Original Research Article

Assess the knee joint pain among elderly at selected community areas, Kolar

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Abstract

Introduction: Aging is a natural process that brings about various physiological changes in the body, with one of the most commonly affected areas being the musculoskeletal system. Among the numerous age-related conditions, knee joint pain is particularly prevalent, affecting millions of older adults worldwide. This pain is often associated with degenerative joint diseases such as osteoarthritis, which is characterized by the wear and tear of cartilage, leading to inflammation, stiffness, and impaired mobility. The increased prevalence of knee pain with age not only reduces the quality of life but also imposes a significant burden on healthcare systems. Understanding the underlying mechanisms of knee joint pain in aging populations is crucial for developing effective prevention and treatment strategies. The study aimed to assess the knee joint pain among Elders and to determine the association between the knee joint pain score with selected socio demographic variables.

Materials and Methods: In the present study, researcher adopted a Descriptive Cross-sectional Survey design using purposive sampling technique among 100 geriatric clients with the age of 60 years and above. The data collected using standardized Oxford knee score scale based on expert's validation and inclusion criteria of the study. Ethical clearance was taken from institutional ethical committee. Data was analyzed by using Descriptive and Inferential statistics.

Results: The results painted a clear picture of the burden of knee joint pain among the elderly in the selected community areas of Kolar. A significant 45% of the participants experienced moderate pain, followed by 31% with good scores, indicating manageable discomfort. Meanwhile, 20% were suffering severely, falling into the poor score category, and only a small 4% reported excellent joint health. These findings highlight that knee joint pain is a common concern among the elderly, with the majority living with moderate to severe discomfort, underscoring the urgent need for early screening and intervention at the community level.

Conclusion: The study revealed that knee joint pain is highly prevalent among the elderly in selected community areas of Kolar, significantly affecting their mobility and quality of life. Early assessment and timely interventions can greatly reduce discomfort and dependency. Promoting awareness and community-based care can pave the way for healthier aging.

Keywords: Knee joint pain, Elderly, Community

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1. Introduction

Knee joint pain is a prevalent and debilitating condition that significantly impacts the quality of life, particularly among older adults. As individuals age, the natural wear and tear on the body's musculoskeletal system often lead to the development of joint-related disorders.[1] Among these, knee joint pain, commonly associated with osteoarthritis, is one of the most widespread and distressing conditions experienced by the elderly. Osteoarthritis, characterized by the progressive degeneration of cartilage, leads to inflammation,

pain, and restricted movement, which can severely limit daily activities and independence[2-3]

The aging process is marked by several physiological changes, including the weakening of bones, joints, and muscles, making the elderly more susceptible to joint-related problems.[4-5] In the case of the knee joint, this pain can result from a combination of factors such as mechanical stress, genetic predisposition, injury history, and lifestyle choices. Consequently, knee pain in older adults is not only a physical issue but also a psychological burden, leading to reduced

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mobility, social isolation, and an overall decline in mental health.[6-7]

Globally, knee joint pain among elders represents a significant public health concern due to its high prevalence and the associated healthcare costs.[8] As the global population continues to age, the number of individuals suffering from knee pain is expected to rise, further straining healthcare resources. According to several studies, nearly 25% of older adults experience some form of knee pain, with osteoarthritis being the leading cause.[9] The condition often results in a reduction in physical activity, which in turn contributes to a vicious cycle of muscle weakness and further joint degeneration.[10]

Understanding the factors that contribute to knee joint pain in the elderly is essential for developing effective preventive measures, treatment strategies, and interventions.[11] Despite the growing recognition of knee pain as a common issue among older adults, there remains a need for more in-depth research to assess its prevalence, risk factors, and impact on the daily lives of the elderly population. This study aims to assess knee joint pain among elders, with a particular focus on identifying the key determinants of the condition, the extent of its impact on mobility and quality of life, and potential strategies for alleviation.[12]

1.1. Key facts as per WHO,

1. In 2019, about 528 million people worldwide were living with osteoarthritis; an increase of 113% since 1990.
2. About 73% of people living with osteoarthritis are older than 55 years, and 60% are female.
3. With a prevalence of 365 million, the knee is the most frequently affected joint, followed by the hip and the hand.
4. 344 million people living with osteoarthritis experience osteoarthritis.
5. With ageing populations and increasing rates of obesity and injury, the prevalence of osteoarthritis is expected to continue to increase globally.[13](13)

2. Materials and Methods

Based on the objective of the study, Quantitative Research approach, a Descriptive survey design was adopted. The study was conducted among elders at Devarayasamudra Community areas, Kolar. Among all the elders with age group of 60 years and above, consists of 100 Elder people from Guttahalli village, PHC, Devarayasamudra.

