



## ASSOCIATION OF DIFFERENT DEMOGRAPHIC CHARACTERISTICS WITH KNEE OSTEOARTHRITIS PATIENTS ATTENDING THE DIFFERENT HOSPITALS OF QUETTA, PAKISTAN

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### ABSTRACT

Knee osteoarthritis (OA) is the most frequent and common among all degenerative joint disorders and affecting huge number of individuals. Older females and low income people are more likely to develop knee OA. A cross sectional survey was conducted in different hospitals of Quetta, Pakistan from July to September 2019. A self-constructed proforma was used among all 392 already diagnosed patients to collect the data and Spss version 23 was used to analyze the data. In demographic Characteristics the age, gender and household income were significantly associated with knee OA ( $p < 0.05$ ). The study concluded that the people who were older, belongs to female gender and with low house hold income were found physically restrictive due to the knee OA. Older females and people with low income should be prioritized for the treatment of knee OA in order to reduce the restrictiveness from their activities of daily life and to enhance their physical functional capacity.

**KEYWORDS:** Characteristics, knee osteoarthritis, Quetta, Pakistan.

### INTRODUCTION

Osteoarthritis (OA) is the most common age related joint disorder among all degenerative joint disorders and a major cause of chronic disability throughout the world.<sup>[1]</sup> Primary osteoarthritis is idiopathic and more common in females, it involves Fingers, spine, hips, and knees, while the secondary osteoarthritis involves the joint due to trauma or repetitive injury.<sup>[2-6]</sup> Knee joint is one of the most effected joint because OA commonly involves the weight bearing joints.<sup>[2,7]</sup> OA is characterized by the progressive loss of bone & cartilage of the joints.<sup>[7,8]</sup> Patient with anterior cruciate ligament (ACL) rapture are more prone to develop knee OA.<sup>[6]</sup> The presence of osteophyte and narrowing of the joint space are radiographic feature for knee OA.<sup>[6,9,10]</sup>

After the age of 40 years the prevalence OA increases, in people with 65 years of age OA accounts for 75% and it progresses as patient ages.<sup>[7,9,11,12]</sup> In Pakistan, 28% from urban and 25% population from rural areas are

affected with knee OA.<sup>[8]</sup> The new onset of knee OA is frequent in elderly women.<sup>[5,11,12]</sup> Knee OA appears with pain, discomfort, morning stiffness, and inflammation especially with physical disability of lower extremities, the severity and disability increases as the person ages.<sup>[4,11]</sup> Risk factors for the knee OA are age, gender, obesity, injury, genetics, anatomy and smoking.<sup>[8,13,14]</sup>

### METHODS

#### Study Design, Settings, and Duration

A cross sectional survey was conducted from July to September 2019 and data was collected from different hospitals of Quetta (Sandeman Provincial Hospital, Hope Physiotherapy Centre, and Akram Hospital).

#### Sampling

Convenient Non-Probability Sampling Technique was used among 392 patients who were included from above mention hospital and were agreed to participate in the study. Patients were included with confirmed diagnosis

of knee OA, both genders & should understand the Urdu language (National language of Pakistan). While, Patient with hip osteoarthritis, rheumatoid arthritis or any other inflammatory disease, knee replacement, any surgical intervention, central nervous system alteration, malignancy or unwilling to sign informed consent were excluded.

#### Data Collection Tool

A proforma was used to collect the data, which include the demographic Characteristics (age, gender, marital status, education, occupation, income and locality) while the included clinical characteristics were severity (mild, moderate, severe and not able to move) which was measured through the visual analogue scale,<sup>[15]</sup> along with radiological evaluation.<sup>[10]</sup> The involvement of the part was described as unilateral (involving one side) or Bilateral (involving both sides) and the use of medications by the patients were asked too.

#### Data Collection Procedure

During the assessment of patient, the trained physical therapists were asked to fill the proforma.

#### Data Analysis Procedure

Data was analyzed and presented in frequency and percentages for categorical variables, mean and standard deviations were presented for continuous variables. Inferential statistics (chi-square test) was used to identify relationship between different demographic & clinical Characteristics.

#### Ethical Consideration

As the approval was taken from the ethical review committee of Faculty of Pharmacy & Health Sciences, University of Balochistan, Quetta, Pakistan. Respectively Approval for the data collection was taken from medical superintendent of concerned hospitals. Informed consent was taken from patient containing that their participation is voluntary, their information will be kept confidential and they can leave the study anytime, after that the proforma was filled for data collection.

## RESULTS

#### Demographic Characteristics

Demographic Characteristics are described in table 1, which says that majority (n=241, 61.5%) belongs to age group between 53 to 62 years, and were male (n=249, 63.5%). After checking the educational status of patients majority (n=90, 23.0%) had bachelors and (n=98, 25.0%) were housewives. According to the income resources majority (n=126, 32.1%) had no income, and (n=258, 65.8%) belonged to urban areas.

