Online ISSN 3007-3197 Print ISSN 3007-3189

http://amresearchreview.com/index.php/Journal/about

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 3, Issue 6 (2025)

Prevalence of Knee Osteoarthritis among Working Women across Socioeconomic Classes in Various Regions of Sindh

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Article Details

Keywords: Knee Osteoarthritis, Working Women, Socioeconomic Status

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ABSTRACT

Obesity and sedentary lifestyle, along with a poor substandard diet, are the primary causes of knee osteoarthritis. Regular physical activity, healthy living, and proper diet, with maintenance of body weight, may contribute to decreasing the rate of knee OA. Another major cause of knee OA in females is hormonal imbalance. Here, we are determining the prevalence of knee osteoarthritis among working women of different socioeconomic status in different areas of Sindh. Objective: The objective of the present study is to compare the prevalence of knee osteoarthritis in working women according to their different socioeconomic statuses in the regions of Sindh. Material And Method: Study Design: Cross sectional study design was conducted. Study Setting: We conducted the data from different areas of sindh (saeedabad, sinjhoro, daur, tandoadam, bhittshah, hala). Duration Of Study: Study was completed in 3 months. Sampling Technique: Non probability convenient sampling technique was used. Sample Size: 125working women sample collected by questioner form. Ethical Consideration: Informed consent was obtained from women. Target Population: Middle age working women of different socioeconomic status. Sample Selection: Inclusion criteria: working women of middle age > 30 year old. Exclusion Criteria: working women < 30 year old and nonworking. Result: Of working women, 125 of them, the frequency percentage distribution says 45% have knee osteoarthritis. Out of that, 80% do not have knee osteoarthritis. Conclusion: According to the study, women engaged in healthy diets and exercises had lower osteoarthritis prevalence than women whose lifestyles were mostly of poor diets and sedentary living, such as staying for hours seated or standing.

INTRODUCTION

OA is the most prevalent form of arthritis [1] Aging is a strong associate and is one of the major causing agents of pain and disability in older people. OA is characterized by the focal loss of articular cartilage, subchondral osteosclerosis, osteophyte formation at joint margins, and remodeling of the joint contours with the enlargement of the affected joints. Inflammation may be present but is not a constant feature. The distribution pattern of joint involvement in OA is characteristic, chiefly involving the hip, knees, and PIP and DIP joints of the hands, nape, and lumbar spine. The incidence of OA advances with age. Studies estimate that 45% of all persons develop knee OA while 25% develop hip OA during life. Some of these patients may be asymptomatic, but the lifetime risk of undergoing total hip or knee replacement for OA in people aged 50 is approximately 11% in females and 8% in males. OA symptoms are more prevalent in women except for the hip, where men are generally affected more. Biomechanical risk factors to developing the disease and factors to actually becoming symptomatic may not be the same. Finally, increased incidence of knee OA may be associated with increased BMI, irrespective of knee alignments [2].

PHYSIOLOGY: OA is a complex disorder comprising both genetic and environmental factors. Repetitive adverse loading of joints due to occupation or competitive sports are also important predisposing factors among farmers (hip OA), miners (knee OA), and elite or professional athletes (knee OA). For most however, recreational sports participation does not seem to constitute added risk for OA so long as there has not been any significant joint trauma. The totality of evidence indicates that weight is a significant modifiable risk factor for incident OA. Knee injury confers a four-fold risk increase for knee OA [3]. Congenital abnormalities of the joint, such as slipped femoral epiphysis, are also related to high risk of OA, presumably because of abnormal load distribution within the joint; this is also thought to be the explanation for the increased risk of OA in Paget's disease of bone. Obesity is another strong risk factor. Part of the explanation is probably subjected to increased mechanical load at the joints, but it has been speculated that cytokines from the adipose tissue may also play a casual role. Because of the increased incidence of OA among women, there have been speculations regarding a causative role for sex hormones. Though not a single evidence shows that circulating sex hormones levels or reproductive histories predispose to OA, some studies showed that OA prevalence is lower in women using hormone replacement therapy (HRT) compared to nonusers. Genetic

