

"Effectiveness of Joint Protection Education on Knowledge and Intensity of Pain Among Elderly with Joint Pain in Selected Old-Age Homes, Bengaluru"

Ranita Samaddar^{1*}, Malathi Kota², Dr. Routh Boyle³

¹PG student, Department of Medical Surgical Nursing, M.S. Ramaiah Institute of Nursing Education and Research, M.S. Ramaiah University of Applied Sciences, Bangalore, Karnataka, India

²Assistant Professor, Department of Medical Surgical Nursing, M.S. Ramaiah Institute of Nursing Education and Research, M.S. Ramaiah University of Applied Sciences, Bangalore, Karnataka, India

³Lecturer of Ramaiah College of Physiotherapy, Bangalore, Karnataka, India

*Corresponding Author:

Ranita Samaddar

PG student, Department of Medical Surgical Nursing, M.S. Ramaiah Institute of Nursing Education and Research, M.S. Ramaiah University of Applied Sciences, Bangalore, Karnataka, India

Email: iamranita2016@gmail.com

Abstract

Background: Joint pain is one of the most common musculoskeletal problems among elderly individuals and significantly affects mobility, functional independence, and quality of life. Elderly residents of old-age homes often have inadequate knowledge of joint protection techniques and non-pharmacological pain management strategies. Educational interventions focusing on joint protection and range-of-motion (ROM) exercises may play a key role in improving self-management and reducing pain intensity among this population.

Objectives: To assess the level of knowledge regarding joint protection among elderly with joint pain; to assess the intensity of joint pain before and after joint protection education; to evaluate the effectiveness of joint protection education on knowledge and pain intensity; and to determine the association between knowledge and pain intensity with selected sociodemographic variables.

Materials and Methods: A pre-experimental one-group pre-test–post-test design was adopted. Fifty elderly individuals (≥ 65 years) with self-reported joint pain residing in selected old-age homes in Bengaluru were selected using non-probability convenience sampling. Sociodemographic data were collected using a structured proforma. Pain intensity was assessed using the Numeric Pain Rating Scale (NPRS), and knowledge regarding joint protection was measured using a structured 39-item Joint Protection Knowledge Questionnaire. Participants received a single 30-minute joint protection education session (lecture-cum-demonstration) followed by demonstration and supervised practice of ROM exercises for major joints for 14 consecutive days. Post-test knowledge and pain scores were obtained after two weeks. Data were analyzed using descriptive statistics, paired t-test, chi-square test, and Fisher's exact test.

Results: All participants (100%) had inadequate knowledge of joint protection in the pre-test. Following the intervention, 60% attained adequate knowledge and 40% had moderate knowledge. Pre-intervention, 68% of participants reported moderate pain and 32% reported severe pain; post-intervention, 56% reported mild pain and 44% reported moderate pain, with no severe pain. The mean pain score reduced from 6.10 ± 0.735 (pre-test) to 3.38 ± 0.667 (post-test) ($t = 20.755$, $p < 0.001$). The mean knowledge score increased from 34.60 ± 3.301 to 68.20 ± 5.264 ($t = 41.295$, $p < 0.001$). A significant association was found between pre-test pain level and age ($p = 0.035$), and between post-test knowledge level and BMI ($p = 0.033$) and history of taking painkillers in the past ($p = 0.046$). No other sociodemographic variables showed significant association with pain or knowledge levels.

Conclusion: Joint protection education, combined with supervised ROM exercises, was effective in significantly improving knowledge and reducing pain intensity among elderly individuals with joint pain residing in old-age homes. The intervention represents a simple, safe, and cost-effective non-pharmacological strategy that can be integrated into geriatric nursing practice to promote self-management and enhance quality of life in elderly populations.

Keywords: Joint protection education; joint pain; elderly; pain intensity; knowledge; range of motion exercises; old-age homes; Bengaluru.

