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RESEARCH ARTICLE
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FACTORS ASSOCIATED WITH KNEE JOINT PAIN LEADING TO OSTEOARTHRITIS AND PREVENTIVE MEASURES TAKEN

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ABSTRACT

Objective: To estimate factors associated with knee joint pain leading to osteoarthritis and preventive measures taken in patients visiting hayatabad medical complex, Peshawar.
Study design: Descriptive cross-sectional study
Place and duration of study: form jan 2022 to March 2022 Hayatabad medical complex
Methodology: This descriptive cross-sectional study was carried out in Hayatabad medical complex from 1st January to March 2022 with non probability convenience sampling. Sample size taken was 320 individuals of age 20 years to 80 years from Hayatabad medical complex of Peshawar KPK . A semi-structured questionnaire was designed and consists of questions about demographic information, including age, gender, place of residence , education, occupation, weather condition, BMI, physical activity and drugs used to subside the pain. Pre-testing was done to check the feasibility, the sequence of questions and weight was measured in kg while where as height was in meters or inches. The sample was analyzed by SPSS version 22. Descriptive statistics was calculated for all the included variables.
Results: Among 320 individuals 112 were males while 208 were females reported to the tertiary hospital with pain in joints 61.87% were living in rural and 38.12% were living in urban areas 49.47% were primary passed while 28% were graduates and 41.8% were matric passed with low or moderate socioeconomic status. The preventive measure taken was 18.12% on medicine to cure the pain 18.44% were interested to take physical therapy 16.88% were taking surgical treatment and 46.56% were on conservative treatment which includes exercise, weight loss, rest and walking. Patients with chronic diseases were diabetes and rheumatoid arthritis 37.8% and 36.56% respectively. The pain was aggravated in cold weather and reduced in hot weather. BMI was taken in which 32.5% were overweight have osteoarthritis.
Conclusion: The present study concluded that various risk factors e.g increased BMI, cold and dry Weather, females, rural areas, various treatment modalities and low educational status leading to

osteoarthritis. Various preventive measures taken were exercise, use of various supplements and diet control.

Keywords: Osteoarthritis, factors, joint pain, types of treatments, different joints.

Introduction

Reflecting the influence of osteoarthritis on our daily life activities, various studies have been conducted to investigate the risk factors of the disease. There is little information about the factors leading to joint pain in patients with osteoarthritis. Joint-related pain required medical and surgical treatment so it is required to investigate factors related to joint pain and factors related to osteoarthritis.[1] Osteoarthritis is also characterized as a 'wear and tear' and affects numerous joints, its function and structures, as captured by the Osteoarthritis Research Society International definition of OA: "The disease shows a molecular derangement or abnormal joint tissue metabolism followed by anatomic, and physiologic derangements which is characterized by cartilage degradation, osteophyte formation bone remodeling, joint inflammation and loss of function ofthe joint, that can conclude in illness.[2] The m**o**st common method is Kellgren Lawrence (K/L), it is the radiographic scheme and atlas for scoring system and grades osteoarthritis in five levels from 0 to 4, defining osteoarthritis by the existence of osteophyte (Grade≥2), and more severe grades are the appearance of joint space narrowing, sclerosis, cysts, and at the end deformity of the joint occurs.[3]

Osteoarthritis (OA) is one of the most common articular diseases leading to chronic disability mostly in old age especially affecting the knee and hip joint.[4]Risk factors of osteoarthritis are cardiovascular diseases, diabetes, cancer, cardiovascular disease and walking disability. The incidence of knee OA increases in obese females and the old age population.[5]It is not only a disease of the cartilage but also includes articular cartilage,ligaments, meniscus and peri-articular muscles related to joints and mechanismsthat can be affectedtherefore it is painful and causes disability.Prevalence of OA 13% of women and 10% of men aged 60 years and older have symptomatic knee (OA) 0steoarthritis.[6]During the one-year period, 25% of people over 55 years may demonstrate persistent episodes of knee pain, in whom about one in six have to consult their general practitioner about it in the same time period. About 10% of people aged over 55 years have painful disabling knee OA of whom one quarter are severely disabled.[7] The prevalence of moderate-to-severe knee osteoarthritis changed from 3.7% at the baseline assessment to 26.7% in the follow-up visit eleven years later. Middle-aged women had a high prevalence of moderate-to-severe knee osteoarthritis.[8]

The prevalence rate was significantly higher among women than in men. Symptomatic knee OA was significantly more common in rural compared to urban and suburban populations. In addition, obesity and low level of education were associated with knee OA.[9]knee joint pain, limited morning stiffness, and reduced function are the three symptoms that are recommended for the diagnosis of knee OA by the EULAR[10] with the bony enlargement restricted movement and crepitus. Synovitisappears and leads to pain at rest or at night, Short duration of stiffness less than 30 minutes in the morning withtenderness to palpation of involved joints may be evident in physical examination and crepitus during joint motion or walking. In advanced cases, malalignment may be apparent (genu varus or genu valgus).[11]Osteoarthritis is a serious disease with increasing impact worldwide since many years various studies and clinical trials have been published in the osteoarthritis (OA) field. Pain is developing and increasing many studies investigating pharmacological treatment for osteoarthritishave limited benefits while new treatment modalities like joint replacement is an effective alternative new data have become available on how long they might last.[12]There is little information about factors related to joint pain therefore this study was done to explore the related factors for osteoarthritis and the factors for arthritic pain in adults.