inheritance is therefore one important factor in the pathogenesis of OA, ranging from approximately 43% at the knee to between 60 and 65 percent at the hip and hand. There are several loci that have recently been identified by genome-wide association studies to predispose to OA, but many others are still yet to be discovered. Changes in cartilage that were not minor are typical of OA. Chondrocyte cell division produces nests of metabolically active cells. Initially, increased production of mature components occurs at a heightened rate, although at the same time, the primary structural components degradation increases, including aggrecan and type 2 collagen. Eventually, the concentration of aggrecan in the matrix falls and exposes the cartilage to load bearing injury. The fissuring of the cartilage surface(fibrillation) then takes place, in which deep vertical clefts develop, localized chondrocyte death and increased cartilage thickness occur,,, this is rather focal than generalized in nature and is predominantly noticeable at the point where maximum load is applied onto the joint, but eventually larger areas of the cartilage surface are damaged. Abnormal cartilage is frequently the deposition sites of the crystals of pyrophosphate of calcium and basic calcium phosphate. The subchondral bone is also abnormal, with osteosclerosis and formation of sunchondral cysts. Fibrocartilage is formed at marginal joints, which eventually endochondrally ossifies into osteophytes. Slowly, remodeling of bone and thinning of cartilage change the shape of the OA joint and increases its surface area. Patients with OA also show an increased BMD at distal sites concerning the joint, mainly related to the formation of osteophytes. The reason is inadequately understood, but it probably relates to the fact that some common signaling pathways are considered to regulate simultaneously both bone and cartilage metabolism. Hyperplasia of the synovium occurs to varying degrees, and some inflammatory changes may be seen, though to a much lesser extent than in RA and other inflammatory arthopathies. Cartilage bodies quickly settle down in the synovium in relation to chondroid metaplasia or secondary uptake and growth of damaged cartilage fragments. The outer capsule also thickens and contracts, usually retaining joint stability during remodeling. Muscles around the affected joint commonly show evidence of wasting and non-specific type 2 fiber atrophy.

CLINICAL FEATURES: The primary presenting complaints are pain and dysfunction in OA patients typically over the age of 45, more often above 60. The mechanisms that seem to mediate pain in OA are not very well understood. They may involve increased pressure within the subchondral bone, mainly causing night-time pain; trabecular microfractures; capsular distension and low-grade synovitis; or possibly bursitis and enthesopathy secondary to altered

mechanics at the joint. For many people, functional restriction of the hands, knees, and hips is as much a problem as if not more so than the pain. Clinical findings, depending on severity, range from a typical finding of joint damage to a few rare findings. There appears to be variability in the correlation among structural change, pain, and disability by the specific location: fairly strong for the hip, weak for the knees, and mostly poor for the smaller joints of the hand. The risk factors for pain and disability may differ from those seen for structural change. At the knee, for example, impairment of quadriceps muscle strength and negative psychological factors (such as anxiety or depression) correlate better with pain and disability than the degree of radiographic change. These radiological signs can be found quite commonly in the elderly and middle-aged, making it necessary to note that pain in patients with OA may arise from other causes. Generalized OA, knee OA, hip OA, and spine OA (spondylosis) will be viewed independently.

SYMPTOMS AND SIGNS OF OA: PAIN: Insidious, over months to years-the onset of pain is often variable or intermittent; some good days, other not-so-good. It relates mainly to all forms of movement and weight bearing, with rest relieving the pain. There is slight morning stiffness (not more than 15 minutes), or a brief gailing after rest (not more than five minutes). The pains are usually occurring in one or a few joints.

CLINICAL SIGNS: Restricted movement that is secondary to capsular thickening or something blocking an osteophyte. A palpable, and sometimes audible, grating or crackling sound during rough articulation. Bony swelling around the joint margins. Usually some degree of deformity, but without instability. Tender along the joint line or extra-articular structures. Weakness and muscle wasting. Synovitis absent or mild.