How to cite this article: Samaddar R, Kota M, Boyle R. Effectiveness of Joint Protection Education on Knowledge and Intensity of Pain Among Elderly with Joint Pain in Selected Old-Age Homes, Bengaluru. *Int J Drug Deliv Technol*. 2026;16(71s): 257. DOI: 10.25258/ijddt.16.71s.29

1. Introduction

Population ageing is increasing worldwide, leading to a growing burden of chronic musculoskeletal disorders

among older adults. These conditions affect nearly 1.71 billion people globally and are a major cause of pain, disability, and reduced quality of life.[1] Osteoarthritis is

*Author for Correspondence: iamranita2016@gmail.com

the most common joint disorder among the elderly, particularly affecting the knee and hip, and often results in chronic pain, restricted mobility, and dependence in daily activities.[2]

India is also experiencing a rapid increase in its elderly population. According to the Longitudinal Ageing Study in India (LASI 2017–2018), joint pain is one of the most common health problems among older adults, especially women.[3] A systematic review further reported that nearly half of the elderly population in India is affected by knee osteoarthritis, highlighting its significant public health burden.[4]

Joint pain in older adults commonly results from age-related degenerative changes, reduced muscle strength, obesity, previous injuries, and chronic conditions such as osteoarthritis and rheumatoid arthritis.[2,5] Persistent joint pain affects mobility, limits activities of daily living, disturbs sleep, reduces independence, and negatively impacts psychological well-being and overall quality of life.

Although medications provide temporary pain relief, their long-term use may cause adverse effects, particularly in elderly individuals with multiple comorbidities.[6] Therefore, non-pharmacological approaches such as exercise, lifestyle modification, and patient education are increasingly recommended as safe and effective strategies for managing chronic joint pain.[6,7]

Joint Protection Education is a simple, evidence-based intervention that teaches older adults how to reduce stress on joints through proper body mechanics, energy conservation, activity modification, and regular exercises. It empowers individuals to manage their symptoms, improve functional ability, and reduce pain while maintaining independence.[8–11]

Older adults living in old-age homes are particularly vulnerable to chronic joint pain because of limited physical activity, multiple health problems, and inadequate knowledge regarding self-management. Nurse-led educational programmes are practical, cost-effective, and can be easily incorporated into routine geriatric care to improve knowledge and encourage healthy self-care practices.[12,13]

However, limited evidence is available on the effectiveness of structured Joint Protection Education among elderly residents of old-age homes, particularly in Karnataka. Therefore, the present study was undertaken to assess the effectiveness of Joint Protection Education on knowledge and intensity of pain among elderly individuals with joint pain residing in selected old-age homes in Bengaluru.

2. Objectives

- 1.To assess the level of knowledge regarding joint protection among elderly with joint pain.
- 2.To assess the intensity of joint pain among elderly with joint pain before and after joint protection education.
- 3.To evaluate the effectiveness of joint protection education on knowledge and intensity of joint pain among elderly with joint pain.

- 4.To find the association between knowledge and intensity of joint pain with selected sociodemographic variables.

Hypotheses

H1: There is a statistically significant reduction in the intensity of joint pain among elderly individuals with joint pain after the Joint Protection Education programme.

H2: There is a statistically significant improvement in the level of knowledge regarding joint protection among elderly individuals with joint pain after the Joint Protection Education programme, compared to pre-test scores.

H3: There is a statistically significant association between the level of knowledge regarding joint protection, the intensity of joint pain, and selected sociodemographic variables among elderly individuals with joint pain.

Materials and Methods Study Design

A quantitative, pre-experimental, one-group pre-test–post-test design was adopted to evaluate the effectiveness of Joint Protection Education on knowledge and intensity of pain among elderly individuals with joint pain.

Setting

The study was conducted at two selected old-age homes in Bengaluru, Karnataka: Avyang Foundation and Omkar Charity Foundation. These settings were chosen based on feasibility, accessibility, and the availability of eligible elderly residents with joint pain.

