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Risk Factors of Knee Osteoarthritis in Patients attending Rheumatology Clinic in Mosul

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Abstract:

Background: Osteoarthritis can be described as the last common pathway of processes that leads to joint failure. This illness also has a significant social and economic impact on all civilizations, and has become a growing burden on health-care systems in usually healthy economies with an aging population.

Objectives: the aim of current study was to measure the frequency of cases related to each assumed risk factor of knee Osteoarthritis among the study sample and to assess the causes of knee Osteoarthritis.

Methods: A case-control study design conducted from the 1st, November 2020 to the 31st, May 2021 in Ibn-Sena and Al-Salam Teaching Hospitals in Mosul, Iraq. A total of 100 individuals diagnosed with knee Osteoarthritis represented the cases of this study, and another 100 individuals free from knee Osteoarthritis were recruited as controls.

Results: The majority of cases and controls (72 % and 53 %, respectively) were between 45 and 64 years. Also, females represented 76% of cases and 57% of controls. It was found that 74% of cases and 81% of controls lived in city. Married people made up 93% of cases and 79% of controls. The manual workers made up 82% of cases and 27% of controls. Also, there was no link between smoking, systemic illnesses and knee osteoarthritis. Females over 45 years accounted for 65% of cases and 31% of controls. Overweight and obese people were twice as likely as the control group to develop knee Osteoarthritis. Trauma in the past had strong link with the development of knee Osteoarthritis. Also, only over half of the patients (51) had a positive family history of Osteoarthritis, whereas only 17% of the controls had a positive family history of Osteoarthritis.

Conclusion: Osteoarthritis occurs more frequently among old married females. Overweight and obesity found to be a risk factor for Osteoarthritis. Also, manual labor increases the chances of developing Osteoarthritis. Athletes are also less likely to develop Osteoarthritis. Trauma and Family history of Osteoarthritis Increase the risk of Osteoarthritis.

Keywords: Osteoarthritis, Knee joint, manual labor, Obesity, Athletes.

Introduction:

Osteoarthritis (OA) is a chronic degenerative disorder of multifactorial etiology which has significant social and economic impact on all civilizations, including developing ones, and has become a growing burden on health-care systems in usually healthy economies with an aging population [1,2]. No one mechanism explains all the processes that occur in the osteoarthritic joints [3]; however, it can be described as the last common pathway of processes that leads to joint failure [4].

Limb alignment appears to be important as well; evidence is accumulating suggesting that varus and valgus knee alignments increase the risk of osteoarthritis development and progression in joint's more loaded area [1,5]. Osteoarthritis is a prevalent chronic disease worldwide and is the most common form of arthritis [6]. Knee OA is the most frequent form of lower extremity OA [7].In acute phase, a study found that chloroquine Phosphate used as a treatment [8], while another study reported that intra-articular injection is an effective treatment [9]. High levels of exercise throughout adolescence may increase the development of femoroacetabular impingement morphology, which is a well-known but poorly characterized risk factor for hip osteoarthritis [10]. Obesity puts more strain on weight-bearing joints, but it also raises joint vulnerability by releasing inflammatory adipokines [11]. It raises the chance of knee osteoarthritis by more than three times [12] and hastens the development of the illness [13]. It's

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unclear why the risk of osteoarthritis related with obesity is considerably lower in the hips than in the knees [14].

Whatever the prevalence and incidence were, it is a public health issue in all communities. Therefore, the aim of current study was to evaluate factors that are associated with knee OA and to identify individuals who are at high risk for the development of the disease.

Patients and Methods:

The study was carried out in Ibn-Sena and Al-Salam Teaching Hospitals in Mosul, Iraq. Ibn-Sena Teaching Hospital is situated in Mosul city on the right side of the river Tigris and it receives approximately 120 patients/day in the Rheumatology Consultation Clinic. On the other hand, Al-Salam Teaching Hospital is situated in Mosul city on the left side of the river Tigris and receives about 100 patient/day in the Rheumatology Consultation Clinic. This study was case-control study. The period of data collection was from 1st, November, 2020 to the 31st, May, 2021 in both hospitals.

