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PHYSICAL FUNCTIONALITY AND SELF-RATED HEALTH STATUS OF ADULT PATIENTS WITH KNEE OSTEOARTHRITIS PRESENTING IN A PRIMARY CARE CLINIC

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ABSTRACT

BACKGROUND: Knee osteoarthritis is a chronic medical condition of public health importance in Nigeria which causes disability and impacts daily activities in the sufferers. This study aimed to describe the physical functionality and self-rated health status of adult patients with clinical knee osteoarthritis presenting at the Family Medicine Department, University College Hospital, Ibadan, Nigeria.

METHODS: This was a cross-sectional study of 400 respondents. Knee osteoarthritis was diagnosed clinically using the criteria of the American College of Rheumatology. Morbidities, self-rated health status and physical functionality of the respondents were also assessed.

RESULTS: Knee osteoarthritis was diagnosed in 46(11.5%) respondents. Respondents with knee osteoarthritis significantly rated their health worse than those without knee osteoarthritis (p <0.0001). Experience of pain, stiffness and performance of daily activities were significantly worse among respondents with knee osteoarthritis. Those who had knee osteoarthritis had significantly higher waist (p <0.0001), hip (p <0.0001) and knee circumferences (p <0.0001) respectively. Logistic regression analysis showed increasing age (OR=1.103; 95% CI=1.022 – 1.191), self-rated health worse than six months ago (OR=12.562; 95% CI=1.178–125.243), experience of stiffness after waking up in the morning (OR=12.758; 95% CI=3.572–45.569), stiffness after sitting/lying down/resting (OR=21.517; 95% CI=2.213–209.220) and waist circumference (OR=1.225;95% CI=1.017–1.477) to be the most significantly associated with knee osteoarthritis.

CONCLUSION: Knee osteoarthritis significantly impairs the health and daily activities of adult patients in Ibadan, Nigeria. Healthcare workers need to screen adult patients routinely at first-contact to detect knee osteoarthritis clinically early and manage appropriately.

KEYWORDS: Family practice clinic, functionality, health status, knee osteoarthritis, Nigeria

INTRODUCTION

Knee Osteoarthritis (OA) is a disease of global importance which leads to disability and affects the daily activities of individuals. Knee OA is very common and has an enormous impact not only on the health of the affected individual but that of the community (1). OA is a complex disease entity that is difficult to define and diagnose. The Subcommittee on Osteoarthritis of the American College of Rheumatology Diagnostic and Therapeutic Criteria Committee defined osteoarthritis (OA) as "A heterogeneous group of conditions that leads to joint symptoms and signs which are associated with defective integrity of articular cartilage, in addition to related changes in the underlying bone at the

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joint margins". Clinically, the condition is characterized by joint pain, tenderness, limitation of movement, crepitus, occasional effusion, and variable degrees of local inflammation (2).

In knee OA evolution, even though the entire joint is implicated, the signature event appears to be loss of hyaline cartilage (3).Though clinical and radiological features may be used for diagnosis of knee OA (3).Assessment of knee OA using clinical features forms an important basis of diagnosis in resource-constrained countries because of the high cost of radiological investigation (3).

The commonest presenting complaints for knee OA are knee pain and stiffness. In 2000, Creamer found knee pain to be present in all the 69 respondents diagnosed with knee OA using the clinical diagnostic criteria of the American College of Rheumatology (ACR) (1). He also reported an increased prevalence of knee OA with advancing age (1). Most individuals with knee OA are usually over the age of 50 years presenting with pain and stiffness in the affected joint(s), which are worsened by activity and improved with rest (4).Early morning features lasting more than 30 minutes have also been reported in the literature as a common feature of knee OA (4).

Knee OA leads to physical disability through an interplay of several factors such as the severity of the disease condition, the presence and intensity of knee pain and other associated co-morbidities such as obesity which has been reported as the strongest modifiable risk factors of OA (5). Loss of physical capacity and derangement in the psychological, social and environmental factors has been implicated in the development of physical disability in knee OA (5).

Most cases of knee OA in Ibadan, Nigeria are attended to first by the primary care physician who often relies on radiologic evidence for diagnosis by which time severe and often irreversible destruction of the joint would have occurred. Similarly, the focus of management is often on salvaging the knee joint with less emphasis on the disability and health status of the sufferers. The aim of this study was to determine the physical functionality and health status of adult patients with clinical knee OA presenting at the University College Hospital, Ibadan, Nigeria.