Population and Sample

The target population comprised elderly individuals aged 65 years and above with self-reported joint pain residing in old-age homes in Bengaluru. The accessible population consisted of elderly residents of Avyang Foundation and Omkar Charity Foundation who met the inclusion criteria.

A sample size of 50 elderly individuals with joint pain was selected using non-probability convenience sampling. Sample size estimation was based on a previous study by Hammond,[14] using a standard formula with 95% confidence level, 80% power, standard deviation of 1, and expected mean difference of 0.5 in pre-test and post-test scores. The minimum required sample size was calculated as 32; this was increased to 50 to enhance power and account for potential attrition.

Inclusion and Exclusion Criteria

Inclusion criteria

Elderly persons who:

- were aged 65 years and above;
- had self-reported pain or discomfort in one or more joints;
- were residing in the selected old-age homes;
- were able to understand, read, and respond in Kannada or English;
- were available during the data collection period;
- were willing to participate and provided informed consent.

Exclusion criteria

Elderly persons who:

- were bedridden;

"Effectiveness of Joint Protection Education on Knowledge and Intensity of Pain Among Elderly with Joint Pain in Selected Old-Age Homes, Bengaluru"

- had diagnosed severe mental illness or cognitive impairment interfering with participation.

Research Variables

- **Independent variable:** Joint Protection Education programme (structured teaching plus demonstration and supervised practice of ROM exercises).
- **Dependent variables:**
 - Knowledge regarding joint protection.
 - Intensity of joint pain.

Tools and Data Collection Instruments

Data collection tools were developed based on an extensive review of literature, expert consultation, and the investigator's clinical experience:

1. Sociodemographic Proforma (Section A): Included age, gender, marital status, educational status, occupation, height, weight, BMI, medical history (e.g., hypertension, type 2 diabetes mellitus, arthritis, fracture history, thyroid disorder, respiratory disease, anaemia, visual/hearing impairment), history of painkiller use, and duration of joint pain.

2. Numeric Pain Rating Scale (NPRS) (Section B, Part I): An 11-point numerical scale from 0 to 10, where:

- 0 = no pain;
- 1–3 = mild pain;
- 4–6 = moderate pain;
- 7–10 = severe pain.

Participants were asked to rate their current joint pain intensity.

3. Structured Joint Protection Knowledge Questionnaire (JPKQ) (Section B, Part II): A 39-item structured questionnaire designed to assess knowledge regarding joint protection. Items covered domains such as: general joint protection principles; hand and finger protection; knee joint protection; back and body mechanics; activity pacing; rest, force, and weight-bearing; and lifestyle and environmental modifications. Each item offered three response options. Scoring:

- Correct answer = 2;
- Partially correct = 1;
- Incorrect = 0.

Total possible score: 78. Knowledge level was categorized as:

- 0–39 (<50%) = Inadequate knowledge;
- 40–62 (51–75%) = Moderate knowledge;
- 63–78 (>75%) = Adequate knowledge.

Validity and Reliability

Content validity for the tools and the lesson plan (Joint Protection Education programme) was established by a panel of experts comprising medical-surgical nursing faculty, a physiotherapist, a general physician, and a biostatistician. Suggestions were incorporated appropriately. The English tool was translated into Kannada and back-translated into English; both versions were reviewed for semantic and conceptual equivalence. Reliability of the JPKQ was established using the test-retest method on 20 elderly individuals (10 for the English version and 10 for the Kannada version). Reliability of the NPRS was established using inter-rater reliability and equivalence on a similar sample. Reliability analysis using IBM SPSS indicated:

- NPRS: $r = 0.826$ (English), $r = 0.861$ (Kannada);
- JPKQ: $r = 0.801$ (English), $r = 0.884$ (Kannada).

These values indicated acceptable reliability.