A total of 100 individuals diagnosed as knee OA represented the cases of this study, and another 100 individual free from knee OA were taken as controls. Cases were patients with knee OA who consulted the Rheumatology Consultation Unit in Ibn-Sena and Al-Salam Teaching Hospital, Mosul. They were collected consecutively. They were asked in details about their disease.

Case definition: Method of case collection was depended on rheumatologist's diagnosis which is based on the diagnostic criteria of knee OA established by the ACR and confirmed by radiographic film, were included in this study [15, 16].

Criteria of knee osteoarthritis: Knee pain + 3, >50 years old, 30 minutes of morning stiffness, grating sensation, bony tenderness, bony enlargement, no detectable warmth of the joint to the touch.

Controls: Controls were individuals free from any joint symptoms who attended the outpatient medical clinic of Ibn-Sena Teaching Hospital, and Al-Salam Teaching Hospital Mosul, Iraq. They were unmatched individuals for both age and sex variables with the cases and they were collected consecutively The researcher interview participants and record information by paper-based questionnaire that included: age, gender, date, verbal consent, residence, marital status, and job, weight, height, history of smoking, history of systemic disease, congenital anomaly, history of Joint trauma, family history of OA and history of strenuous sport.

Statistical analysis: Microsoft Excel 2010 and SPSS (version 24) were used. 95% confidence interval (CI) for the OR was calculated by Chi-squared test, Mean±SD, independent *t* tests were used to find out significant difference; P at level 0.05 considered to be significant. Approval statement from the Directorate of Health of Nineveh Governorate was obtained which allowed collecting data for the study from Ibn-Sena and Al-Salam Teaching Hospital Mosul, Iraq. Verbal consent also was taken from each person who was included in the study.

Results:

A total of 100 individual diagnosed as knee OA represented the cases of this study, and another 100 individuals free from knee OA were taken as controls (Figure 1). The distribution of cases and controls by age is shown in Table (1). Age group (45- 64 years) formed most patients and controls, 72 % and 53 %, respectively. Mean age of cases were higher than that of controls; 54 ± 7.55 and 46± 12.10, respectively, Table (1).

Table (1) Age distribution of knee osteoarthritis cases and their controls

Age group/year	Cases		Controls	
	No.	%	No.	%
<45	18	18	42	42
45-64	72	72	53	53
>65	10	10	5	5
Mean ± SD	54 ±7.55		46 ± 12.10	

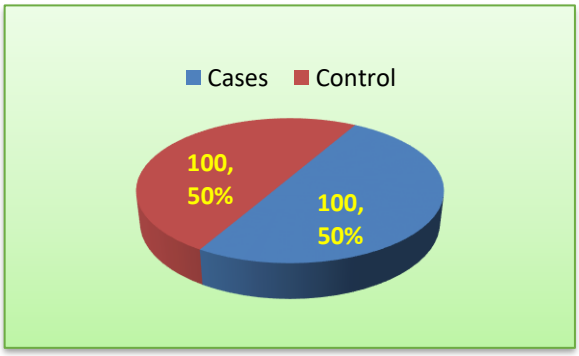

Figure 1: Frequencies of cases and control participants.

Females constituted 76% of cases, while in controls the female contributed by 57%. This indicated significant association (P= 0.007) between knee OA and female gender. On the other hand, 74% of cases and 81% of controls were living in urban region without significant association (P = 0.236). in addition, marital status constituted 93% cases, while in controls, married subjects contributed to 79% (P= 0.004) indicated significant association between knee OA and marital status. The present results showed that 82% of cases and 27% of controls were manual workers. The rest were non-manual workers. This indicated highly significant association between manual worker and knee OA was noticed (P-value = 0.0001). Moreover, no association was present between smoking and development of knee OA (P-value = 0.750). A highly significant association (P-value=0.004) between abnormal BMI (include overweight and obesity) and the development of knee OA. Overweight and obese patients are two times risky to have knee OA compared to the control group (Table 2).