Material and Methods

It was a cross-sectional descriptive study conducted Hayatabad medical complex of Peshawar from 1st january to March 2022 The study population includes all the OPD cases of osteoarthritis visiting

the hospital, while the target population was from all public hospitals of Peshawar. The sampling method was non probability convenience sampling with sample size was 320 individuals from 18 years to 60 years visiting hospitals. Ethical approval was taken from the Hayatabad medical complex Peshawar. All the individuals gone through surgery, neurological patients, gynecological patients, pregnant ladies and psychiatric patients were excluded from the study.

The duration of the study was six months after the approval of the synopsis. The objective of the study was to estimate To estimate factors associated with knee joint pain leading to osteoarthritis and preventive measures taken in patients visiting hayatabad medical complex, Peshawar.A semi-structured questionnaire was designed and consisted of questions about demographic information, including age, gender, location, education, occupation, income, family history of osteoarthritis, BMI, physical activity, trauma, treatment strategies, and medicines used were the factors included in the questionnaire. Pre-testing was done to check the feasibility and sequence of questions. weight was measured in kg while height in meters or inches.

The patient's age was from 20-80 years with diagnosed osteoarthritis pain in joints. The sample was analyzed by SPSS version 22. Descriptive statistic was calculated for all the included variables. All the results were calculated and presented in the form of tables.

Results

Among 320 individuals 112 were males while 208 were females reported to the tertiary hospital with pain in joints 61.87% were living in rural and 38.13% were living in urban areas 49.47% were primary education while 8.75% were graduates and 41.8% were matric pass with low or moderate socioeconomic status and more in house wives 43.75%. respondents with 32.5% were overweight and 20.9% were obese and 18.12% has taken medical treatment to cure the pain where as 18.44% were taken physiotheraphy 16.88% has taken surgical treatment and 46.56% has taken preventive measures which includes exercise, weight loss, diet and walk and regularly intake of supplements. The pain was aggravated in cold and dry weather and reduced in hot weather. BMI was taken in which 32.5% were overweight have osteoarthritis. 11.87% in patients with poor posture and twisted posture and 43.75% osteoarthritis in housewives.

S.no		Frequency	Percentage
1	Female	208	65%
2	Male	112	35%
	Total	320	100%

Table1 = Osteoarthritis distribution according to gender

S.no	Location		Percentage
1	Rural	198	61.87%
2	Urban	122	38.13%
	Total	320	100%

Table 2= Osteoarthritis distribution according to the location

S.no	Education		Percentage
1	Primary	158	49.47%
2	Matric	134	41.8%
3	Graduate	28	8.75%
	Total	320	100%

Table 3= Osteoarthritis distribution according to the education

S.no	Preventive measures and other Treatment taken		Percentage
1	Medical treatment	58	18.12%
2	Surgical treatment	54	16.88%
3	Physiotherapy	59	18.44%
4	Preventive measures e.g. exercise, diet control, walk, yoga and intake of supplements.	149	46.56%
	Total	320	100%

Table 4= Osteoarthritis distribution according to the preventive measure

S.no	Weather		Percentage
1	Cold and dry	174	54.4%
2	Cold and wet	128	40%
3	Hot and dry	12	3.8%
4	Hot and wet	6	1.88%
	Total	320	100%

Table5=Relation of osteoarthritis with weather

S.no	Occupation		Percentage
1	House wife	140	43.75%
2	Athlete	8	2.5%
3	Sports	17	5.31%
5	Climbing	18	5.62%
6	Work in twisted position	38	11.87%
7	Work in kneeling position	26	8.12%
8	Heavy lifting	14	4.3%
9	Work at standing position	21	6.56%
11	Poor posture	38	11.87%
	Total	320	100%

Table 6= Osteoarthritis distribution according to the occupation

S.no	BMI		Percentage
1	Underweight	75	23.43%
2	Healthy	74	23.12%
3	Overweight	104	32.5%
4	Obese	67	20.9%
	Total	320	100%

Table 7= Osteoarthritis distribution according to the BMI

Discussion

The present study was conducted in tertiary care hospital of Peshawar on factors associated with knee joint pain leading to osteoarthritis and preventive measures taken in patients visited hayatabad medical complex, Peshawar. In the study, the sample size was 320 out of which 65% were female and 35% were male living in rural areas (61.87%) while the other 38.13% were in urban areas of Peshawar. They were reporting to the hospital for joint issues. Patients with primary education 49.4% have pain in joints and obese and overweight individuals were very prone to knee joint dysfunction leading to osteoarthritis. The Study conducted in the Japanese population with older age p=0.005 female gender BMI p<0.001 higher education p=0.025 less activity has p<0.001results were significantly associated with osteoarthritis. The study concluded that increased BMI, high education, less activity and females were the contributing risk factors for pain in the joint causing osteoarthritis.

