

Original Research Article

Assessment of effect of osteoarthritis of knee on the activities of daily living and treatment seeking behaviour of patients at Kalaburagi, Gulbarga city of Karnataka

Panchasheela S. Reshmi, Sudip V. Bhavsar*

Department of Community Medicine, Dr M K Shah Medical College and Research Centre, Ahmedabad, Gujarat, India

Received: 01 February 2020

Revised: 15 February 2020

Accepted: 16 February 2020

*Correspondence:

Dr. Sudip V. Bhavsar,

E-mail: sudipvbhavsar@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Osteoarthritis (OA) is estimated to be the fourth leading cause of disability in most of the countries. It is the most frequent joint disease with a prevalence of 22% to 39% in India. The objectives of the study were to assess the effect of OA of knee on activities of daily living using Western Ontario and McMaster University Osteoarthritis (WOMAC) index and treatment seeking behaviour of patient with OA of knee.

Methods: Convenience sampling was used to find out patients of OA from 15th April to 1st June 2016 with cross-section type of study design. Data was collected and analyzed using MS Excel 2000.

Results: In this study 16% of participants in underweight category and 79% participants in overweight category reported moderate to very severe pain on visual analogue score (VAS). Treatment seeking behaviour was quite poor in lower socio-economic class (SEC) as compared to upper SEC. 20.34% participants had extreme pain while walking. 9.74% participants experienced extreme level of morning stiffness while 18.72% had extreme difficulty while ascending stairs. 14.87% experienced extreme difficulty during getting standing position from sitting position.

Conclusions: Moderate to severe pain on VAS was more common in overweight group compared to underweight group. Treatment seeking behaviour was quite poor in lower SEC as compared to upper SEC. 20.34% participants had extreme pain while walking. 14.87% experienced extreme difficulty during getting standing position from sitting position.

Keywords: VAS, WOMAC, Osteoarthritis, Treatment seeking behaviour

INTRODUCTION

Osteoarthritis (OA) is most prevalent chronic painful joint disorder leading to morbidity in most of the countries worldwide.¹ OA is estimated to be the fourth leading cause of disability in most of the countries.² It is the most frequent joint disease with a prevalence of 22% to 39% in India.³ Around 10% of population at the age of 60 years and above have symptomatic problems attributable to osteoarthritis.⁴ OA is more common in women than men. Nearly, 45% of women over the age of 65 years have

symptoms while 70% of those over 65 years show radiological evidence of OA.⁵ Osteoarthritis is defined as a heterogenous group of conditions that affects the articular cartilage first, which undergoes wear and tear.⁶ This allows the bone and cartilage to rub together. Rubbing causes pain, swelling and loss of motion of the joint. After 65 years of age, majority of the people shows radiographic evidence of osteoarthritis.⁷

Pathological features include progressive loss of articular cartilage and formation of new bone called osteophyte.

The risk of developing osteoarthritis increases with age. It is more common in post-menopausal women than men. The other factors associated with osteoarthritis include obesity, joint injury, previous joint surgery, occupational bending and lifting.⁸ Indeed obesity is a strong risk factor for the progression of knee osteoarthritis. By maintaining an ideal weight or body mass index (BMI) the onset of knee osteoarthritis can be reduced.⁹

Osteoarthritis of knee joint is diagnosed on the basis of clinical and radiological findings. Clinical findings include knee pain plus at least one of the following 3 features; age more than 45 years; stiffness of less than 30 minutes; crepitus on active motion. Radiological findings include radiographic evidence of osteophytes and reduced joint space.¹⁰ Treatment of osteoarthritis is preventive if predisposing factors are known. Once progressed physiotherapy and surgery remains the only option.¹¹

Objectives

The objectives of the study were to assessment of effect of osteoarthritis of knee on activities of daily living using Western Ontario and McMasters University Osteoarthritis (WOMAC) index, to assessment of treatment seeking behavior of patient of osteoarthritis of knee and to study the relation between various demographic indicators and osteoarthritis of knee.

METHODS

This study was conducted at Khaja colony under catering area of Urban Health Training Centre (UHTC) of Khaja Banda Nawaz Institute of Medical Sciences situated at Kalaburagi (Gulbarga) city of Karnataka. Study period was from 15th April to 1st June 2016. This is a Cross-sectional study using Convenience sampling method (all those eligible were covered during study period) to collect the data. Institutional Ethical Committee clearance was obtained prior to initiation of the study.