Description of the Intervention: Joint Protection Education Programme

The Joint Protection Education programme consisted of: 1. Structured Teaching Session (approximately 30 minutes):

- Mode: lecture-cum-discussion using PowerPoint presentations and pamphlets.
- Content:
 - Definition and purpose of joint protection;
 - Principles of joint protection (respecting pain, activity pacing, minimizing force, using larger and stronger joints, maintaining appropriate posture and body mechanics, balancing activity and rest, weight management, and prioritizing sleep);
 - Body mechanics and safe techniques for lifting, carrying, pushing, pulling, and performing activities of daily living;
 - Environmental and lifestyle modifications to reduce joint stress.

2. Demonstration of Range of Motion (ROM) and Joint Protection Exercises (approximately 20 minutes):

Practical demonstration and supervised return-demonstration of active ROM and joint protection exercises for major joints, including:

- Neck: flexion, extension, lateral flexion, rotation;
- Shoulder: flexion, extension, abduction, adduction, circumduction, internal and external rotation;
- Elbow and forearm: flexion, extension, supination, pronation;
- Wrist and fingers: flexion, extension, radial/ulnar deviation, finger flexion–extension, opposition, grip and pinch exercises;
- Spine and trunk: flexion, extension, lateral flexion;
- Hip: flexion, extension, abduction, adduction, circumduction, rotation;
- Knee: flexion, extension, straight leg raises, seated marches;
- Ankle and foot: dorsiflexion, plantarflexion, inversion, eversion.

Participants were taught to perform each exercise gently within a pain-free range and were advised to practice daily, initially for about 5 minutes per joint group per day.

3. Follow-up and Supervised Practice:

- Each participant practiced the taught exercises daily for 14 consecutive days under supervision of the researcher.
- Supervision ensured correct technique, safety, and adherence.
- Participants were encouraged to follow a “20-minute rule” (taking rest after approximately 20 minutes of continuous activity) and to respect pain signals, modifying or pausing activities when pain increased.

Ethical Considerations

Ethical clearance was obtained from the University Ethics Committee for Human Trials (UECHT), Ramaiah

"Effectiveness of Joint Protection Education on Knowledge and Intensity of Pain Among Elderly with Joint Pain in Selected Old-Age Homes, Bengaluru"

University of Applied Sciences (Ref. No. EC-25/132-PG-RINER).

Data Collection Procedure

- Pilot study: Conducted from 10 January 2026 to 23 January 2026 on 10 participants in Siddharth Old Age Home, Bengaluru, to test feasibility, clarity of the tool, and logistics. The pilot study suggested that the intervention was feasible and effective; no major changes were required.
- Main study: Conducted from 9 February 2026 to 9 March 2026. Steps in data collection:
 1. Recruitment of 50 eligible participants using convenience sampling from Avyang Foundation (n = 20) and Omkar Charity Foundation (n = 30).
 2. Baseline (pre-test) assessment:
 - Sociodemographic data collected using the proforma.
 - Baseline pain intensity assessed using NPRS.
 - Baseline knowledge regarding joint protection assessed using JPKQ (15–20 minutes per participant).
 3. On the same day, Joint Protection Education programme was delivered in small groups of 10 participants at a time, followed by practical demonstration and supervised return-demonstration of exercises.
 4. Daily follow-up for 14 days:

- The researcher visited each home once daily.
- Supervision of ROM and joint protection exercises (about 20 minutes per session per group).
- 5. Post-test assessment (after two weeks of intervention):
 - Repeat administration of JPKQ to assess knowledge.
 - Reassessment of pain intensity using NPRS at a fixed time of day to maintain uniformity.

Data Analysis

Data were coded and entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 20.

- Descriptive statistics:
 - Frequency and percentage for sociodemographic variables, knowledge levels, and pain categories.
 - Mean and standard deviation for pain and knowledge scores (pre-test and post-test).
- Inferential statistics:
 - Paired t-test to evaluate the effectiveness of Joint Protection Education on mean pain and knowledge scores (pre-test versus post-test).
 - Chi-square test and Fisher's exact test to examine associations between categorical pain/knowledge levels and selected sociodemographic variables.
 - A p-value < 0.05 was considered statistically significant.