2.1. Study variable

Knee joint pain among elderly population.

2.2. Attribute variable

In this study, "Attribute Variables " describes the Elderly, Age, Gender, Religion, education status, marital status, Type of physical activity, Type of diet, Body Mass Index, Previous occupation, Duration of knee pain in years, History of comorbid illness, Treatment for joint pain.

2.3. Inclusion criteria

1. Elderly individuals aged 60 years and above.
2. Residents of selected community areas in Kolar for at least the past 6 months.
3. Willing to participate and provide informed consent.
4. Able to communicate effectively (in Kannada or local language).
5. Physically present during data collection period.
6. Elderly who experience any level of knee joint pain, whether mild, moderate, or severe.

2.3. Exclusion Criteria

1. Elderly with severe cognitive impairment (e.g., advanced dementia) that prevents them from answering questions.
2. Those who have undergone knee replacement surgery.
3. Individuals with recent trauma or fracture to the lower limbs.
4. Bedridden elderly or those with severe mobility limitations unrelated to knee joint pain.

2.4. Sample

Geriatric client's aged 60 years and above

2.5. Sample size determination

The sample size based on the formula

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{d^2}$$

Where:
1. nnn = required sample size
2. Z = Z-score corresponding to desired confidence level (typically 1.96 for 95% confidence)
3. ppp = estimated proportion of the population with the condition (prevalence)
4. ddd = allowable error or precision (usually 5% or 0.05)

Based on the estimated prevalence of 50%, 95% confidence level, and 10% allowable error, the minimum required sample size was calculated to be 96. To account for possible non-responses, the final sample size was rounded up to 100 elderly participants.

2.5. Tools used are

Oxford Knee score scale consists of score of 48 items.

It consists of 12 questions, each rated on a scale of 0 to 4, where 0 represents the worst outcome (most symptomatic) and 4 represents the best outcome (least symptomatic). The total score is calculated by summing the scores for each question, resulting in a possible range of 0 to 48. A higher score indicates better knee function and less pain.[14-15]

The Client would choose one of the five options:

1. No pain (scored as 4)
2. Very little pain (scored as 3)
3. Moderate pain (scored as 2)
4. Severe pain (scored as 1)
5. Very severe pain (scored as 0)

2.6. Score interpretation

1. 0-19: May indicate severe knee arthritis requiring surgical intervention
2. 20-29: May indicate moderate to severe knee arthritis
3. 30-39: May indicate mild to moderate knee arthritis
4. 40-48: May indicate satisfactory joint function, possibly not requiring further treatment

2.7. Data collection methods

1. **Step 1:** Ethical clearance obtained from the Institutional Ethical Committee of Sri Devaraj Urs College of Nursing, Tamaka, Kolar.

2. **Step 2:** Formal permission will be obtained from the concerned Medical officer of selected community areas, Kolar. (Devarayasamudra PHC Medical Officer)

3. **Step 3:** As an investigator, the study objective, purpose and duration of study will be explained and obtain informed consent and participant information sheet from the participants.

4. **Step 4:** 100 samples will be selected using purposive sampling technique.

5. **Step 5:** The survey was carried out until the desired sample achieved for the study, using standardized Oxford knee score Scale.

6. **Step 6:** Based on the survey standardized Oxford knee score responses of the elderly be scored and analysed using descriptive and inferential statistics.

7. **Step 7:** Finally thank all the participants.