**Table 1: Demographic Characteristics.**

Characteristics	Frequency	Percentage
<b>Age group</b>		
43-52 years	61	15.6
53-62 years	241	61.5
63 and more	90	23.0
<b>Gender</b>		
Male	249	63.5
Female	143	36.5
<b>Marital status</b>		
Married	322	82.1
Unmarried	70	17.9
<b>Education</b>		
Uneducated	65	16.6
Religious education	41	10.5
Primary education	36	9.2
Matriculation	50	12.8
Intermediate	54	13.8
Bachelors	90	23.0
Higher education	56	14.3
<b>Occupation</b>		
Government servant	92	23.5
Private	74	18.9
Un employed	42	10.7
Self employed	86	21.6
House wife	98	25.0
<b>Income</b>		
No income	126	32.1
Won't disclose	51	13.0
Less than 10,000	20	5.1
10,000 to 20,000	56	14.3
20,000 to 30,000	47	12.0
More then 30,000	92	23.5
<b>Locality</b>		
Urban	258	65.8
Rural	134	34.2

#### Disease Characteristics

Disease Characteristics are described in table 2, in which severity was classified into mild, moderate, Severe and not able to move, the majority (n=255, 65.1%) were Severe, suffering with bilateral knee OA (n=349, 89.0%) and (n=370, 94.4%) were using medication.

**Table 2: Disease Characteristics.**

Variable	Frequency	Percentage
<b>Severity</b>		
Mild	13	3.3
Moderate	115	29.3
Severe	255	65.1
Not able to move	9.0	2.3
<b>Involvement of knee</b>		
Unilateral	43	11.0
Bilateral	349	89.0
<b>Medication</b>		
Yes	370	94.4
No	22	5.6

### Comparison of demographic characteristics vs Disease characteristics

The comparison of demographic data with disease characteristics are described in table 3, which states that

the age group, gender and income are statically significant ( $p < 0.05$ ).

**Table 3: Comparison of demographic characteristics vs Disease characteristics.**

Variable	Mild n (%)	Modrate n (%)	Severe n (%)	Notable to move n (%)	P value
<b>Age group</b>					<b>0.001</b>
43-52 years	-----	22(36.0)	39(63.9)	-----	
53-62 years	12(4.9)	71(29.4)	151(62.6)	07(2.9)	
63 and more	01(1.1)	22(24.4)	65(72.2)	02(2.2)	
<b>Gender</b>					<b>0.007</b>
Male	08(3.21)	72(28.9)	164(65.8)	05(2.0)	
Female	05(3.49)	43(30.0)	91(63.6)	04(2.79)	
<b>Marital Status</b>					0.186
Married	12(3.72)	89(27.6)	212(65.8)	09(2.79)	
Unmarried	01(1.42)	26(37.1)	43(61.4)	-----	
<b>Education</b>					0.290
Uneducated	01(1.5)	21(32.3)	42(64.6)	01(1.53)	
Religious education	01(2.43)	11(26.8)	29(70.7)	-----	
Primary education	03(8.3)	12(33.3)	20(55.5)	01(2.7)	
Matriculation	02(4.0)	16(32.0)	30(60.0)	02(4.0)	
Intermediate	03(5.5)	20(37.0)	31(57.4)	-----)	
Bachelors	02(2.2)	25(27.7)	62(68.8)	01(1.1)	
Higher	01(1.5)	10(17.8)	41(73.2)	04(7.14)	
<b>Occupation</b>					0.471
Government servant	01(1.0)	23(25.0)	66(71.7)	02(2.1)	
Private	03(4.0)	26(35.1)	42(56.7)	03(4.0)	
Un employed	01(2.3)	17(40.4)	24(57.1)	-----	
Self employed	05(5.8)	24(27.9)	56(65)	01(1.1)	
House wife	03(3.0)	25(25.5)	67(68.3)	03(3.0)	
<b>Income</b>					<b>0.001</b>
No income	04(3.17)	39(30.9)	80(63.4)	03(2.3)	
Won't disclose	01(1.9)	10(19.6)	39(76.4)	01(1.96)	
Less than 10,000	02(10.0)	07(35.0)	11(55.0)	-----	
10,000 to 20,000	05(8.9)	22(39.2)	29(51.7)	-----	
20,000 to 30,000	01(2.0)	11(22.9)	35(72.9)	01(2.0)	
More than 30,000	01(1.08)	26(28.2)	61(66.3)	04(4.3)	
<b>Locality</b>					0.479
Urban	07(2.71)	81(31.3)	165(63.9)	05(1.93)	
Rural	06(4.47)	34(25.3)	90(67.1)	04(2.9)	

### Comparison of demographic data vs Involvement of part

The comparison of demographic data with involvement of part are described in table 4, which states that age group and gender are statically significant ( $p < 0.05$ ) with the involvement of part.