3. Results

Table 1.1: Frequency and percentage distribution of subjects with regard to age, gender and marital status (n=50)

Sl.No.	Socio-Demographic Variables	Frequency	Percentage%
1	Age		
	65 - 70	35	70
	71 - 75	9	18
	76 - 80	6	12
	>80	-	-
2.	Gender		
	Male	24	48
	Female	26	52
3.	Marital status		
	Unmarried	13	26
	Married	16	32
	Divorced	3	6
	Widow	18	36
	Separated	-	-

Table 1.1 shows that, the majority of participants (70%) were in the age group of 65–70 years. Females (52%) slightly outnumbered males (48%). Most participants were widows (36%), followed by married individuals (32%).

Table 1.2: Frequency and percentage distribution of subjects with regard to Educational status, Occupation, BMI. (n=50)

Sl. No.	Socio-Demographic Variables	Frequency	Percentage%
4	Educational Status		
	No formal education	19	38
	Primary	10	20
	Secondary	11	22

"Effectiveness of Joint Protection Education on Knowledge and Intensity of Pain Among Elderly with Joint Pain in Selected Old-Age Homes, Bengaluru"

	Higher Secondary	4	8
	Degree and Above	6	12
5.	Occupation		
	Employed	35	70
	Unemployed	15	30
6.	BMI		
	(<18.5 kg/m ²) Underweight	-	-
	(18.5–22.9 kg/m ²) Normal	25	50
	(23.0–24.9 kg/m ²) Overweight	20	40
	(25.0–29.9 kg/m ²) Obese- Class I	5	10
	(≥30.0 kg/m ²) Obese- Class II	-	-

*Source: WHO Asian BMI classification

Table 1.2 shows that, A large proportion (38%) had no formal education, and most of them (70%) were employed. Regarding BMI, 50% of them had normal weight.

Table 1.3: Frequency and percentage distribution of subjects with regard to medical history, History of taking any painkillers in past & duration of Joint pain. (n=50)

Sl.No.	Socio-Demographic Variables	Frequency	Percentage%
7.	Medical History		
	Hypertension	8	16
	Type 2 diabetes mellitus	10	20
	Arthritis	14	28
	History of fracture	5	10
	Thyroid disorder	4	8
	Respiratory disease	3	6
	Anaemia	-	-
	Visual impairment	3	6
	Hearing impairment	3	6
8.	History of taking Painkiller in past		
	Yes	24	48
	No	26	52
9.	Duration of joint pain		
	5-10 years	45	90
	11-15 years	5	10

Table 1.3 shows that, Arthritis (28%) and diabetes (20%) were the most common medical conditions. About 48% of the population were taking painkillers, and the majority of them (90%) had experienced joint pain for 5–10 years.

Table 2: Pain level before and after intervention (n=50)

variables	Pre-test				Post-test			
Intensity of pain	moderate		severe		mild		moderate	
	f	%	f	%	f	%	f	%
	34	68	16	32	28	56	22	44

Table 2 shows before the intervention, the majority of participants experienced moderate (68%) and severe pain (32%). Following the intervention, pain levels reduced significantly, with most participants reporting mild (56%) and moderate pain (44%), and no cases of severe pain. This demonstrates the effectiveness of the intervention in reducing pain intensity.

Table 2.1: Knowledge level before and after intervention (n=50)

Variables	Pre-test	Post-test	
Knowledge regarding joint protection	Inadequate knowledge	moderate	adequate

"Effectiveness of Joint Protection Education on Knowledge and Intensity of Pain Among Elderly with Joint Pain in Selected Old-Age Homes, Bengaluru"

	f	%	f	%	f	%
	50	100	20	40	30	60

Table 2.1 shows that all participants (100%) had inadequate knowledge regarding joint protection. After the intervention, there was a marked improvement, with 60% of participants attaining adequate knowledge and 40% having moderate knowledge. This indicates that the educational intervention was effective in improving knowledge levels.