Study population

Survey was done among total 12843 people of Khaja colony till desired time period was over. Study population ultimately came 390 participants (n=390) fitting into eligibility criteria.

Inclusion criteria

Age more than or equal to 45 years, pain in knee joint or Self-reported difficulty in activities like walking one quarter of a mile, climbing, bending and kneeling down and self-care activities were included.

Exclusion criteria

Age below 45, without pain in knee joint or difficulty in at least following activities-walking one quarter of a mile, climbing, bending, kneeling, shopping, self-care activities were excluded.

Data collection

A pre-tested and semi structured proforma was used for data collection. Visits were made to Jalalwadi, Khaja colony, and Chotidewdi areas on pre-decided dates. House to house visit of the area was done beginning from the randomly selected house. Data was collected from the people above the age of 45 who are having knee pain. Thus, a total of 390 elderly belonging to different households where included in the study. Subjects were explained about the objectives of the study and after getting informed verbal consent, data was collected about demographic details and osteoarthritis related information mentioned in proforma. BG Prasad's socioeconomic scale was used to determine the socio-economic class (SEC).

Case definition for osteoarthritis: Any person with age of 45 or above and having knee pain or stiffness of less than 30 minutes or crepitus on active motion.

Socio-economic status* = Total income per month / no. of family members

[*AICPI (Base 2001)=237 (2016)]

Classification of SEC

Upper SEC income was Rs. 3700 and above. Upper middle SEC income was Rs. 1850 to Rs. 3669. Lower middle SEC income was Rs. 1110 to Rs. 1849. Upper lower SEC income was Rs. 555 to Rs. 1109 and lower-below SEC income was Rs. 555.

Height was calculated with the patient standing without shoes, measured at baseline using a calibrated scale. Participants were made to stand with their heel, buttock and occiput touching the wall and marking are done using pencil above the head. Weight measurement was done using portable weighing scale. BMI of the participant was calculated.

$BMI = \text{Weight (kgs)} / \text{Height (m}^2\text{)}$

Classification of BMI

Underweight BMI of the participant was less than 18.50, normal range was 18.50 to 24.99 and overweight was 25.00 and above.

Data analysis

Collected data was entered and analysed using Microsoft Excel Version 2000. The results are expressed as proportions. Variables were analyzed to find out the association of the correlates with the risk factors and socio-economic status. Significance of variables was estimated in terms of Odd's Ratio (OR) and its 95% confidence interval. A p value less than 0.05 considered significant.

RESULTS

Table 1 shows that highest percentage of study subjects belongs to 56 to 65 years age group (about 40%). About 3/4th of study subjects were females. Out of all osteoarthritis patients, more than half (about 54%) were overweight. About 2/3rd (66%) of study participants were illiterate. Majority (about 70%) of study participants belongs to middle socio-economical class.

Table 2 shows that 16% of participants in underweight category were having moderate to very severe pain while it was seen in 79% of participants in overweight group. This finding was statistically highly significant.

Table 3 shows that 67% of participant of lower SEC did not seek treatment which is far higher in comparison to upper class (i.e. 21%). Higher percentage of people from lower SEC did not have any type treatment for their ailment. Most of the higher SEC people either had orthopaedic or general practitioner consultation. Both of above finding were statistically highly significant.

When participants were assessed using WOMAC's index (Table 4), we found in our study that 24% participants (i.e. 92 participants) had experienced moderate pain while walking and 20.34% (59 participants) had extreme pain while walking. 11.28% (44 participants) had moderate pain at rest while 2.6% participants (10 participants) had extreme pain at rest. 22% participants (i.e. 84 participants) had experienced moderate level morning stiffness while 9.74% (38 participants) experienced extreme level of morning stiffness. 24% participants (i.e. 93 participants) faced moderate difficulty while

descending the stairs. While ascending stairs 20.51% (80 participants) had moderate difficulty while 18.72% (73 participants) had extreme difficulty. During rising (standing) from sitting position 30.25% (118 participants) had experienced moderate difficulty while 14.87% (58 participants) experienced extreme difficulty.

Table 1: Demographic characteristics of participants (n=390).