3. Results

Section A: Socio-Demographic variable

Table 1: Distribution of baseline characteristics in terms of frequency and percentage N =100

Sl. no	Socio Demographic variables	Frequency (f)	Percentage (%)
1.	**Age (in Years)**		
	60-65	52	52
	66-70	25	25
	70-75	11	11
	76-80	12	12
2.	**Gender**		
	Male	30	30
	Female	70	70
3.	**Educational status**		
	Formal education	0	0
	No-Formal education	100	100
4.	**Religion**		
	Hindu	100	100
5.	**Marital status**		
	Married	51	51
	Widowed	49	49
6.	**Socioeconomic status**		
	Above poverty level	0	0
	Below poverty level	100	100
7.	**Type of family**		
	Nuclear	76	76
	Joint Family	24	24
8.	**Diet**		
	Mixed Diet	100	100
9.	**Occupation**		
	Home marker	67	67
	Other	33	33
10.	**Duration of pain**		
	1-6 Month	23	23
	7-12Month	29	29
	1 Year and above	48	48
11.	**Nutritional status**		
	Under weight	10	10

	Normal weight	67	67
	Over weight	23	23
12	**Receiving treatment for Knee joint pain**		
	Yes,	3	3
	No	97	97
13	**Physical activities**		
	No involved	17	17
	Low(less than 20Min/day)	40	40
	High(More than 30Min/day)	43	43
14	**History of comorbid Illness**		
	Present	10	10
	Absent	90	90

Table 2: Knee joint pain score levels N=100

Grading for the oxford knee score		Knee score	
		Frequency (f)	**Percentage (%)**
Score 0 to 19	Poor	45	45%
Score 20 to 29	Moderate	31	31%
Score 30 to 39	Good	20	20%
Score 40 to 48	Excellent	4	4%

Table 3: Association between knee joint pain with selected socio-demographic variables N=100

	Variables	**Below Median <22**	**Median and above > 22**	**Chi square**	**df**	**P value (0.05)**	**Inference**
1	**Age (in Years)**						
	60-70	30	46	$x^2=$ 16.83	1	.0004	SS* at $p < .05$.
	71-80	21	03				
2	**Gender**						
	Male	12	18	2.075	1	.1497	NS at $p < .05$.
	Female	39	31				
3.	**Educational status**						
	Formal education	0	0	-			NS at p<.05.
	No-Formal education	51	49		1	F-1	
4.	**Religion**						
	Hindu	51	49	-		F-1	NS at p<.05.
5.	**Marital status**						
	Married	19	32	7.869	1	.0050	SS*at p<.05.
	Widowed	32	17				
6.	**Socioeconomic status**						
	Above poverty level	0	0	-	1	F-1	NS at p<.05.
	Below poverty level	51	49				
7.	**Type of family**						
	Nuclear	36	42	4.855	1	.0276	SS*at p<.05.
	Joint Family	16	6				
8.	**Diet**						
	Mixed Diet	51	49	-	1	F-1	NS at p<.05.
9.	**Occupation**						
	Home marker	39	28	4.22	1	.0399	SS* at p<.05.
	Other	12	21				
10.	**Duration of pain**						

	1-6 Month	6	17	9.35	1	.009	SS*at p<.05.
	7-12Month	13	17				
	1 Year and above	30	17				
11.	**Nutritional status**						
	Under five	8	2				
	Normal weight	30	37	3.55	1	.168	NS at p<.05.
	Over weight	13	10				
12	**Treatment for joint pain**						
	Yes,	2	1	0.304	1		NS at p<.05.
	No	49	48			0.581	
13	**Physical activities**						
	No involved	14	03				
	Low (less than 20Min/day)	21	19	1.1716	1	.556	NS at p<.05.
	High (More than 30Min/day)	16	27				
14	**History of comorbid Illness**						
	Present	6	4	YC-0	-	1	NS at p<.05.
	Absent	44	45				

Note: - P<0.05, NSS-Not Statistically significant, SS-statistically significant, YC-Yates, F- Fisher exact test, df-degree of freedom,1(3.841).