Table 3: Effectiveness of Joint Protection Education on knowledge and intensity of pain before and after intervention (n=50)

Variables	mean	Standard deviation	t value	p value
Pre-test pain score	6.10	±.735	20.755	0.000
Post-test pain score	3.38	±.667		
Pre-test knowledge	34.60	±3.301	41.295	0.000
Post-test knowledge	68.20	±5.264		

Significant at $p < 0.05$

Table 3 shows the mean pain score decreased from 6.10 in the pre-test to 3.38 in the post-test, while the mean knowledge score increased from 34.60 to 68.20. The calculated t-values for both pain (20.755) and knowledge (41.295) were statistically significant at $p = 0.000$ ($p < 0.05$). This confirms that joint protection education was highly effective in reducing pain and improving knowledge among participants. Therefore H1 and H2 were accepted.

Table 4.1: Association of pain level before intervention with Age, Gender and marital status. (n=50)

11. Association of pain level before intervention with Age, Gender and marital status.					
Sl no	Socio- Demographic variables	Pain level		Chi square value (X2) / Fisher's Exact Test	p Value
		Moderate	Severe		
1.	Age in Years				
	65-70	22	13	22.197 (Fisher's Exact Test)	.035 S*
	71-75	8	1		
	76-80	4	2		
	>80	0	0		
2.	Gender				
	Male	15	9	.642 df = 1 (Chi square value)	.423 NS
	Female	19	7		
3.	Marital Status				
	Unmarried, married	8	5	2.414 (Fisher's Exact Test)	.491 NS
	married	12	4		
	Divorced	1	2		
	widow	13	5		
	separated	0	0		

Table 4.1 depicts that no significant association was observed between the level of pain before intervention and selected socio-demographic variables such as gender, marital status, regarding joint protection education among elderly with the level of pain ($p > 0.05$).

However, age shows a statistical significant association with the level of pain ($p < 0.05$).

Table 4.2: Association of pain level before intervention with Educational status, Occupation and BMI. (n=50)

Sl no	Socio-Demographic variables	Pain level		Chi square value (X ²) / Fisher's Exact Test	p Value
		Moderate	Severe		
4.	Educational status				
	No formal education	12	7	.431	
	Primary	7	3		

"Effectiveness of Joint Protection Education on Knowledge and Intensity of Pain Among Elderly with Joint Pain in Selected Old-Age Homes, Bengaluru"

	Secondary	8	3	(Fisher's Exact Test)	.980 NS
	Higher secondary	3	1		
	Degree and above	4	2		
5.	Occupation				
	Employed	22	12	1.418	.234 NS
	Unemployed	13	3	(Fisher's Exact Test)	
6.	BMI				
	(<18.5 kg/m ²) Underweight	0	0	.551 (Fisher's Exact Test)	.759 NS
	(18.5–22.9 kg/m ²) Normal	16	9		
	(23.0–24.9 kg/m ²) Overweight	14	6		
	(25.0–29.9 kg/m ²) Obese- Class I	4	1		
	(≥30.0 kg/m ²) Obese- Class II	0	0		

Table 4.2 depicts that no significant association was observed between the level of pain before intervention and selected socio-demographic variables such as educational status, occupation, BMI, regarding joint protection education among elderly with joint pain ($p > 0.05$)