MATERIALS AND METHODS

Study site: This study was carried out at the General Outpatient (G.O.P.) Clinic, Department of Family Medicine, University College Hospital (UCH), Ibadan, Nigeria. Ibadan is the largest city in Africa south of the Sahara with a population of 3.6 million people. UCH is the foremost teaching hospital in Nigeria and G.O.P. clinic functions as a primary care setting within the tertiary hospital. Most of the patients presenting in UCH for the first time are triaged and managed at the G.O.P. clinic while those requiring further specialist care are referred to other specialty clinics within the health facility.

Study design: A cross-sectional design was used for this study.

Study population: All consenting adult patients (18 years and above) who presented during the period of the study (January 15th to March 30th 2012) were recruited. Leslie and Kish formula for single proportion was used to calculate the sample size using the best estimate of knee OA in Nigeria (6). Thus, 400 patients were recruited. Those who were too ill to participate in the study and those who did not consent were excluded.

Sampling technique: Respondents who met the inclusion criteria were selected one after the other as they arrived at the clinic (consecutively).

Procedure: The respondents were interviewed with a semi-structured questionnaire which was pre-tested before its use. The American College of Rheumatology (ACR) criteria was used to diagnose knee OA clinically (7, 8). Detailed history and comprehensive physical examination of the respondents were carried out by the researchers, and focused laboratory investigations were added to arrive at the diagnoses. Their self-rated health status was assessed with the 'three-item perception of illness scale' (9). Each item is graded from 1 to 5 (poor to excellent), which are aggregated into a composite score of perception of health (score = 3 to 15) (9, 10).The perception of illness scale has a Cronbach's alpha coefficient of 0.65 (10).The Western Ontario and McMaster Universities Osteoarthritis (WOMAC) Index which is a disease-specific, tri-dimensional self-administered questionnaire was used to assess their functionality (health status and health outcomes) (11).The WOMAC Index contains 24 questions, targeting areas of pain, stiffness and

physical function and it is available in over 60 languages (11).

Anthropometric measurement: Height was recorded to the nearest centimetre with a measurement stand (stadiometer) which was positioned on a flat surface. Respondents were asked to remove their shoes, and their heels were positioned against the stand with their scapula, buttocks and heels resting against the wall and female respondents were asked to remove their headwears. Weight was measured with a weighing scale manufactured by Hana, China, and was recorded to the nearest 0.1kg. After the removal of their personal effects, respondents stood on the weighing scale which was placed on a flat horizontal surface. Readings were made by the researcher standing in front of the respondents and the zero mark was checked after every reading for accuracy. Intermalleolar and intercondylar distances were measured to the nearest centimetre. Body circumferences (waist, hip, knee and calf) were measured using a flexible non-elastic measuring tape and these were measured to the nearest 0.1meters.

Ethical considerations: Informed consent of all the respondents was obtained before the examination and administration of questionnaires. Approval was sought and obtained from the head of Family Medicine Department, UCH, Ibadan.

Follow-up: All the respondents had their primary health complaints (reasons for encounter) addressed before the interview. Respondents needing additional treatment were referred to other specialty units within UCH, Ibadan.

Data analysis: SPSS (version 16) was used for data handling (entering, cleaning and analysis) after the questionnaires had been checked, sorted and coded serially at the end of each study day. Tables were generated to describe the categorical variables. Chi-square statistics was used to assess the association between categorical variables. Student's t-test was used to assess the association between continuous variables. The p –value of significance was set at ≤ 0.05. Logistic regression analysis was used to explore the relationship between significant variables and knee OA.

RESULTS

Two hundred and thirty-eight (59.5%) female and 162 (40.5%) male respondents were interviewed giving a female to male ratio of 1.5:1. The mean $\pm$ SD age was 47.3 ± 16.4 years (range was 18 to 90 years). The highest proportion of the 400 respondents interviewed, 93 (23.2%) were aged 60 years and above. The majority of the respondents (64.2%) were married and 35.0% had tertiary education. Elementary occupation such as cleaners and helpers; agricultural, forestry and fishery labourers; labourers in construction, manufacturing and transport; food preparation assistants; street and related sales and service workers and cleaners were the occupation of 48.8% of the respondents. The majority (51.2%) lived above the Nigerian minimum wage of 18,000 Naira ($120) per month.

