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Short Article

Gender Dependent Disparity between Symptoms and Consequences among Osteoarthritis Patients

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Abstract: Osteoarthritis (OA) is classified as a type of joint pain which results when the breakdown of joint ligament and underlying bone occurred. This study was conducted to assess the determinants, symptoms and consequences among patients with osteoarthritis visiting Sir Ganga Ram Hospital and University of Lahore Teaching Hospital, Lahore. 100 patients with osteoarthritis were selected using non-probability convenient sampling technique. The study was completed in 4 months. With the aid standardized WOMAC tool and pretested questionnaire, the data were collected. Version 24.0 of SPSS was used to evaluate data. Findings showed that 62 % patients were females and they were more prone toward developing disease as compared to male. Female had shown high degree of pain in joints and more symptoms leading toward osteoarthritis as compared to male. Old age was a major determinant of osteoarthritis; the mean ± SD age of patients was 61year. BMI above 25kg/m2 also influence joints pain about 61 out of 100 patients was overweight and obese. The lack of awareness about disease, poor practices, sedentary lifestyle and lack of physical activity are the major factors causing joints pain. Older age, female gender, overweight and obesity, muscle weakness, joint injury, joints stiffness, low bone mineral density, and joint laxity all play role osteoarthritis growth. It was concluded that obesity, old age, females, poor dietary practices and lack of knowledge are the risk factors of osteoarthritis. Inadequate intake of calcium and vitamin D were the associated factors of arthritis.

Keywords: Osteoarthritis, BMI, Symptoms, Joints Pain, Stiffness, Consequences, Knowledge.

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INTRODUCTION:

Osteoarthritis (OA) is classified as a type of joint pain which results when the breakdown of joint ligament and underlying bone occurred. It is the most well recognized type of joints pain, influencing a large number of individuals (Glyn-Jones S *et al.*, 2015). The prevalence of knee osteoarthritis was 3.12 – 4.61% in urban community and 3.61% in Rural North community of Pakistan (Ghaznavi S *et al.*, 2017). A study conducted in Pakistan has shown that 28.1% of the urban population and 25.07% of the rural population have osteoarthritis (Farooqi A *et al.*, 2018). Among those more than 60 years of age, around 10% of guys and 18% of females are influenced (Fransen M *et al.*, 2015).

Symptoms of osteoarthritis (OA) mostly develop slowly and become worst over time. The damaged to the joints caused by osteoarthritis cannot be reversed but symptoms are aimed and cured to lower the pain caused by osteoarthritis (Lundgren A *et al.*, 2018). Signs and symptoms include pain in the joint after small or no movement, tenderness of joints, stiffness of joints become worst when the patient wake up in morning or after some resting, inability to move your joints to its full range, hearing or feeling a grinding sensation after joint movement and bone spurs (Yucesoy B *et al.*, 2015).

Reasons for osteoarthritis may include history of any past joint injury or fall, limb advancement, and genetic factors (Iqbal N *et al.*, 2011). Hazard effects of osteoarthritis is more prominent in the individuals who are being overweight and obese, those having one leg of an alternate length as compared to other leg and have employments that outcome in elevated amounts of joint pressure causing damage to that joints. As far as modifiable variables, being obese (BMI above than 30) was altogether connected with the occurrence of knee osteoarthritis and hip osteoarthritis. Weight reduction may help in the individuals who are overweight (Farooqi A *et al.*, 2018).

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Some factors that may contribute toward developing osteoarthritis are family history of having osteoarthritis, older adults are more likely to develop osteoarthritis as compared to younger individuals, sex, being overweight or obese is a major factor, physical repetitive stress on your particular joints affecting from osteoarthritis, any previous fall or accident causing the damages to your joints, bone disorder or born with malformed joint, rheumatoid arthritis, metabolic syndrome, comorbidities (presence of additional disease may be one or more than one disease), Vitamin D deficiency, smoking, regular stairs climbing and sarcopenia. Further studies are needed to show the link between dietary factors, smoking and sarcopenia with osteoarthritis (Mobasheri A *et al.,* 2017).