KNEE OSTEOARTHRITIS: This osteoarthritis (OA) primarily involved patellofemoral and intermadiate tibiofemoral compartments in the locality but later spreads to involvement of the whole joint. The OA could either be isolated or could be a part of generalized nodal OA. Most of the patients, especially women, have bilateral and symmetrical involvement, while in the case of men, trauma is an important risk factor and may lead to unilateral OA. The area of pain lies around the anterior of the knee and upper tibia. The patellofemoral pain is usually aggravated when going upstairs or downstairs. Pain at the back of the knee may point to a complication of a popliteal cyst (Baker's cyst). Patients may find it extremely hard to walk long distances, rise from a chair, get in and out of a car or bend down to put on shoes and socks. The important findings in the local examination are: Ceretonious asymmetric gait with less time spent bearing

weight on the painful side; Varus and, less common, a valgus; and/or fixed flexion deformity. Tenderness is located in or around the joint line (secondary anserine bursitis and medial ligament enthesopathy causing tenderness of the upper medial tibia). Weakness and wasting of the quadriceps muscle, restricted flexion/extension with prominent crepitus, and bony swelling around the joint line.

The occurrence of calcium pyrophosphate dihydrate (CPPD) crystal deposition with OA is most prevalent at the knee joint. The presence of an inflammatory component (stiffness, effusion) can lead to acute synovitis (pseudogout) attacks, which can be decisive for faster radiological and clinical progression of OA.

OBJECTIVE OF STUDY

To find out the prevalence of knee osteoarthritis among working women of various socio-economic status across different areas of Sindh.

RATIONALE OF STUDY

The objective of this study is to find the prevalence of knee OA among women from different socio-economic standings with an understanding that an inactive lifestyle and poor diet are hazardous to knee OA, compared with active lifestyle women who do not have an increased risk.

OPERATIONAL DEFINITIONS

ARTHRITIS: Means joint inflammation. Joints are places where two bones meet, such as your elbow and knee.

TENDERNESS: Pain or discomfort when an affected area is touched. It should not be confused with the pain that patient perceives without touching.

SYNOVITIS: When the synovium of the joint becomes inflames or swollen.

DEGENERATION: The state or process of being or becoming degenerate.

JOINT EFFUSION: When too much fluid builds up around a joint in your body.

SUBCHONDRAL BONE ATTRIATION: Flattening or depression of the articular surface unrelated to gross fracture.

OSTEOPHYTES: Bony growth that form in your joints or in the spine.

CREPITUS: A grating sound or sensation produced by friction between bone and cartilage or the fractured parts of a bone

- Upper class has salary above 100,000
- Upper middle has salary above 50,000

- Middle class has salary above 30,000
- Lower class has salary above 20,000
- Poor class salary has below 10,000
- Mild pain; pain scale reading from 1 to 3 is considered as mild pain
- Moderate pain; pain scale reading from 4 to 6 is considered as moderate pain
- Severe pain; pain scale reading from 7 to 10 is considered as severe pain

LITERATURE REVIEW

Osteoarthritis is by far the most common reason for disability in the aged; most of the osteoarthritis patients will ever be managed in the community or primary care setting. An epidemiological study revealed that clinically important osteoarthritis of the knee, hand, or hip was found among only 8.9% of the adult population [4-5]. The knee osteoarthritis was the most common type (6% of all adults). The older you get, the greater the chance of acquiring osteoarthritis. According to the studies, men aged 60 to 64 present with knee osteoarthritis more often in the right knee (23%) than in the left knee (16.3%), while the distribution appears to be more evenly balanced for women (right knee, 24.2%; left knee, 24.7%) [5-6]. The prevalence of knee osteoarthritis rises to about 40% among those ages 70 to 74. When the diagnosis rests on clinical signs and symptoms alone, the prevalence rate among adults is found to be lower at 10%. The radiological demonstration of typical signs of osteoarthritis of the knee is not correlated with symptoms: only about 15% of patients with radiologically demonstrated knee osteoarthritis complain of knee pain.

In a nationwide survey of French physicians[7]. Patients with knee OA were selected, totaling 3,247 persons (mean age: 66 years). Of these, 17% were working; two-thirds of this population perceived restrictions as to their current capacity for work, with one in five still taking OA-related sick leave. A Norwegian population-based study identified 233 cases of knee OA among 3,266 subjects (median age, 45 years). Absent adjustment for age and sex, these patients were almost 2.5 times more likely to be out of work, and twice as likely to take >8 weeks of sick leave compared to others without knee OA.