Forty-six (11.5%) respondents were diagnosed clinically with knee osteoarthritis using the American College of Rheumatology (ACR) diagnostic criteria. These constituted 10 (21.7%) males and 36 (78.3%) females. The mean $\pm$ SD age of the respondents with knee OA 60.9 ± 12.8 years was significantly higher than those without knee OA (45.5 ± 16.1 years) (t = 39.027, p < 0.0001). Respondents without knee OA on average walked more distances daily compared with those with knee OA (385metres vs 325metres, t = 2.890, p = 0.090).Only 13 (28.3%) of the respondents with knee OA engaged in physical activities such as walking (17.4%), jogging (4.3%), aerobics (4.3%) and basketball (2.3%). The average duration of their present episode of knee pain was 3 days (2 – 50 days). Various analgesics such as NSAIDS (91.3%), Paracetamol (73.4%), Opiods (34.8%), topical (47.8%) and injectable analgesics (2.2%) were used by respondents in the previous one month.

Table 1: Socio-demographic characteristics of respondents

	n	(%)
Age (years)		
< 30	79	19.8
31 – 40	79	19.8
41 – 50	76	19.0
51 – 60	73	18.2
> 60	93	23.2
Marital status		
Single	79	19.8
Married	257	64.2
Separated/divorced	11	2.8
Widowed	53	13.2
Educational status		
None	71	17.8
Primary school	94	23.4
Junior secondary school	3	0.8
Senior secondary school	92	23.0
Tertiary	140	35.0
Occupational classification (ILO-ISCO)		
Managers	2	0.5
Professionals	18	4.5
Technicians and associate professionals	10	2.5
Clerical support workers	61	15.2
Service and sales workers	38	9.5
Skilled agricultural, forestry and fishery workers	8	2.0
Craft and related trades workers	16	4.0
Plant and machine operators, and assemblers	0	0.0
Elementary occupations	195	48.8
Armed forces occupations	8	2.0
*Unemployed	44	11.0
Income		
Below minimum wage (<18,000 Naira per month)	195	48.8
Above minimum wage (≥18,000 Naira per month)	205	51.2
Living arrangement		
Alone	34	8.5
With spouse	240	60.0
With children/Grandchildren	64	16.0
With relations/friends	62	15.5
Financial support		
Self	140	35.0
Spouse	82	20.5
Parents	56	14.0
Children/Grandchildren	107	26.8
Others	15	3.8

* Not categorized under International Labour Organization – International Standard Classification of Occupation (ILO-ISCO)

Table 2 describes the self-rated health of the respondents which was dichotomized into 'good' or 'poor'. When asked how they would rate their overall health, a higher proportion of respondents having knee OA (76.1%) rated their health poorer than those without knee OA (41.2%) (χ^2 = 19.951, p<0.0001). Similarly, respondents with knee OA rated their health significantly poorer when compared with those without knee OA six months previously (73.9% vs 36.4%) (χ^2 = 23.676, p <0.0001). The physical health of those with knee OA was significantly poorer compared with those without knee OA (60.9% vs 23.4%) (χ^2 = 28.437, p <0.0001).

Table 2: Self-rated health and knee OA

	KNEE OSTEOARTHRITIS		
	Yes = 46 (%)	**No = 354 (%)**	**TOTAL=400 (%)**
How do you rate your overall health now?			
Poor	35(76.1)	146(41.2)	181(45.3)
Good	11(23.9)	208(58.8)	219(54.7)
χ^2 = 19.951 df=1 p <0.0001*			
How do you rate your overall health compare to 6 months ago?			
Poor	34(73.9)	129(36.4)	163(40.8)
Good	12(26.1)	225(63.6)	237(59.2)
χ^2 = 23.676 df=1 p <0.0001*			
How do you rate your overall physical health compare to others of your age?			
Poor	28(60.9)	83(23.4)	11(27.7)
Good	18(39.1)	271(76.6)	289(72.3)
χ^2 = 28.437 df=1 p <0.0001*			

*Significant at p <0.05

The physical functionality and health status of respondents is described in Table 3.This was assessed using the WOMAC^{TM} physical functionality questionnaire. In the pain sub-section, respondents with knee OA significantly experienced more pain in their daily activities than those without knee OA did. Similarly, stiffness was experienced more among those with knee OA in the last 48 hours than in those without knee OA. Respondents with knee OA reported significant difficulty in performing their various daily physical activities and functions when compared with those without knee OA.

