



PREVALENCE OF OSTEOARTHRITIS OF THE KNEE JOINT AMONG ELDERLY POPULATION IN A RURAL AREA.

Community Medicine

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ABSTRACT

Background: Osteoarthritis (OA) is one of the most common degenerative disorders among the elderly population; although aging is the most important cause, research has shown that it is a complex disease with many etiologies. It is not an inevitable part of aging but rather the result of a combination of factors, many of which can be modified or prevented. **Objective:** The objective of this study was to assess the burden and determinants of OA knee among the adult population. **Methods:** A community-based, cross-sectional study among 468 adult persons living in a rural area in Nadubhuvanagiri Health Sub Centre (HSC), an area under Govt. Primary Health Centre, Bhuvanagiri, Cuddalore Health Unit District, Tamilnadu. Data collection was done by researcher himself. Written and informed consent was obtained before data collection. OA was diagnosed using the criteria laid down by the American College of Rheumatology, and it was validated and tested in the study area. **Results:** A total of 468 adult respondents were interviewed out of which 39% had OA of knee. Age and BMI (Body mass Index) were found to be independent risk factor for osteoarthritis knee. While sex and occupation didn't had much of influence significantly. The Prevalence of osteoarthritis knee was high among the elderly population. **Conclusion:** The burden of osteoarthritis knee was high in this region. Hence, effective preventive strategy has to be taken to minimize this burden.

KEYWORDS

INTRODUCTION:

There has been a remarkable increase in the growth of the elderly population. In India 5.3% of males and 4.8% of females are aged more than 65 years. Old age cannot be healed or prevented. The commonest obstacle for elderly to carry out ADL is the problem of joint-pain and decreased mobility. Worldwide osteoarthritis is the most common articular disease of people 65 years and older¹. It represents a major cause of disability in the United States. The prevalence of this disorder in certain elderly group is as high as 85%.

Arthritis is defined as inflammation of a joint characterized by pain, swelling, and limitation of joint movements. Osteoarthritis (OA), the most common type of arthritis, is a joint failure in which all structures of the joint undergo pathologic changes, often in concert. It is an important cause of disability and the fourth leading cause of years lived with disability.² OA affects almost all joints, but the most commonly affected joints are the knee and hip joints. In the world, it is estimated that 10%–15% of all adults aged over 60 have some degree of OA, with prevalence higher among women than men.³ A study done in Asian countries of India, Pakistan, and Bangladesh showed a higher prevalence of OA knee in rural areas was 13.7% as compared to 6.9% in urban areas.⁴ Community survey data in rural and urban areas of India show the prevalence of OA to be in the range of 17%–60.6%.⁵

A study conducted in India among adults had shown a significant difference in the prevalence of OA between rural (56.6%) and urban areas (32.6%).⁵ Due to the lifestyle habits, Asians have a higher risk for knee joint arthritis compared to Americans and Europeans. In wake of this, clinical assessment for diagnosis of osteoarthritis of knee joint is of utmost importance. American College of Rheumatology (ACR) clinical classification criteria is one of most widely used tool for clinical diagnosis of osteoarthritis of knee joint in epidemiological studies. In this backdrop, the study is planned to estimate the prevalence and association of osteoarthritis of the knee joint with selected Sociodemographic variables among elderly persons residing in a rural area.

MATERIALS AND METHODS:

We did a community based cross sectional study in the elderly population above 60 years residing in Nadubhuvanagiri Health Sub Centre (HSC), an area under Govt. Primary Health Centre (PHC), Bhuvanagiri, Cuddalore Health Unit District, Tamilnadu. No sampling procedure was followed since the entire population of Nadubhuvanagiri, health sub-center has been included in this study. A house to house survey interview of all the eligible participants in Nadubhuvanagiri Health Sub Centre, attached to PHC, Bhuvanagiri. It has a population of 6996 persons out of which 582 persons were above 60 years. Maximum three visits were made in case a participant was not interviewed in the first visit. 468 participants above 60 years were

included in for our study. Detailed history and Clinical examination of both the knee joint was done to find out the diagnosis as per American College of Rheumatology (ACR) clinical classification criteria for osteoarthritis of the knee joint. American College of Rheumatology (ACR) criteria: ACR criteria for diagnosing osteoarthritis of knee joint is presence of pain in knee joint plus any three of six factors listed below. Age more than 50yrs 2. Presence of crepitus on active motion 3. Less than 30 min of morning stiffness 4. Bony tenderness 5. Bony overgrowth 6. No palpable warmth of synovium Since all the participants are ≥ 60 yrs, presence of any two factors out of last five are enough for diagnosis. All the history taking and examination was done by the researcher himself.

RESULTS

During the study there was a total of 6996 persons in the Nadubhuvanagiri population in which there were 582 eligible elderly persons in the area of which 468 participated in the study(191 males,277 females).Socio- demographic variables of the respondents were presented in Table-1. Majority (78.4%) of the study subjects were unskilled workers. Majority (55.3%) of the study population (n=468) were married in our study and majority (67.3%) of the study population (n=468) had done schooling up to primary level.