Table 4: Comparison of demographic data vs Involvement of part.

Variable	Unilateral n (%)	Bilateral n (%)	P value
<b>Age group</b>			<b>0.001</b>
43-52 years	21(34.4)	40(65.5)	
53-62 years	19(7.8)	222(92.1)	
63 and more	03(3.3)	87(96.6)	
<b>Gender</b>			<b>0.008</b>
Male	28(11.2)	221(88.7)	
Female	15(10.4)	128(89.5)	
<b>Marital Status</b>			
Married	35(10.8)	287(89.1)	
Unmarried	08(11.4)	62(88.5)	
<b>Education</b>			0.384
Uneducated	08(12.3)	57(87.6)	
Religious education	03(7.31)	38(92.6)	
Primary education	07(19.4)	29(80.5)	
Matriculation	06(12.0)	44(88.0)	
Intermediate	05(9.25)	49(90.7)	
Bachelors	10(11.1)	80(88.8)	
Higher	04(6.15)	52(92.8)	
<b>Occupation</b>			0.627
Government servant	16(17.3)	76(82.6)	
Private	03(4.0)	71(95.9)	
Un employed	05(11.9)	37(88.0)	
Self employed	09(10.4)	77(89.5)	
House wife	10(10.2)	88(89.7)	
<b>Income</b>			<b>0.006</b>
No income	16(12.6)	110(87.3)	
Won't disclose	02(3.92)	49(96.0)	
Less than 10,000	02(10.0)	18(90.0)	
10,000 to 20,000	07(12.5)	49(87.5)	
20,000 to 30,000	08(17.0)	39(2.9)	
More than 30,000	08(8.6)	84(91.3)	
<b>Locality</b>			0.479
Urban	34(13.1)	224(86.8)	
Rural	09(6.7)	125(93.2)	

## DISCUSSION

The current study disclosed that there was a significant relationship between knee osteoarthritis (OA) and demographic Characteristics (age, gender & income), the results of the current study were in line with study reported by Paradowski et al in 2006 in japan which concluded that age, gender and income had a significant impact on knee OA.<sup>[16]</sup>

Age is one of the major contributing factors in knee OA. A Study reported by Anderson et al in 2010 that Patients with older age are on greatest risk for knee OA.<sup>[17]</sup> Similarly studies from different part of the world (i.e Spain, united states, Australia & South Korea) concluded that the increase in age have greatest effects on knee OA and experience more restrictiveness in activities of daily life.<sup>[7,18-21]</sup> Within the context, it is stated that people with old age are more prone to develop Knee due to the deterioration of articular cartilages inside the knee joint.<sup>[10,22]</sup>

Gender is the second major contributing factor in knee OA and the results were supported by Hart et al, Paradowski et al, Hart et al and Elboim-Gabyzonet al that as compare to men in women symptoms are worsen,<sup>[7,16,23,24]</sup> Furthermore, the women are more likely to develop knee OA due to low level of bone mineral density,<sup>[25-27]</sup> secondly women's develop knee OA due to hormonal influence and difference of knee anatomy.<sup>[28-30]</sup> Moreover, females are more likely to develop knee OA due to their poor accessibility towards health care facilities due to gender discrimination and cultural norms especially in tribal areas.<sup>[31,32]</sup>

House hold income was the third major contributing factor which was directly related to knee OA and the study conducted by Liu et al in 2015 and Martin et al in 1996 and concluded that the patients with low-income are widely affected by knee OA.<sup>[33,34]</sup> The knee OA is more common in people with low income as they cannot afford the Mediterranean diet frequently, which somehow cures the OA.<sup>[35]</sup> The People with low income

cannot afford to visit the doctor or to take the therapeutic exercise by trained professional frequently, to cure the OA due to their low socio economic status.<sup>[36]</sup>

The Patient who were older, belongs to female gender along with low income were highly susceptible for knee OA. According to observation the older females with low income were found more restrictive especially in the physical activities of their daily life as compare to men.

## CONCLUSION

The study finalized that the people who were older, specially belongs to female gender and with low income were more prone to develop knee OA. Patient with knee OA were found restrictive physically, the severity of that restrictiveness were directly linked with the severity of disease and involvement of part.

## Recommendations

Older age individuals, females and people with low house hold income ought to be prioritized for the early cure of knee osteoarthritis, for enhancing their physical & functional capacity.

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## Conflicts of Interest

The authors hereby declare there is no conflict of interest with this submission.

## Author contributions

NH & AAA develop the study, KC & SN collected the data, MR & MI did statistical analysis, SS & RN made the initial draft, MU & MS finalized the manuscript and supervised the study. All authors have read and approved the final version.

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