderly women, who are disproportionately, affected due to both biological and lifestyle factors *(Sharma et al., 2022).* Coping strategies interventions address emotional and social dimensions of chronic pain, which are crucial for holistic care in older women with knee OA *(Fernandez et al., 2024).*

So, the current study aimed to evaluating the effect of Coping Intervention Strategies among Elderly Women Suffering Pain from Knee Osteoarthritis at Beni-Suef.

Regarding frequency and percentage distribution of the studied elderly women regarding to their sub-items knowledge about knee joint pain and coping strategies to deal with knee joint pain the findings of the current study revealed that there was a statistically significant improvement during posttest among the studied elderly women regarding sub-items knowledge about knee joint pain and coping strategies to deal with knee joint pain comparing with pretest and noticed that, less than one third of the studied elderly women had correct knowledge level regarding symptoms of knee joint pain during pretest which improved posttest to become majority of them.

From researchers' point of view, this findings might be due to the findings of the current study clearly indicate that targeted educational interventions significantly enhance the knowledge of elderly women regarding knee joint pain and effective coping strategies. The notable improvement observed from pretest to posttest demonstrates the critical role of structured health education in raising awareness, promoting self-care, and empowering older adults to manage chronic conditions like knee osteoarthritis. Such interventions are essential in reducing dependency, improving functional outcomes, and ultimately fostering a better quality of life among the elderly population.

The finding in present study in agreement with the study conducted by **Simick Behera et al., (2024).** Who study "How Does Osteoarthritis Education Influence Knowledge, Beliefs, and Behavior in People With Knee and Hip Osteoarthritis?" Whose mention that, there was a statistically significant improvement of studied participants regarding knowledge before and after implementation of educational program regarding studied elderly women regarding knowledge about knee joint pain and coping strategies.

On other hand the finding in present study in disagreement with the study conducted by **Dar & Qadir, (2023).** Who study "A study to assess the effectiveness of planned teaching programme (ptp) on prevention of osteoarthritis among women in selected area, kashmir". Whose mention that, who reported that more than half of the respondents had low levels of knowledge. Likewise, minority of sample has good knowledge level.

Regarding percentage distribution of the studied elderly women to their total level of independence in activity of daily living the findings of the current study revealed that less than one third of the studied elderly women had full function during pretest which improved posttest to become more than two thirds of them.

From researchers' point of view, this findings might be due to the elderly women became equipping with targeted education and support, they were better able to manage their symptoms and maintain or regain their independence in daily activities. This demonstrates the critical role of structured health education in promoting self-care and functional independence among older adults with chronic musculoskeletal conditions.

The finding in present study in agreement with the study conducted by **Taha & Ibrahim, (2021).** Who study "Effect of Educational Program on

Nurses' Knowledge, Practices and Patients' Outcomes Post Total Knee Arthroplasty. ". Whose mention that, there was a statistically significant improvement of studied participants regarding independence in the activities of daily living (ADL) before and after implementation of program.

The finding in present study in disagreement with the study conducted by **Driban et al, (2020).** Who study "The incidence and characteristics of accelerated knee osteoarthritis among women: The Chingford cohort". Whose mention that, more than one third of studied elderly women had full function and moderate functional impairment. While minority of them had severe functional impairment.

Regarding frequency and percentage distribution of studied elderly women regarding their level of pain the findings of the current study depicted that there was a statistically significant improvement during posttest among the studied elderly women regarding level of pain comparing with pretest and noticed that, more than half of the studied elderly women had severe pain during pretest which improved posttest to become minority of them.

From researchers' point of view, these findings might be due to the increased awareness and application of coping strategies taught during the program. As elderly women gained knowledge about knee joint pain, its causes, and appropriate management techniques, they were better equipped to engage in effective self-care and modify behaviors that contribute to pain. This rationally supports the notion that empowering patients through education significantly enhances their ability to manage chronic conditions like knee osteoarthritis.

The finding in present study in agreement with the study conducted by **Jönsson, (2020).** Who study "A Supported Osteoarthritis Self-Management Program for People with Knee and/or Osteoarthritis. Outcomes and factors associated with response" Whose mention that, Significantly fewer patients with knee and hip OA reported daily pain, took OA medication, reported willingness to undergo surgery, reported fear of movement, and were physically inactive. Between the baseline and the 12-month follow-up, patients with knee and/or hip OA exhibited significant improvements in NRS-pain and the significant decreases in other symptoms and pain scores.