Table 1. Socio-demographic Characteristics to participants (n=468)

Variable	Category	Total N=468(%)
Age	60-70 years	137(29.3)
	71-80	41(8.8)
	>80	4(0.9)
Sex	Male	191(40.8)
	Female	277(59.2)
Education	Illiterate	40(8.5)
	Primary	315(67.3)
	Middle	84(17.9)
	High School	26(5.6)
	Higher Secondary School	3(0.6)
Marital Status	Married	259(55.3)
	Single	26(5.6)
	Widower/Separated	183(39.1)
Occupation	Unskilled	367(78.4)
	Semiskilled	43(9.2)
	Skilled	58(12.4)

The prevalence of osteoarthritis both knees was 39% (95% C.I., 34.48–43.49) out of which 38% had osteoarthritis of the right knee(95% C.I., 33.65%–42.62) and 35.5% had osteoarthritis of the left knee(95% C.I.,31.17%–40.02)(Table-2)

Table 2. Prevalence of Osteoarthritis Knee (n=468)

Variable	Number	% (95% C.I)
Osteoarthritis-Both Knees	182	39(34.48-43.49)
Osteoarthritis knee		
Right Knee	178	38(33.65%-42.62)
Left Knee	166	35.5(31.17%-40.02)

There was significant association between age, BMI and knee osteoarthritis (Table-3). Majority of them were in age group of 60-70 years which constitute around 29.3% of our study population. Because in our study group around 156 patients were overweight or obese this constitutes about 33.3% of study population.

Table 3. Association of Osteoarthritis Knee with select Socio-demographic Characteristics

Variable	Category	P value
Sex	Male/Female	0.136
Age	>60 Years	0.038
BMI	Underweight/Normal/Overweight/Obese	0.004

Prevalence of various symptoms in relevance to presence of osteoarthritis knee is shown in Table-4. Out of 468 study subjects, 38% of them had pain in the right knee and 35.5% of them had pain in the left knee. Out of the 468 subjects, 59.4% had morning stiffness of the right knee and 41.5% had morning stiffness of the left knee. Out of the 468 subjects only 11.3% had crepitus in the right knee and 9.8% had crepitus in the left knee. Only 4.3% had palpable warmth in the right knee and 4.9% had palpable warmth in the left knee. Out of the 468 subjects, 54.5% had bony tenderness of the right knee and 51.7% had bony tenderness of the left knee. Only 7.7% of the study subjects had bony enlargement of the right knee and 7.9% had bony enlargement of the left knee.

Table 4. Distribution of various symptoms among patients

Variable	Right Knee		Left Knee	
	Osteoarthritis present (n=178)		Osteoarthritis present (n=166)	
	No.	%	No.	%
Pain	178	100	166	100
Crepitus	53	29.8	45	27.1
Tenderness	160	89.9	139	83.7
Morning Stiffness	151	84.8	134	80.7
Bone Warmth	20	11.23	22	13.2
Bone Growth	36	20.22	37	22.2

DISCUSSION

The prevalence of osteoarthritis was estimated to be 39 % in the present study. The prevalence was slightly higher when compared to a study done in rural elderly population of Chandigarh where the prevalence of osteoarthritis was 32.6 %. Akihiro Sudo et al⁶ in their study found the prevalence of symptomatic knee OA was 21.2%, 32.3% in women and 13.5 in men .MK Sharma et al⁷ in their study found the prevalence of OA among elderly as 56.6% where as in rural Area it was 32.6% and urban Area it was 60.3 %. The age group in the above study was greater than 65yrs and they used different criteria for the diagnosis. There is a significant association between Osteoarthritis knee and age. Zeng et al⁸, in Taiwan and Sharma et al⁹, in India also reported a significantly higher prevalence of knee osteoarthritis in the older age group. Liying Jiang et al¹⁰ in their study found that the prevalence increased dramatically after 50yrs old in both men and women suggesting that age might be a risk factor for knee OA.

In the present study, majority of the study subjects were unskilled workers based on the occupation 367(78.4%) followed by skilled workers 58(12.4%) and semiskilled workers (9.2%). Xiao Zheng Kang et al.¹⁰ found that approximately 91% Of participants (men and women) reported having been engaged in farming for most of their adult lives. Almost all (91%) reporting that the job they had held the longest involved heavy physical work. In the present study found there was no significant association between occupation and knee osteoarthritis.

In the present study majority of the study subjects were 308(65.8%) of the normal BMI, 154(32.9%) were overweight, 4(0.9%) were underweight and 2(0.4%) were obese. In the present study majority of the physical activity was moderate 396(84.6%) followed by sedentary which is 72(15.4%). There is significant association between Body Mass Index and knee osteoarthritis (P-value: 0.004). Obesity could increase stress on cartilage and induce breakdown of cartilage simply

on the basis of excess force across a weight-bearing joint. There is also a significant association between BMI and osteoarthritis Knee.

Based on ACR criteria for osteoarthritis of knee, 178(38%) of the study subjects had osteoarthritis of right knee, where as in the left knee it was found the 166 (35.5%) of the study subjects had osteoarthritis. Similarly Akinobu Nishimura et al¹¹ found in their study that the prevalence of definite radiographic bilateral and unilateral knee OA were 21.6% and 10% in older Japanese villagers.

CONCLUSION

As the population of India is ever-increasing, the quantity of aged is going to raise resulting in high degree of burden of osteoarthritis. Awareness programme should be started at community level which is required for early diagnosis of osteoarthritis knee. Understanding on healthy diet and regular exercise should be formed for better preservation of BMI and thereby body weight to reduce the risk factor for OA knee. Avoidance of awkward strain pattern on knee joint as the age increase, though it is well known that ageing is uncontrollable risk factor.

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