Gupta et al[8] acquired an economic evaluation from a cohort of 1,258 Canadian patients aged 55 years and older (mean 73 years) with disabling hip or knee arthritis (the proportion with knee complaints was not specified): in total, 2.5% said there were not working due to OA; it was estimated that the time lost from employment by participants and their unpaid

caregivers accounted for 80% of annual OA-related costs because there were a number of sources of indirect cost (formal lost work time, lost labour productivity, caregiver time losses etc). Similar findings were reported by Leardini et al [9] that among 254 OA knee patients from the institutes of rheumatology in Italy (mean of 66 years), 21% of whom were still working. Out of this study, 2.4% indicated that they quit their jobs due to the knee OA and 2% changed their type of work within the past year. About 22% of patients had had OA knee-related sick leave within that time (denominator for this calculation is all patients in work). Sayre et al[10] studied "employment reduction" from OA among 2,134 adults with OA (mean age 62 years) enrolling at a medical service scheme database in British-Columbia. Among the 453 subjects who were classified as knee OA, a total of 36% had not worked at all and 13% had reduced their working hours because of arthritis. In the mini-Finland study[11] a survey representative for the Finnish population of 30-64 years, 4% were said to have been diagnosed with knee OA by a doctor and more than 70% of them said their capacity for work was reduced. Beyond this, the reports identified by Bieleman et al[12] provide information about job interruption, absenteeism, reduced hours worked, job change and job dissatisfaction, but only among patients with arthritis as a whole or with hip OA, and without any exploration by type of work duties. There is, therefore, a very small evidence base concerning OA knee and work participation with regard to the significance of the problem in aging western workforces. Such an evidence gap, presumably surprising at first sight, is perhaps because the worst effects of OA were previously considered as occurring after retirement from work. However, changing demography within workplaces makes research into this area timely and important.

MATERIAL AND METHODOLOGY

STUDY DESIGN

Cross sectional study design was conducted

STUDY SETTING

The study conducted the data from different areas of sindh (saeedabad, sinjhoro, daur, tandoadam, bhittshah, hala)

DURATION OF STUDY

Study was completed in 3 months

SAMPLING TECHNIQUE

Non probability convenient sampling technique was used.

SAMPLE SIZE

125working women sample collected by questioner form.

TARGET POPULATION

Middle age working women of different socioeconomic status.

SAMPLE SELECTION

INCLUSION CRITERIA: Working women of middle age > 30-year-old.

EXCLUSION CRITERIA: Working women < 30-year-old and nonworking.

DATA COLLECTION PROCESS

Working women of varying socioeconomic status were interviewed and the questionnaire was administered following ethical permission and their consent in writing. This questionnaire had two halves: one half contained the demographic data of the women, whereas the other half contained close-ended questions.

DATA ANALYSIS PROCEDURE

The data was analyzed using the Statistical Package for Social Science (SPSS) software version 22.

RESULT

TABLE NO 1: Q: AGE

Age group	Frequency	Percentage %
30-40	60	48
41-50	40	32
51-60	15	12
61-Onward	10	8

TABLE NO 2: Q: WEIGHT

Age group	frequency	Percentage %
40-60	54	43.2
61-80	63	50.4
81-Onward	8	6.4

TABLE NO 3: Q: NUMBER OF PERSONS HAVING KNEE PAIN:

	Frequency	Percentage%
Yes	97	77.6
No	28	22.4

TABLE NO 4:	Q: EDUCATION	
	Frequency	**Percentage%**
Primary	18	14.4
Secondary	12	9.6
Higher	39	31.2
No education	56	44.8

TABLE NO 5:	Q: SOCIOECNOMICS STATUS	
	No	**Percentage%**
Upper	3	2.4
Upper middle	23	18.4
Middle	29	23.2
Lower	33	26.4
Poor	37	29.6

TABLE NO 6:	Q: NO OF CHILDREN	
	No	**Percentage**
1-5	80	64
6-10	23	18.4
11-Onward	2	1.6
No children	20	16