The osteoarthritis can be early prevented by taking healthy diet, calcium and vitamin D diet rich, maintaining weight and practicing proper everyday yoga (Fransen M *et al.,* 2015). Cure for osteoarthritis is still not discovered that is why only the symptoms are aimed to be treated to ease pain and to prevent further progression of disease (Blagojevic M *et al.,* 2010). Due to increasing burden of osteoarthritis an early adjustment is needed in early treatment of disease for example maintaining healthy weight, pain control, improving joints functioning and modifying lifestyle (McAlindon E *et al.,* 2014). Treatment for osteoarthritis can be divided into two categories surgical treatment and non-surgical treatment. Initially the non-surgical treatment is recommended for osteoarthritis then after that surgical treatment is done (Ivirico JL *et al.,* 2017).

As recommended by organizations internationally dealing with osteoarthritis and Osteoarthritis Research Society International (OARSI), the first line treatment for the disease that should be offered is to provide them sufficient awareness and education about disease, exercise and losing weight. If there is no other way to overcome disease, surgery like joint replacement surgery is the last option for them (Filardo G *et al.,* 2016).

METHODOLOGY:

Study Sample:

A cross sectional research was performed at orthopedic department of Sir Ganga Ram Hospital and University of Lahore Teaching Hospital. Study Duration was 4 months and Sampling Size was 100 adult patients of both genders suffering from osteoarthritis. Data were collected after the ethical approval from The University of Lahore by using the non-probability sampling technique. Patients not suffering from osteoarthritis and joint pain and non-cooperative patients were excluded.

Study Design:

Data collection was carried out by using pre-tested questionnaire. Measures of pain and joint stiffness, functionality difficulty were collected using standardized questionnaire Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC,). Reliability testing resulted in a Cronbach's alpha of 0.917, showing the internal consistency of the questionnaire to be a reliable tool. Data were analyzed with the help of SPSS version 24.0. The Chi-Square test has been used to assess the correlation between patient pain symptoms and gender difference among osteoarthritis patients. Frequencies were calculated to determine the attitude, consequences and practices among osteoarthritis patients.

The rules and regulations set by the University of Lahore's ethical committee will be observed when performing study and the participants ' rights have been respected. All the participants had been given written informed consent prior to participation. The information of participants was kept private, and evidence gathered. All throughout the analysis, the participants remained anonymous. There is no disadvantage and hazards towards the subjects involved in the study.

RESULTS:

In this cross-sectional study 100 patients were reported with 38 male patients were male and 62 female patients with mean age of 61 years. The results of current study showed that BMI had played a major role in osteoarthritis about 61% individuals suffering from osteoarthritis were either overweight or obese. Among them 35% were overweight with BMI 25-29.9 mg/m^2 and 26% osteoarthritis patients had BMI >30. Patient demographics are given in Table-1:

Table-1: Demographic data of patients in current study

Gender	Male	38
	Female	62
Age	35-40year	20
	40-50years	23
	50-60years	31
	above 60 years	26
Residential area	Urban	75
	Rural	25
Educational status	Illiterate	26
	Middle-matric	38
	Inter	17
	Graduation and above	19
Socioeconomical status	Lower class	17
	Lower middle	32
	Middle class	24
	Upper middle	20
	Upper class	7
BMI	Underweight	3
	Healthy	36
	Overweight	35
	Obese	26

Most common symptoms experienced by patients were feeling pain while twisting joints in 92%; pain while straightening joints 86%; pain while bending joints 78%; pain while climbing stairs 88%; joints pain while getting on toilet 86% and joints pain while rising from sitting 74%. Symptoms associated with development of osteoarthritis are listed in Table-2.

Table-2: Presences of pain symptoms in research participants

Pain Symptoms	**Yes (n)**	**No(n)**
Painful joints	74	26
Pain while twisting joints	92	8
Pain while straightening joints	86	14
Pain while bending joints fully	78	22
Pain while walking on flat surface	54	46
Pain while climbing stairs	88	12
Joints pain while resting	39	61
Joints pain while sitting and lying	40	60
Joints pain while standing	60	40
Joints pain while getting on toilet	86	14
Joints pain while rising from sitting	74	26
Joints pain while shopping	68	32
Joints pain when wearing socks	52	48
Joints pain when getting in/out of car	59	41
Joints pain while bending to pick object	62	38
Joints stiffness after resting	62	38

Figure1 demonstrates the consequences encountered by patients with osteoarthritis. More frequently, 42% of patients had swelling and inflammation in joints; 66 % of patients felt grinding sensation while rotating joints; and 49% patients faced joint hung up while moving.