Table 3: Physical functionality by clinical Knee Osteoarthritis

| | Knee Osteoarthritis | | | |
	Yes = 46 Mean ± SD	No = 354 Mean ± SD	t- score	p- value
PAIN				
When walking on a flat surface	1.63(0.37)	1.07(0.37)	66.534	<0.0001*
When going up or down stairs	3.15(1.09)	1.51(0.85)	140.549	<0.0001*
At night while in bed (that is - pain that disturbs your sleep)	2.02(0.93)	1.12(0.48)	109.194	<0.0001*
While sitting or lying down	2.43(1.07)	1.29(0.62)	112.951	<0.0001*
While standing	2.37(1.20)	1.30(0.81)	62.487	<0.0001*
STIFFNESS				
How severe has your stiffness been after you first woke up in the morning?	2.28(0.86)	1.07(0.35)	314.114	<0.0001*
How severe has your stiffness been after sitting or lying down or while resting later in the day?	1.83(0.93)	1.02(0.17)	218.043	<0.0001*
DIFFICULTY IN PERFORMING DAILY ACTIVITIES				
When going down the stairs	3.19(1.07)	1.57(0.87)	135.412	<0.0001*
When going up the stairs	3.28(0.98)	1.57(0.86)	157.214	<0.0001*
When getting up from a sitting position	2.69(0.89)	1.36(0.67)	149.764	<0.0001*
While standing	2.39(1.06)	1.36(0.82)	59.104	<0.0001*
When bending to the floor	1.76(0.95)	1.30(0.63)	18.825	<0.0001*
When walking on a flat surface	1.59(0.78)	1.06(0.34)	65.462	<0.0001*
Getting in or out of a car, or getting on or off a bus	2.57(1.03)	1.33(0.79)	94.085	<0.0001*
While going shopping/outing/market	1.24(0.43)	1.05(0.56)	4.709	0.031*
When putting on your socks or stockings	1.50(0.66)	1.06(0.33)	53.434	<0.0001*
When getting out of bed	1.67(0.79)	1.14(0.85)	16.341	<0.0001*
When taking off your socks or stockings	1.39(0.61)	1.06(0.33)	31.579	<0.0001*
While lying in bed	1.52(0.66)	1.12(0.81)	10.250	0.001*
When getting in or out of the bathtub/room	1.20(0.50)	1.07(0.76)	1.240	0.266
While sitting	2.50(0.84)	1.34(0.62)	128.498	<0.0001*
When getting on or off the toilet	2.19(0.91)	1.21(0.57)	104.300	<0.0001*
While doing heavy household chores	2.35(1.10)	1.33(0.66)	80.902	<0.0001*
While doing light household chores	1.19(0.45)	1.01(0.12)	37.683	<0.0001*

*Significant at p <0.05

Anthropometric measurements showed that the respondents having knee OA were significantly heavier (74.4kg vs 69.1kg; t = 8.035, p = 0.005) and had higher BMI (29.4kg/m^2 vs 25.6kg/m^2; t = 23.411, p <0.0001) than those without knee OA. The knee circumferences of respondents with knee OA were significantly larger compared with those without knee OA; right knee circumference (42.2cm vs 39.8cm; t = 15.558, p <0.0001) and left knee circumference (41.9cm vs 39.7cm; t = 12.991, p <0.0001). The intercondylar (4.1cm vs 3.9cm; t = 0.108, p = 0.743) and intermalleolar (4.6cm vs 4.1cm; t = 0.250, p = 0.621) distances were greater in those with knee OA than in those without knee OA. Respondents with knee OA had higher Waist-Hip ratio (0.91 ± 0.06) compared with those without knee OA (0.90 ± 0.06), though this difference was not statistically significant (t = 0.029, p = 0.865).