Variable	Category	Frequency	Percentage (%)
Age group	45-55	96	24.62
	56-65	153	39.23
	66-75	97	24.87
	76-85	29	7.44
	85 and above	15	3.84
Gender	Male	99	25.3
	Female	291	74.7
BMI category	Underweight	12	3.09
	Normal	167	42.82
	Overweight	211	54.10
Education	Illiterate	256	65.64
	Primary	18	4.62
	Secondary	28	7.2
	Higher secondary	61	15.64
	Graduate and above	27	6.9
SEC	Upper	101	25.90
	Middle	271	69.49
	Lower	18	4.61

Table 2: BMI category wise distribution of visual analogue scale for pain (due to OA of knee).

BMI category	0-2 VAS score*	3-5 VAS score*	6-8 VAS score*	9-10 VAS score*	Row Totals	Chi-Square value	P value
	N (%)	N (%)	N (%)	N (%)	N (%)		
Underweight	3 (25)	7 (59)	1 (8)	1 (8)	12 (100)	79.15	<0.00001
Normal	1 (1)	54 (32)	98 (59)	14 (8)	167 (100)		
Overweight	1 (1)	42 (20)	125 (59)	43 (20)	211 (100)		
Column totals	5	103	224	58	390 (grand total)		

VAS: visual analogue scale. (*0-2 score indicates no to mild pain on VAS, 3-5 score indicates mild to moderate pain, 6-8 indicates moderate to severe pain on VAS and 9-10 score indicates severe to very severe pain on VAS).

Table 3: SEC wise distribution of treatment seeking behaviour.

SEC	Orthopedic surgeon consultation	General practitioner consultation	No consultation	Row totals	Chi-Square value	P value
	N (%)	N (%)	N (%)	N (%)		
Upper class	43 (42)	37 (37)	21 (21)	101 (100)	30.2065	<0.00001
Middle class	61 (23)	136 (50)	74 (27)	271 (100)		
Lower class	1 (5)	5 (28)	12 (67)	18 (100)		
Column totals	105	178	107	390 (grand total)		

Table 4: Effect of OA on activities of daily routine assessed using WOMAC's index.

Variable	Activity	Intensity or difficulty	Frequency	Percentage (%)
Pain	Walking	Moderate level	92	24
	Walking	Extreme level	59	20.34
	Rest	Moderate level	44	11.28
	Rest	Extreme level	10	2.6
Stiffness of knee	Morning stiffness	Moderate level	84	22
		Extreme level	38	9.74
Physical function	Descending stairs	Moderate difficulty	93	24
		Extreme difficulty	59	15.13
	Ascending stairs	Moderate difficulty	80	20.51
		Extreme difficulty	73	18.72
	Rising from sitting	Moderate difficulty	118	30.25
		Extreme difficulty	58	14.87

DISCUSSION

Our study shows that the majority of study subjects belong to the age group of 56 to 65 years (about 40%). In a study conducted by Radha et al, showed that the age group most affected by OA was 55-65 year (about 42%).¹² As per the British Columbia Osteoarthritis Survey, headed by Linda et al, the mean age of all participants was 67.3 years.¹³ Nour et al, in their study showed that mean age for OA of knee was 62.1 years.¹⁴ Sathyanarayanan et al, in their study found that majority (49.5%) participants belonged to 50 to 59 yr age group.¹⁵

Our study showed that about 75% of study participants were females which indicate the female preponderance to OA. Other study reported 63.33% of participant to be females.¹² As per the British Columbia Osteoarthritis Survey, headed by Linda Li, 61.8% study participants were females.¹³ Nour et al, in their study showed that OA was more common in females (86.1%) compared to males.¹⁴

In our study more than half (about 54%) of all osteoarthritis patients were overweight. In literature one study showed that 37.33% participants were overweight and other study about 65% of the participants were overweight.^{12,13} Nour et al, in their study showed that 78.6% participants were overweight which was more compared to our finding in this study.¹⁴ In contrast to all above mentioned 3 studies Sathyanarayanan et al, in their study found that only 20.3% participants were overweight.¹⁵ These variations in BMI could be due to the dietary and work habits of the respective study population.

In our study 93.1% participants had education below or up to higher secondary. As per the British Columbia Osteoarthritis Survey, Li et al, found that about half of the study participants had completed high school or lower (50.3%).¹³

Table 2 shows that about only 16% of underweight category participants were having moderate to very severe pain while in overweight group 79% participants were having moderate to very severe pain. This re-confirms the established fact that overweight increases the chances of osteoarthritis.