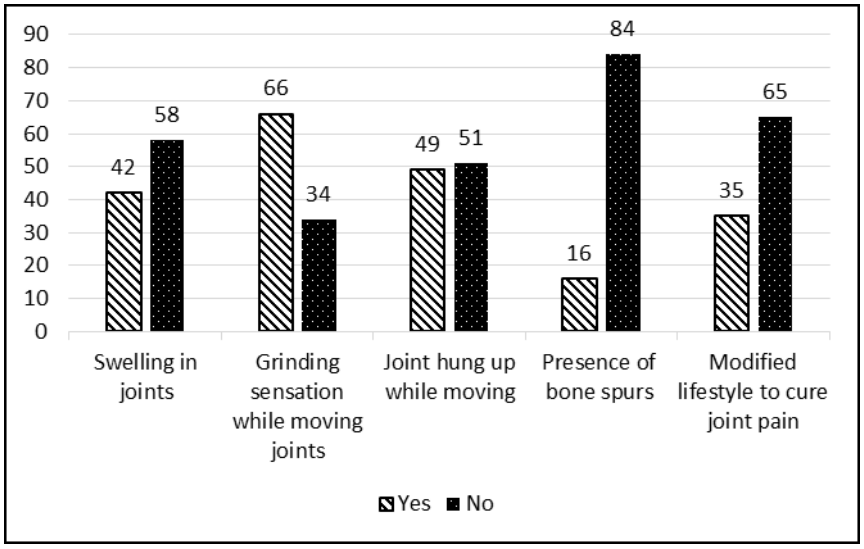

Figure-1: Consequences in osteoarthritis patients

Table-3: Practices of patients suffering from osteoarthritis:

Practices of osteoarthritis patients toward disease played the most important role among them, as 67% patients didn't sit in good posture; 67% patients didn't maintain a good posture while moving; 62% patients didn't maintain a good posture while standing; 85% didn't try any exercise to treat joint pain and 72% preferred to consume tea after meals. Different attitude of patients is shown in table-3.

Percentage of patients practices		Female	Male	P - value
Sit in good posture	**YES**	15	18	0.017
	NO	47	20	
Maintained a good posture while moving	**YES**	16	18	0.027
	NO	46	20	
Maintained a good posture while standing	**YES**	18	21	0.009
	NO	44	17	
Performed any exercise to treat your joint pain	**YES**	3	12	0.000
	NO	59	26	
Took medicine to cure disease	**YES**	39	13	0.005
	NO	23	25	
Preferred to consume tea often after meals	**YES**	47	25	0.279
	NO	28	13	

The gender based differences is shown in the table as 50% females have painful joins while only 23% male have painful joints. 61% female have pain twisting joints, 53% have pain while fully bending joints, 57% while straightening joints, 41% while walking on flat surface, 58% while climbing stairs. However male have less percentage of pain such as 31%pain while twisting joints, 29% pain while straightening joints, 25% pain while bending joints fully, 28% while climbing stairs. 56% females have Joints pain stiffness while using toilet, 28% male have joint stiffness while using toilet. Female 44% have pain and physical difficulty while bending to pick object, 38% female while wearing socks, 51% while rising from sitting, moreover 18% male have pain stiffness while bending to pick, 23% male while rising from sitting and 14% male have pain, stiffness while wearing socks. Gender based disparities among Osteoarthritis patients are shown in table-4.

Table 4-Gender Based Disparities among Osteoarthritis patients

Percentage of patients joint pain, stiffness, functionality		Female	Male	P - value
Painful joints	**YES**	50	23	0.028
	NO	12	15	
Pain while twisting joints	**YES**	61	31	0.003
	NO	1	7	
Pain while straightening joints	**YES**	57	29	0.029
	NO	5	9	
Pain while bending joints fully	**YES**	53	25	0.021
	NO	9	13	
Pain while walking on flat surface	**YES**	41	13	0.002
	NO	21	25	
Pain while climbing stairs	**YES**	58	28	0.005
	NO	4	10	
Joints pain while resting	**YES**	29	10	0.042
	NO	33	28	
Joints pain, stiffness while sitting and lying	**YES**	30	10	0.029
	NO	32	28	
Joints pain while standing	**YES**	43	17	0.015
	NO	19	21	
Joints pain, stiffness while getting on toilet	**YES**	56	28	0.028
	NO	6	10	
Joints pain while rising from sitting	**YES**	51	23	0.016
	NO	11	15	
Joints pain, stiffness while shopping	**YES**	48	20	0.010
	NO	14	18	
Joints pain, stiffness when wearing socks	**YES**	38	14	0.018
	NO	24	24	
Joints pain when getting in/out of car	**YES**	42	17	0.023
	NO	20	21	
Joints pain while bending to pick object	**YES**	44	18	0.018
	NO	18	20	
Joints stiffness after resting	**YES**	50	12	0.000
	NO	12	26	