Table 4: Anthropometric measurements of the respondents

| MEASUREMENTS | KNEE OSTEOARTHRITIS | | t- score | p- value |
	YES Mean ± SD	NO Mean ± SD		
Weight (Kg)	74.4 ± 15.9	69.1 ± 12.2	8.035	0.005*
Height (cm)	159.5 ± 6.8	164 ± 7.6	18.084	<0.0001*
Waist circumference (cm)	96.0 ± 11.2	88.7 ± 10.3	20.483	<0.0001*
Hip circumference (cm)	106.2 ± 12.4	98.1 ± 9.6	27.063	<0.0001*
Right lower limb length (cm)	98.5 ± 9.1	101.3 ± 5.3	9.067	0.003*
Left lower limb length (cm)	97.3 ± 12.9	100.5 ± 9.1	4.784	0.029*
Right knee circumference (cm)	42.2 ± 4.9	39.8 ± 3.8	15.558	<0.0001*
Left knee circumference (cm)	41.9 ± 4.8	39.7 ± 3.9	12.991	<0.0001*
Right calf circumference (cm)	36.8 ± 4.4	36.3 ± 4.0	0.670	0.414
Left calf circumference (cm)	37.6 ± 5.1	36.4 ± 4.4	2.551	0.111
Right knee height (cm)	50.9 ± 3.0	52.4 ± 3.7	7.029	0.008*
Left knee height (cm)	49.9 ± 7.0	52.0 ± 5.7	4.897	0.027*
Intercondylar distance (cm)	4.1 ± 2.7	3.9 ± 2.5	0.108	0.743
Intermalleolar distance (cm)	4.6 ± 3.7	4.1 ± 2.5	0.250	0.621
Waist Hip Ratio	0.91 ± 0.06	0.90 ± 0.06	0.029	0.865
Body Mass Index	29.4 ± 6.2	25.6 ± 4.8	23.411	<0.0001*

*Significant at p <0.05

Logistic regression analysis showed increasing age (OR = 1.103; CI= 1.022 – 1.191, p = 0.012), self-rated health worse than six months ago (OR = 12.562; CI = 1 – 125.243, p = 0.036), experience of stiffness after waking up in the morning (OR = 12.758; CI= 3.572 – 45.569, p with knee OA.

<0.0001), stiffness after sitting/lying down/resting (OR = 21.517; CI= 2.213 – 209.220, p = 0.008) and waist circumference (OR = 1.225; CI= 1.017 – 1.477, p = 0.033) to be the most significantly associated.

Table 5: Logistic regression analysis of significant variables associated with Knee Osteoarthritis

	B	p	Odds Ratio	95.0% C.I. Lower	Upper
Age	.0098	0.012*	1.103	1.022	1.191
Overall physical health right now	1.415	0.282	4.118	0.312	54.272
Overall physical health compare to 6mnths ago	2.524	0.036*	12.562	1.178	125.243
Overall physical health compare to others of your age	-0.751	0.520	0.472	0.048	4.658
Pain when walking on a flat surface	0.389	0.746	1.475	0.140	15.540
Pain when going up or down stairs	-0.635	0.573	0.530	0.058	4.811
Pain at night while in bed	0.310	0.694	1.364	0.291	6.389
Pain while sitting or lying down	-0.989	0.302	0.372	0.057	2.435
Pain while standing	-0.332	0.684	0.718	0.145	3.541
Stiffness after you woke up in the morning	2.546	<0.001*	12.758	3.572	45.569
Stiffness after sitting/lying down/resting	3.069	0.008*	21.517	2.213	209.220
Difficulty when going down the stairs	-1.468	0.365	0.230	0.010	5.524
Difficulty when going up the stairs	3.421	0.057	30.586	0.901	1.039E3
Difficulty when getting up from a sitting position	1.529	0.149	4.615	0.577	36.886
Difficulty in standing up	-0.229	0.797	0.795	0.139	4.553
Difficulty when bending to the floor	-0.342	0.591	0.710	0.204	2.476
Difficulty when walking on a flat surface	-0.742	0.629	0.476	0.023	9.688
Difficulty getting in or out of a car or getting on or off a bus	-0.303	0.708	0.739	0.152	3.597
Difficulty while going shopping/outing/market	-2.084	0.414	0.124	0.001	18.554
Difficulty when putting on your socks or stockings	-1.860	0.169	0.156	0.011	2.211
Difficulty when getting out of bed	-0.011	0.983	0.989	0.360	2.717
Difficulty when taking off your socks or stockings	0.250	0.870	1.285	0.064	25.970
Difficulty in lying on bed	0.633	0.125	1.883	0.838	4.232
Difficulty in sitting	0.444	0.628	1.559	0.259	9.382
Difficulty when getting on or off the toilet	-1.042	0.296	0.353	0.050	2.491
Difficulty while doing heavy household chores	-0.066	0.914	0.936	0.281	3.122
Difficulty while doing light household chores	0.607	0.795	1.835	0.019	178.863
Weight	0.430	0.177	1.537	0.823	2.868
Height	-0.303	0.281	0.739	0.426	1.281
Waist circumference	0.203	0.033*	1.225	1.017	1.477
Hip circumference	0.036	0.617	1.036	0.901	1.192
Right lower limb length	-0.116	0.336	0.891	0.703	1.128
Left lower limb length	-0.003	0.945	0.997	0.903	1.100
Right knee circumference	0.120	0.729	1.127	0.573	2.218
Left knee circumference	0.225	0.518	1.253	0.633	2.481
Right knee height	-0.020	0.893	0.980	0.729	1.317
Left knee height	-0.002	0.977	0.998	0.883	1.128
BMI	-0.688	0.371	0.503	0.111	2.269
Constant	41.261	0.334	8.306E17		