The analysis revealed a compelling snapshot of the knee joint health status among the elderly in selected community areas. As illustrated in **Table 2,** the majority of participants 45% (45 individuals) reported a moderate level of knee joint pain**,** suggesting that nearly half of the elderly population is experiencing noticeable discomfort that may affect their daily activities. Interestingly, a relatively encouraging 31% (31 individuals) reported a good score**,** indicating mild or manageable levels of pain. This suggests that with appropriate preventive and rehabilitative interventions, their knee health could be preserved or even improved. On the more concerning side, 20% (20 individuals) were found to be experiencing poor scores**,** pointing to more severe pain levels, likely requiring immediate medical attention or physical therapy support. Only a small fraction 4% (4 individuals) achieved an excellent score, indicating minimal or no knee joint pain, which reflects an ideal but rare scenario among the elderly.

The chi-square analysis showed a significant association between knee joint pain levels and variables such as age, marital status, type of family, occupation, and duration of pain (p < 0.05), indicating these factors influence pain severity among the elderly. No significant association was found with gender, education, religion, socioeconomic status, diet, nutritional status, treatment, physical activity, or comorbid illness, suggesting these did not impact the pain scores significantly. Elderly aged 60–70 years, those married, and those in nuclear families reported higher pain scores. Homemakers and individuals with pain lasting over a year were more likely to report severe knee pain.

These findings highlight the need for targeted interventions considering demographic and lifestyle factors.

4. Discussion

The present study aimed to assess the level of knee joint pain among elderly individuals residing in selected community areas of Kolar. The findings revealed that a majority (45%) of participants experienced moderate knee joint pain, consistent with the study by Sharma et al. (2021), which reported that 48% of rural elderly suffered from moderate osteoarthritic symptoms. In our study, 20% of participants had poor scores indicating severe pain, which aligns with the findings of Mahajan et al. (2019), who observed 22% of elderly reporting disabling knee joint pain in community settings.

Interestingly, only 4% of participants showed excellent scores with no or minimal pain. This is similar to the findings of Gupta et al. (2020), who noted that only a small proportion (5%) of the elderly maintained optimal joint health due to active lifestyles and balanced diets[16-17] A good score was observed in 31% of participants, suggesting the importance of protective factors such as regular walking, healthy weight, and social engagement.

Studies have shown that factors such as aging, obesity, poor posture, and lack of exercise significantly contribute to knee joint pain in the elderly (Verma et al., 2018).[18] Moreover, the lack of awareness and limited access to physiotherapy services in rural areas like Kolar could be aggravating the problem.

Pain and joint stiffness also limit mobility and quality of life, as supported by the WHO (2021), which emphasizes that musculoskeletal conditions are among the leading causes of disability worldwide.[19] Our findings emphasize the need for early screening, community physiotherapy, and health education interventions.

The study also highlights the importance of lifestyle modifications, as supported by Mishra et al. (2022), who showed that elderly individuals engaging in yoga and physiotherapy had reduced knee pain severity.

4.1. Nursing implications of the study

1. Nursing Education: Nurse educators can integrate geriatric joint pain assessment and management into the curriculum to prepare students for age-related musculoskeletal care.
   Workshops and community-based case studies can enhance critical thinking about elderly care and preventive strategies for joint pain.
2. Nursing Practice: Community health nurses can perform early screening and pain assessments among the elderly to initiate timely referrals and interventions.
   Nurses can educate elderly clients on lifestyle modifications, joint exercises, and posture correction to reduce knee pain severity.
3. Nursing Research: This study opens avenues for future research on the effectiveness of physiotherapy, diet, and exercise in reducing knee pain in rural elderly populations.
   Further longitudinal studies can explore the impact of family type, occupation, and physical activity patterns on chronic joint pain.
4. Nursing Administration: Administrators can develop community outreach programs targeting elderly wellness, including mobility clinics and joint care camps.
   Policy guidelines can be framed to ensure routine joint pain screening is part of geriatric services in primary health centers.

4.2. Recommendations of the study

1. A similar study can be replicated on a large sample in different types of setting.
2. A similar study can replicate with True Experimental Study design.

5. Conclusion

This chapter highlighted on overall study findings, implications, limitations and recommendation of the present study. The present study clearly indicated the Early identification and treatment for knee joint pain helps the individual for quality life. The researcher had strongly emphasized the necessity to meet with information needs of the Elderly which will helps them gaining knowledge and to maintain their quality life.

6. Source of Funding

None.

7. Conflict of Interest

None.

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