Table 5- Consequences of Osteoarthritis patients

Percentage of patients consequences		Female	Male	P - value
Swelling in joints	**YES**	31	11	0.038
	NO	31	27	
Grinding sensation while moving joints	**YES**	50	16	0.000
	NO	12	22	
Joint hung up while moving	**YES**	36	13	0.021
	NO	26	25	
Presence of bone spurs	**YES**	10	6	0.964
	NO	52	32	
Modified lifestyle to cure joint pain	**YES**	18	17	0.110
	NO	44	21	

Different consequences of osteoarthritis patients were as 31% females have swelling; 60% females feel grinding while moving whereas only 16% male feel it. 36% of females joint hung up and 13% males joints were hung up. Only 10% females bones are spurs, moreover 44% females doesn't modified lifestyle to cure joint pain, whereas 21% males doesn't modified lifestyle to cure joint pain. A different consequence of patients is shown in table-5.

DISCUSSION:

According to this study there was an association between age and osteoarthritis, osteoarthritis was more common in patients aging above 50 years, 57% patients aging above 50 years were osteoarthritic. Similar results were found in 2013 study; according to them about 57.16% patients aging above 50 year had osteoarthritis (Losina E *et al.*, 2013).

According to current research the main factors found by scientist that BMI played a major role in developing osteoarthritis as 61% individuals had BMI above normal and it was also shown that females (62%) are more prone toward the disease as compared to male (38%) (Pereira D *et al.*, 2017).

In the present research, 45% of osteoarthritis patients were from the lower class and lower middle class and 40% of patients were from the upper class, social status was considered a significant factor when awareness, practices and attitudes were addressed. Of all, 75 percent of patients came from urban areas and 25 percent came from rural areas with osteoarthritis. Same results were in previous study, which concluded that the socioeconomically status played a role in increasing pain caused by osteoarthritis in lower class, were more prone toward developing osteoarthritis as compared to upper class, as they were performing more heavy domestic work as compared to upper class (Cleveland J *et al.*, 2017).

The knowledge played a major role, as lower level of knowledge lead to lower knowledge about how to avoid an unnecessary work leading toward joints pain and how to cope up with disease symptoms. According to our study about 26% patients are illiterate and 38% are below or equal to matriculation. Similar results were found by in another study in which showed that 41% had education below matriculation (Perruccio V *et al.*, 2016). Dairy products consumption was relatively low in osteoarthritis patients. The association was found among low dairy product intake and osteoarthritis patients. In another research found there should be modification in daily intake of dairy products among osteoarthritis patients (Vergis S *et al.*, 2018).

Recent study showed that caffeine intake is much higher among osteoarthritis patients, 42% consumed tea/coffee 1-2cups/day and 45% consumed 2-3 cups/day, as tea/coffee had oxalates which bind with calcium reducing its availability and excreted out of body through excretion. It is strongly associated with the prevalence of osteoarthritis. Same results were found in another study, that above 70% patients were consuming 1-2 servings of caffeine per day (Bang CH *et al.*, 2019).

CONCLUSION:

The study concluded that lack of awareness about disease, poor dietary practices, female gender, obesity, false attitude, low income, poor socioeconomic status, further ascending stairs, and bad posture while driving, sitting and standing, lack of exercises, gender and age proved to be associated with the osteoarthritis. Majority of patients had inadequate awareness of the condition and proved to worsen the symptoms of disease. Inappropriate attitude with lack of knowledge was found and poor practices among patients osteoarthritis. Female had shown high degree of pain in joints, discomfort, difficulty in physical functionality and more symptoms leading toward osteoarthritis as compared to male. Majority of people had inadequate awareness of the condition, so the effects of the illness increased.

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Conflict of Interest

There is no conflict of interest.

Financial Disclosure: None to disclose

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