Table 4.3: Association of pain level before intervention with Medical history, Taking painkillers in past, duration of joint pain. (n=50)

of joint pain.				(n=30)	
Sl no	Socio- Demographic variables	Pain level		Chi square value (X2) / Fisher's Exact Test	p Value
		Moderate	Severe		
7.	Medical History				
	Hypertension	5	3	2.288 (Fisher's Exact Test)	.942 NS
	Type 2 diabetes mellitus	7	3		
	Arthritis	10	4		
	History of fracture	4	1		
	Thyroid disorder	3	1		
	Respiratory disease	2	1		
	Anaemia	0	0		
	Visual impairment	1	2		
	Hearing impairment	2	1		
8.	Taking pain killer in past				
	Yes	15	9	.642 df= 1 (Chi square value)	.423 NS
	No	19	7		
9.	Duration of joint pain				
	5-10 years	33	12	8.844 (Fisher's Exact Test)	.356 NS
	11-15 years	1	4		

Table 4.3 depicts that no significant association was observed between the level of pain before intervention and selected socio-demographic variables such as medical history, taking pain killers, duration of joint pain regarding joint protection education among elderly with joint pain ($p > 0.05$).

In the present study, all participants (100%) had inadequate knowledge regarding joint protection in the pre-test assessment. Since there was no variation in the knowledge levels, it was not possible to compute any

statistical association between pre-test knowledge and selected socio-demographic variables. Statistical tests like chi-square require variability in data across categories; however, in this case, all responses were

concentrated in a single category (inadequate knowledge), making such analysis infeasible.

4. Discussion

The present study evaluated the effectiveness of Joint Protection Education on knowledge and pain intensity among elderly individuals with joint pain residing in selected old-age homes in Bengaluru. The findings showed that the nurse-led educational programme, along with supervised joint protection and ROM exercises for two weeks, significantly improved participants' knowledge and reduced pain.

Before the intervention, all participants had inadequate knowledge regarding joint protection, reflecting poor awareness of simple self-management strategies. After the intervention, most participants had adequate or moderate knowledge, indicating that the educational programme effectively improved their understanding. Similar findings were reported by Ganji et al., Coleman et al., and Sapkota et al., who also observed significant improvements in knowledge following structured educational interventions.[9,10,15]

Pain intensity also decreased considerably after the intervention. Most participants initially reported moderate to severe pain, whereas after two weeks, the majority experienced only mild to moderate pain, with no participant reporting severe pain. These findings are consistent with studies by Ganji et al., Palo et al., Vijay Shankar et al., and Fransen et al., which demonstrated that education combined with exercise effectively reduces pain and improves functional ability in older adults with osteoarthritis.[7,10,16,17]

Age was significantly associated with pre-test pain intensity, indicating that pain increases with advancing age. However, post-test pain was not associated with sociodemographic variables, suggesting that the intervention was beneficial across different groups. Post-test knowledge showed a significant association with BMI and history of painkiller use, although improvement was observed among all participants.

Overall, the findings support Joint Protection Education as a simple, low-cost, and effective nursing intervention. Incorporating this programme into routine care in old-age homes can improve knowledge, reduce pain, promote independence, and enhance the quality of life of elderly individuals.

5. Conclusion

The present pre-experimental study demonstrated that Joint Protection Education, combined with supervised ROM exercises, is highly effective in improving knowledge and reducing the intensity of joint pain among elderly individuals residing in selected old-age homes in Bengaluru.

Key conclusions include:

- At baseline, all participants had inadequate knowledge regarding joint protection, and the majority experienced moderate to severe joint pain.
- Following a structured Joint Protection Education session and 14 days of supervised exercise practice, there was a statistically significant improvement in

knowledge, with all participants achieving moderate or adequate knowledge levels.

- Pain intensity decreased significantly, with mean pain scores reducing from moderate to mild levels, and no participants reporting severe pain post-intervention.
- Age was significantly associated with pre-test pain levels, while BMI and history of painkiller use were associated with post-test knowledge levels. Most other sociodemographic variables did not show significant associations, indicating that the intervention was beneficial across diverse subgroups.

These findings indicate that Joint Protection Education is a practical, safe, and cost-effective non-pharmacological strategy that can be implemented by nurses in old-age homes and community settings. Incorporating such programmes into routine geriatric care can enhance self-management, reduce dependence on analgesics, and promote healthy ageing.