Regarding percentage distribution of the studied elderly women regarding to their total coping levels with pain the findings of the current study depicted that minority of the studied elderly women had high coping level during pretest which improved to become less than two thirds of them during posttest.

From researchers' point of view, this findings might be due to the notable improvement in total coping levels with pain among the studied elderly women can be logically attributed to the targeted intervention that enhanced their awareness, knowledge, and use of effective coping strategies. Providing structured education and supportive techniques likely empowered them to better understand their condition and adopt practical behaviors that reduce the perception and impact of pain in daily life.

The finding in present study in agreement with the study conducted by **Wang et al., (2021).** Who study Effectiveness of pain coping skills training on pain, physical function, and psychological outcomes in patients with osteoarthritis. Whose stated that, there

were statistically significant differences between pre-and post coping training applications.

The current study finding in the line agreed with *Fahmy et al., (2023).* who applied study entitled " Coping strategies among elderly women suffering from knee osteoarthritis pain at Beni-Suef city" whose found more than two thirds of studied elderly women had low coping level had moderate coping level, and only less than one fifth of them had high coping level.

Regarding Correlation between total knowledge, levels of independence in activity of daily living, total pain levels and total coping levels with pain during pretest and posttest the current study revealed that there was strong positive correlation between total pain levels and total levels of independence in activity of daily living and between total coping levels with pain and total pain levels. Also, there was positive correlation between total knowledge and total coping levels with pain. While, there was negative correlation between total knowledge, total levels of independence in activity of daily living and total pain levels and between total coping levels of pain and total levels of independence in activity of daily living during pretest.

Additionally, there was strong positive correlation between total levels of independence in activity of daily living, total pain levels and total coping levels with pain and between total pain levels and total coping levels with pain. Also, there was positive correlation between total knowledge and total pain levels. While, there was negative correlation between total knowledge, total levels of independence in activity of daily living and total coping levels with pain during posttest.

From researchers' point of view, these findings might be due to the study highlights significant correlations between pain levels, coping strategies, and independence in daily activities among elderly women with knee joint pain. The findings suggest that better knowledge and coping mechanisms can reduce pain-related limitations and improve independence. These results emphasize the importance of integrated care that includes education, pain management, and support to enhance the quality of life for elderly women with knee osteoarthritis.

The finding in present study in the same line, with the result of *Khalil et al,. (2024).* who applied study entitled " Instructional Guidelines on Selected Health Outcomes among Elderly with Knee Osteoarthritis " Whose mention that, strong positive correlation between total levels of independence in activity of daily living, total pain levels and total coping levels with pain.

While the finding of current study agreed with *Jormand et al., (2022)* who applied study entitled " Selfcare behaviors in older adults suffering from knee osteoarthritis: Application of theory of planned behavior." who reported that there was positive correlation between total pain levels and total levels of independence in activity of daily living and between total coping levels with pain and total pain levels.

This result supported with *Mohsen et al., (2021)* who applied study entitled "The Effect of Nursing Intervention on Knowledge and Practice among Elderly with Knee Osteoarthritis. " Whose mention there was positive correlation between total knowledge and total pain levels.

Conclusion

The present study showed that, more than one quarter of the studied elderly women had full function during pretest which improved posttest to become more than two thirds of them. Additionally, minority of the studied elderly women had no pain during pretest which improved posttest to become less than half of them. Moreover, minority of the studied elderly women had high coping level during pretest which improved to become more than three fifths of them during posttest. Finally, there was strong positive correlation between total levels of independence in activity of daily living, total pain levels and total coping levels with pain and between total pain levels and total coping levels with pain. Also, there was positive correlation between total knowledge and total pain levels.

Recommendations

- Provide health education through mass media concerning knee osteoarthritis.

- Increase public awareness about efficacy & tolerability of the coping intervention strategies in reducing pain and complications of knee osteoarthritis through directed program to persons in community.

- Provide current comprehensive Arabic booklet about coping intervention strategies for women with knee osteoarthritis.

- Studying coping intervention strategies among the elderly women suffering from knee osteoarthritis pain more broadly in the nursing specialty.

- Replication of the study on longer sample to be able to generalize the result study.

- Further studies are recommended to consider describing the differing cultural, demographic, and contextual aspects of elderly women suffering from knee osteoarthritis pain regarding to their coping strategies.

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