*Significant at p <0.05

DISCUSSION

This hospital based study used the American College of Rheumatology (ACR) diagnostic criteria to diagnose Clinical knee Osteoarthritis (OA). The point prevalence of knee OA in this study was 11.5% with a female preponderance ratio of 3. This was less than that of a Nigerian community based cross sectional study (19.6%) which also showed a female preponderance ratio of 1.2:1 (6). Knee OA has been shown to be commoner among the females due to several factors such as obesity and hormones like Insulin-like growth factor 1 (IGF-1) which declines significantly with age in women than men (12).

Self-rating of health is widely used to assess a person's health need (13, 14). Self - rated health has also been shown to be a predictor of physical, social and mental health in patients with clinical Knee OA (15).Presence of knee OA was found to affect the self-rated health of the majority of respondents with knee OA adversely. This was shown by the report of

worse rated health in respondents with knee OA at the time and six months prior to this study when compared with those without knee OA. Significantly, more than three-quarters of those with knee OA rated their health worse compared with less than a half of those without knee OA. Worsening of the overall health status among persons with knee OA has been reported in the literature and it varies with the type and number of joints affected (16, 17).

Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC[TM]) physical functionality questionnaire was used to assess the physical functionality of the respondents. Respondents with knee OA had poorer physical function when compared with those without knee OA, p <0.0001. This was in line with the study which reported that the majority of the respondents with moderate to severe knee OA had poor physical function with most of them stating that their knee OA interfered negatively with their role performance (6). Experience of pain in most aspect of daily activities such as walking, climbing up stairs, sitting and standing was significantly worse among participants with knee OA. Similarly, stiffness of the knee joint was experienced more frequently by respondents reporting clinical knee OA. The respondents with knee OA in this study also reported significant difficulty while doing daily physical activities. This was in agreement with the study by Creamer et al., 2000, using the same WOMAC disability score in which heavy domestic duties, descending stairs, rising from sitting and going shopping had the highest scores for self-reported difficulty; while the least were sitting and lying in bed (1).

Obesity was a major predictor of physical functional loss as there was significant direct correlation between disability and BMI and pain (1). Disability scores increased in persons having knee OA with increasing BMI compared with those having knee OA with normal BMI (1). Obesity was independently associated with disability and compounded disability from knee pain (18). Respondents in this study with knee OA were significantly heavier with higher waist, hip, and knee circumferences compared with those without knee OA. In addition, those with knee OA had significantly higher body mass index than those without knee OA. Association between obesity and knee OA had been shown in many studies (19, 20). Haq et al., in 2003 reported that during physical activity such as walking, three to six times the weight of the body is transferred across the knee joint and any increase in body weight can be multiplied by this factor (3).

In this study, multivariate analysis done using logistic regression analysis showed that the most significant variables associated with knee OA were increasing age (OR = 1.103), higher waist circumference (OR = 1.225) and self-rated health worse than six months ago (OR = 12.562). The odds of experiencing stiffness after waking up in the morning with knee OA was almost 13 times (OR = 12.758), while the odds of experiencing stiffness after sitting/lying down/resting was about 22 times (OR = 21.517).

In conclusion, this study has shown that the presence of knee OA negatively impacts the daily activities, self-rated health status and functionality of the sufferers. Similarly, the significant association with increased adiposity (Waist-Hip ratio) and obesity identified in the study points to the need for routine health education to mitigate the public health impact of knee OA. Life-style modification should be part of the health information given to patients when presenting in the hospitals.

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