Table 3 of our study showed that there was an inverse relationship between the socioeconomic status of the patients and the incidence of OA among them. The possible reason could be that the lower classes were unable to afford treatment and/or lower health consciousness among such class show very low rates of seeking treatment in comparison to middle and upper classes. Even in those who seek treatment, upper class consulted specialist more commonly (orthopaedics consultation who can manage in best way) in comparison to other classes who contacted General Practitioner (who can manage but not up to the level of specialist) which again possibly due to higher overall socio-economical development in upper classes compared to other classes.

In our study 24% participants had experienced moderate pain while walking while the study conducted by Radha et al, showed that 63.33% participants experienced moderate pain which was higher than our study findings.¹² Moderate level morning stiffness was seen in 22% of study participants while other study reported 51.33%.¹² In our study, 24% participants faced moderate difficulty while routine physical work like descending the stairs while the study conducted by Radha et al, showed that 67.33% participants experienced moderate level of difficulty in routine physical function.¹²

CONCLUSION

Population with BMI in the category of overweight are more prone for having severe pain of OA while doing daily activities of living and socioeconomic status of the affected population play a significant role in health care seeking pattern. Population with lower socioeconomic status have less access to health care services.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. World Health Organization. World Health Report 2002. Reducing Risks, Promoting Healthy Life. Geneva, WHO, 2002.
2. Mutangadura, Gladys B. World Health Report 2002: Reducing Risks, Promoting Healthy Life. World Health Organization, Geneva. Agricultural Economics, Blackwell. 2004;30(2):170-2.
3. National Health portal. Osteoarthritis. Available at <https://www.nhp.gov.in/disease/musculo-skeletal-bone-joints-/osteoarthritis>. Accessed on 3 January 2020.
4. Symmons D, Mathers C, Pflieger B. Global Burden of Osteoarthritis in the year 2000. World Health Organisation. 2000;2002(4):1-26.
5. Davis MA, Ettinger WH, Neuhaus JM. Obesity and osteoarthritis of the knee: Evidence from the National Health and Nutrition Examination Survey (NHANES I). *Semin Arthritis Rheum.* 1990;20(3 suppl 1):34-41.
6. Teichtahl AJ, Wang Y, Wluka AE, Cicuttini FM. Obesity and knee osteoarthritis: new insights provided by body composition studies. *Obesity (Silver Spring)*. 2008;16(2):232-40.
7. Arden N, Nevitt MC. Osteoarthritis: epidemiology. *Best Pract Res Clin Rheumatol*. 2006;20(1):3-25.
8. Murphy L, Schwartz TA, Helmick CG, Renner JB, Tudor G, Koch G, et al. Lifetime risk of symptomatic knee osteoarthritis. *Arthritis Rheum*. 2008;59(9):1207-13.
9. Coggon D, Reading I, Croft P, McLaren M, Barrett D, Cooper C. Knee osteoarthritis and obesity. *Int J Obes Relat Metab Disord*. 2001;25(5):622-7.
10. Powell A, Teichtahl AJ, Wluka AE, Cicuttini FM. Obesity: a preventable risk factor for large joint osteoarthritis which may act through biomechanical factors. *Br J Sports Med*. 2005;39(1):4-5.
11. Maheshwari J. *Essentials of Orthopedics*. Fourth edition. New Delhi, Jaypee Brothers Medical Publishers (P) Ltd; 2011: 287-289.
12. Radha MS, Gangadhar M.R., Prevalence of Knee Osteoarthritis Patients in Mysore City, Karnataka. *Int J Recent Sci Res*. 2015;6(4):3316-20.
13. Li L. British Columbian Osteoarthritis Survey. Osteoarthritis Survey; January 2008. <https://arthritis.rehab.med.ubc.ca/files/2011/08/BCOASurvey.pdf>. Accessed on 3 January 2020.
14. Nour HA, Oyoo GO, Joshi MD, Otsyeno FMT. Patterns of Knee, Hip and Hand Osteoarthritis in Kenyatta National Hospital. *East African Orthop J*. 2013;7;53-6.
15. Sathiyarayanan S, Shankar S, Padmini SK. Usefulness of WOMAC index as a screening tool for knee osteoarthritis among patients attending a rural health care center in Tamil Nadu. *Int J Community Med Public Health*. 2017;4:4290-5.

Cite this article as: Reshmi PS, Bhavsar SV. Assessment of effect of osteoarthritis of knee on the activities of daily living and treatment seeking behaviour of patients at Kalaburagi, Gulbarga city of Karnataka. *Int J Community Med Public Health* 2020;7:882-6.