TABLE NO 7:	Q: FEMALES HAVING KNEE CRACKING SOUNDS	
	Frequency	**Percentage%**
Yes	77	61.6
No	48	38.4

TABLE NO 8:	Q: FEMALES HAVING KNEE SWELLING	
	Frequency	**Percentage%**
Yes	29	23.2
no	96	76.8

TABLE NO 9:	Q: KNEE WARM TO TOUCH	
	Frequency	**Percentage%**
Yes	29	23.2
No	96	76.9

TABLE NO 10: Q: FEMALES HAVING MENOPAUSE

	Frequency	Percentage%
Yes	39	31.2
no	86	68.8

TABLE NO 11: Q: PAIN IN ANOTHER JOINT

	Frequency	Percentage%
Yes	56	44.8
No	69	55.2

TABLE NO 12: Q: PAIN DURING LONG SITTING

	Frequency	Percentage%
Yes	76	60.8
No	49	39.2

TABLE NO 13: Q: PAIN DURING LONG STANDING

	Frequency	Percentage%
Yes	63	50.4
No	62	49.6

TABLE NO 14: Q: PAIN WHEN GOING UPSTAIRS

	Frequency	Percentage%
Yes	57	45.6
No	68	54.4

TABLE NO:15: Q: PAIN WHEN GOING DOWNSTAIRS

	Frequency	Percentage%
Yes	61	48.8
No	64	51.2

TABLE NO 16: Q: PAIN DURING HEAVY DOMESTIC LIFTING (WEIGHT > 10KG)

	Frequency	Percentage%
Yes	75	60
No	50	40

TABLE NO 17:	**Q: PAIN DURING DAILY ACTIVITIES**	
	Frequency	Percentage%
Yes	75	60
No	50	40
TABLE NO 18:	**Q: PAIN DURING KNEELING:**	
	Frequency	Percentage%
Yes	77	61.6
No	48	38.4
TABLE NO 19:	**Q: PAIN DURING USING TOILET**	
	Frequency	Percentage%
WC	69	55.2
Combort	15	12
No pain	44	35.2
TABLE NO 20:	**Q: PAIN DURING WALKING**	
	Frequency	**Percentage%**
Yes	60	48
No	65	52
TABLE NO 21: Q: PAIN DURING REST		
	Frequency	Percentage%
Yes	35	28
No	90	72
TABLE NO 22:	**Q: ANY BONY DEFORMITY**	
	Frequency	**Percentage%**
Yes	12	9.6
No	113	90.4
TABLE NO 23:	**Q: PREVIOUS HISTORY KNEE INJURY**	
	Frequency	**Percentage%**
Yes	21	16.8
No	104	83.2

TABLE NO 24: Q: PAIN DURATION

	Frequency	Percentage%
Continous	32	25.6
Episodic	63	50.4
No pain	30	24

TABLE NO 25: Q: PAIN INTENSITY

	Frequency	Percentage%
Mild	61	48.8
Moderate	33	26.4
Severe	3	2.4
No pain	28	22.4

TABLE NO 26: Q: PAIN ONSET

	Frequency	Percentage%
Morning	33	26.4
Afternoon	4	3.2
Night	60	48
No pain	27	21.6

TABLE NO 27: Q: ANY MEDICATIONS

	Frequency	Percentage%
Pain killer	18	14.4
Multivitamins	43	34.4
NSAIDS	07	5.6
No medications	57	45.6

TABLE NO28: Q: WORKING HOURS

	Frequency	Percentage%
0-7 hours	62	49.6
8-14 hours	62	49.6
15-21 hours	1	0.8

TABLE NO 29: Q: DIAGNOSTIC TEST FOR CONFIRMATION

Baltotement	Frequency	Percentage%
Yes	25	20

No	100	80
Q: BULDGE SIGN:		
	Frequency	**Percentage%**
Yes	41	32.8
No	84	67.2
Q: GENU VARUS:		
	Frequency	**Percentage%**
Yes	24	19.2
No	101	80.8
Q: PATELLAR STABILITY		
	Frequency	**Percentage%**
Yes	31	24.8
no	94	75.2
TABLE NO 30:	**Q: FEMALE HAVING OSTEOARTHRITIS**	
	Frequency	**Percentage%**
Yes	45	36
No	80	64
TABLE NO 31:	**Q: FOOD INTAKE**	
1: MEAT		
Daily	8	6.4
Weekly	46	36.8
Monthly	37	29.6
Occassionally	27	21.6
No intake	07	5.6
2: VEGETABLE		
Daily	105	84
Weekly	15	12
Monthly	5	4
Occassionally	0	0
No intake	0	0