It affects the quality of life among the Japanese population.[13] The present study was in accordance with the study conducted on the Japanese population that high BMI, housewives female 65% were the major risk factors for the causation of osteoarthritis in kpk population.Other risk factors like low education were found significant with joint osteoarthritis likewise age and gender especially females were the coexisting risk factors for osteoarthritis.[14] A recent trial showed that osteoporosis is also associated factor with osteoarthritis in previous studies,even trials has taken to check the improvement in pain by taking medication for osteoporosis but they fails to reduce the structural progression of joint osteoarthritis therefore this issue is still in consideration[15] in present study the conservative treatment,medication and physiotherapy were the treatment modalities for osteoarthritis.

A study was conducted in Punjab (Gurdaspur) in 2018 on the prevalence of knee osteoarthritis among women from 30 -60 years of age. The sample size was 422 females from Punjab Gurdaspur India. It was a cross-sectional study sample was collected from November to April 2017and a semi-structured questionnaire was used for data collection. The prevalence of knee osteoarthritis was 21.6%. The prevalence of osteoarthritis was high in 50 -60 years of age. It was found that the females with high socioeconomic status were suffering from knee osteoarthritis. A sedentarylifestyle with a high BMI≥25 was affected by osteoarthritis. It was concluded that the prevalence was increased with increasing age, higher socioeconomic status high BMI, sedentary lifestyle and menopause were significantly associated with osteoarthritis.[16] Another study was conducted in Punjab Hoshiarpur India on the prevalence of knee osteoarthritis in females in urban and rural areas of India Hoshiarpur. The study concluded that prevalence was high in urban areas 21.5% and osteoarthritis increases with age and is also associated with menopause and education level. In the present study, osteoarthritis was common in people living in rural areas 61.8% , associated with a low level of education and increase BMI.[17]

A study was conducted to compare the effects of mobilization and physiotherapy in patients with unilateral medial tibiofemoral knee osteoarthritis, the sample size was 30 individuals with diagnosed knee osteoarthritis, and the sample was divided equally into two groups 15 in group A and 15 in group B. Group A individuals were taking mobilization with movement and group B underwent conventional physiotherapy. The visual Analogue Scale VAS and Oxford Knee score (OKS) were used for outcome measures. Measurements were taken after 2 weeks. The results of the study showed that both groups showed improvement in pain but group A showed more improvement in VAS scale $p \leq 0.0001$ which is significant.[18]In the present study physiotherapy medication was taken by 18.44% and 18.12% respectively while conservative treatment which includes exercise, weight loss, orthotic and rest were 46.56%. Patients interested in surgical procedures were 16.88%. In the present study, most of the patients were on conservative treatment which is effective as compared to surgical and pharmacological treatment.

A study was conducted atthe University of Southampton (UK) on weather-sensitive patients and those who didn't show any relation with weather change in osteoarthritis. For many patients with osteoarthritis, 67.2% perceived the weather affecting the pain, weather-sensitive participants reported more pain than non-weather-sensitive individuals $P < 0.001$ After adjusting for several confounding factors Southern Europe was more likely to indicate themselves as weather-sensitive persons for osteoarthritis than those from Northern Europe. The results emphasize the importance of considering weather sensitivity in the daily life of older people with OA and may help to identify weather-sensitive older people with OA.1 as far as results of the present studyshowed that cold and dry weather affects 54.4% of individuals as compared to patients of osteoarthritis in hot and dry1.88%.[19]The amount of moderate-intensity activity on a weekly basis was found to be significantly associated with current arthritic pain among the subjects with osteoarthritis. Although it was difficult to ascertain whether the reduced weekly amount of moderate activity in the symptomatic subgroup was the cause or the result in this cross-sectional study, previous studies have suggested that appropriate physical activity

is beneficial for functioning.[20] In the present study conservative treatment and physiotherapy were the best treatment methods for osteoarthritis.

Conclusion

The present study concluded that increased BMI, cold and dry Weather, females in rural areas location, various treatment modalities and low education are the risk factors for joint pain leading to osteoarthritis. Various preventive measures taken were exercise, use of various supplements and diet control.

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