References

1. Goyal AK, Mohanty SK (2024). Socioeconomic variation in the prevalence of pain by anatomical sites among middle-aged and older adults in India: a cross-sectional study. *BMC Geriatrics*, 24(1), [pagination]. Available at: doi.org
2. Lawrence RC et al. (2000). Osteoarthritis: New insights. Part 1: The disease and its risk factors. *Annals of Internal Medicine*, 133, [pagination]. Available at: www.annals.org
3. Peat G, McCarney R, Croft P (2001). Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. *Annals of the Rheumatic Diseases*, 60(2), 91–97. Available at: doi.org
4. Daniel RA et al. (2025). Prevalence of knee osteoarthritis among elderly persons in India: a systematic review and meta-analysis. [Journal details], [volume(issue)], [pagination].
5. Havelin J, King T (2018). Mechanisms underlying bone and joint pain. *Current Osteoporosis Reports*, 16(6), 763–771. Available at: doi.org
6. Nelson AE, Allen KD, Golightly YM, Goode AP, Jordan JM (2014). A systematic review of recommendations and guidelines for the management of osteoarthritis. *Seminars in Arthritis and Rheumatism*, 43(6), 701–712. Available at: doi.org
7. Fransen M et al. (2015). Exercise for osteoarthritis of the knee. *Cochrane Database of Systematic Reviews*, 2015(1), CD004376. Available at: doi.org
8. Dziedzic K et al. (2015). Self-management approaches for osteoarthritis in the hand: A 2×2 factorial randomized trial. *Annals of the Rheumatic Diseases*, 74(1), 108–118. Available at: doi.org
9. Coleman S et al. (2012). A randomized controlled trial of a self-management education program for osteoarthritis of the knee. *Arthritis Research & Therapy*, 14(1), R21. Available at: doi.org

10. Ganji R, Pakniat A, Armat MR, Tabatabaeichehr M, Mortazavi H (2018). The effect of self-management educational program on pain intensity in elderly patients with knee osteoarthritis: A randomized clinical trial. *Open Access Macedonian Journal of Medical Sciences*, 6(6), 1062–1066. Available at: doi.org
11. Bobos P et al. (2021). Joint protection programmes for people with osteoarthritis and rheumatoid arthritis of the hand: An overview of systematic reviews. *Physiotherapy Canada*, 73(1), 56–65. Available at: doi.org
12. Menezes S, Thomas TM (2018). Status of the elderly and emergence of old age homes in India. *International Journal of Social Sciences and Management*, 5(1), 1–4. Available at: doi.org
13. Mann C, Goberman-Hill R (2011). Health care provision for osteoarthritis: concordance between what patients would like and what health professionals think they should have. *Arthritis Care & Research*, 63(7), 963–972. Available at: doi.org
14. Hammond A (1994). Joint protection behavior in patients with rheumatoid arthritis following an education program: a pilot study. *Arthritis & Rheumatism (Arthritis Care & Research)*, 7(1), 5–9. Available at: doi.org
15. Sapkota et al. (2024). Effectiveness of structured educational programme on knowledge and practice regarding osteoarthritis management among elderly. [Journal details], [volume(issue)], [pagination].
16. Palo N et al. (2015). Therapeutic education and conservative management in knee osteoarthritis: a multicentre prospective study. [Journal Title], [volume(issue)], [pagination]. Available at: pmc.ncbi.nlm.nih.gov
17. Vijay Shankar et al. (2024). Effectiveness of structured education and exercise programme on pain and function among elderly with knee and hip osteoarthritis: A randomized controlled trial. *Journal of Pharmaceutical and Clinical Pharmacy*, [volume(issue)], [pagination]. Available at: jptcp.com
18. Coster S, Li Y, Norman IJ (2020). Cochrane reviews of educational and self-management interventions to guide nursing practice: A review. *International Journal of Nursing Studies*, 110, 103698. Available at: doi.org