3: FRUIT		
Daily	30	24
Weekly	32	25.6
Monthly	19	15.2
Occassionally	31	24.8
No intake	13	10.4
4: MILK		
Daily	42	33.6
Weekly	14	11.2
Monthly	12	9.6
Occassionally	34	27.2
No intake	23	18.4
5: PULSE		
Daily	46	36.8
Weekly	59	47.2
Monthly	6	4.8
Occassionally	0	0
No intake	14	11.2
6: JUNKFOOD		
Daily	17	13.6
Weekly	17	13.6
Monthly	23	18.4
Occassionally	42	33.6
No intake	26	20.8

TABLE NO 32: Q: OBESITY

	Frequency	**Percentage**
Normal	44	35.2
Underweight	13	10.4
Overweight	43	34.4
Obese	25	20

TABLE NO 33:	**Q: MARRITAL STATUS**	
	Frequency	**Percentage%**
Married	112	89.6
Non-married	13	10.4
TABLE NO 34:	**Q: OCCUPATIONS**	
Teacher	11	8.8
Doctor	7	5.6
Staff member	29	23.2
Nurse	7	5.6
Maids	7	5.6
Labours	59	47.2
Tylor	3	2.4
Swippers	2	1.6
TABLE NO 35:	**Q: ADDRESS**	
Saeedabad	46	36.8
Sinjhoro	12	9.6
Daure	23	18.4
Tando adam	20	16
Bhitshah	9	7.2
Hala	15	12
TABLE NO 36:	**Q: RELIGION**	
	Frequency	**Percentage%**
Muslims	114	91.2
Non-muslims	11	8.8
TABLE NO 37:	**Q: HEIGHT**	
	Frequency	**Percentage%**
4 feet	33	26.4
5 feet	89	71.2
6 feet	3	2.4

TABLE NO 38: Q: FEMALES OF WHICH OCCUPATION HAVE KNEE O.A

	Yes	No
Teachers	0	1
Doctor	5	2
Staffmember	17	12
Nurse	6	1
Maids	5	2
Labours	9	50
Tylor	2	1
Swippers	1	1

RESULT

Out of 125 working women, the frequency percentage distribution reveals that 45% of them have knee osteoarthritis, whereas 80% do not

DISCUSSION

The study carried out a cross-sectional survey to see the influence of physical activity and healthy life on knee OA among women from Saeedabad, Sinjhoro, Daur, Tandoadam, Bhittshah, and Hala. The sample size was 125, and after data collection from the participants, the data were analyzed using the software SPSS. For authenticity and relevance, we measured frequency and percentage.

As highlighted in the literature, an inactive lifestyle predisposes one to knee OA. In our present study, the effects of a physiotherapy lifestyle and a healthy diet are evident. Women whose job requires prolonged sitting or inactivity are more likely to develop arthritis; on the other hand, those women who are extremely active, such as laborers, show up in a significantly lesser proportion among arthritis patients.

CONCLUSION AND RECOMMENDATIONS

This study involves the working women of upper, middle and lower class. Data were collected from Saeedabad, Sinjhoro, Daur, Tandadam, Bhittshah and Hala . Study revealed that a sedentary lifestyle, poor diet, and advanced age are the prime factors for prolonged maintenance of same posture while working that increases the incidence of knee OA in women as compared to those women who spend most of their working hours in fields or active participants throughout the day have lesser incidence of knee OA. Through this study, we want to let working women understand the importance of being physically active and consuming

appropriate diet which will decrease the risk and severity of knee OA.

RECOMMENDATIONS

A survey can be conducted on various parts of Sindh.

Evaluate the awareness of working women about physically active lifestyles and healthy diets through surveys.

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