Table (2) Association between knee OA and sociodemographic features of the study population

Variable		Cases		Control		O.R	P- value*	C.I
		No.	%	No.	%			
Gender	Female	76	76	57	57	2.389	0.007	1.249- 4.588
	Male	24	24	43	43			
Residency	Urban	74	74	81	81	0.688	0.236	0.324-1.373
	Rural	26	26	19	19			
Marital status	Married	93	93	79	79	3.532	0.004	1.333-9.700
	Single	7	7	21	21			
Occupation	Manual worker	82	82	27	27	12.317	0.0001	5.970-25.725
	Non Manual worker	18	18	73	73			
Smoking habit	Smokers	28	28	26	26	1.107	0.750	0566-2.167
	Non smokers	72	72	74	74			
BMI	Overweight and obesity	77	77	57	57	2.526	0.004	1.313-4.880
	Normal B.M.I	23	23	43	43			

Moreover, data in Table (3) showed a highly significant relationship (P-value =0.0001) between history of strenuous sport and having OA of knees. Also, a significant association was found among trauma & development OA of knees as one third (35%) of cases gave positive history of trauma, while in controls only 3% gave positive history of trauma. These data indicated that persons with knee OA have 10 times more to give history of trauma than those without OA. Furthermore, no significant relationship (P=0.121) was found between congenital anomalies and the development of knee OA (OR=2.812, C.I:0.652-13.840). About one half of cases (51) gave positive family history of OA; whereas only 17% of the controls gave positive family history of OA. This showed highly significant association between knee OA and family history of OA. Therefore, no evident association could be concluded from this finding.

Table (3) Association between knee OA and clinical history of the study population

Variable		Cases		Control		O.R	P- value*	C.I
		No.	%	No.	%			
History of sport stress	Present	33	33	6	6	8.27	0.0001	4.20-16.26
	Absent	67	67	94	94			
Congenital anomaly	Present	8	8	3	3	2.812	0.121	0.652-13.840
	Absent	92	92	97	97			
History of trauma	Present	35	35	33	33	17.410	0.0001	4.846-74.266
	Absent	65	65	97	97			
Family history of OA	Present	51	51	17	17	5.082	0.0001	2.527-10.315
	Absent	49	49	83	83			
Systemic diseases	Yes	25	25	27	27	0.901	0.774	0.456-1.778
	No	75	75	73	73			

* Based on x^2 test.

Discussion:

Knee OA is the most common musculoskeletal disorder and the leading cause of disability among elderly people. Longitudinal studies of large population cohorts have yielded valuable insights, and awareness that osteoarthritis develops as a result of hostile biomechanics acting on a vulnerable joint is growing. Biomechanical variables may be modifiable and offer a possible strategy of intervention since biological processes inside a joint are mechanosensitive [17]. In this study, the average age of patients with knee OA was 54 years. This conclusion is comparable to that of (18) who found that the average age of cases of knee OA was 53.5 years, whereas (19) found that the average age of cases of knee OA was 51 years, which was somewhat lower than our findings. The male to female ratio of patients in this study was 1:3, and there was a significant relationship (P=0.007) between knee OA and female gender, which was consistent with (20). In this investigation, a significant link was discovered between female age more than 45 years and the risk of knee OA (P=0.0001). However, this relationship was not significant in males (P=0.308). This finding agreeed with (11) and (21), where the sample size was 175 cases with an equal number of controls, and they found a significant association between female age greater than 45 years and the risk of knee OA (O.R=9.34, CI:4.77-18), but no significant association between male age greater than 45 years and the risk of knee OA. Current study found no significant link between those who lived in urban regions and those who lived in rural areas (P=0.236), which was consistent with the findings of a case control study conducted by (22), there was a significant link between marital status and the development of knee OA (P=0.004). Moreover, (23) in case control research with 212 patients and an equivalent number of controls, found a strong

relationship between marital status and symptoms and indications of knee OA. The findings of this study revealed a highly significant link between manual labor and the development of knee OA (P-value<0.001). This finding was consistent with those of (22) who found a substantial link between occupational risks and symptoms and indications of knee OA in a case-control study done in Russian in 2010. This might be explained by the fact that manual workers place a greater mechanical strain on the knee joint, resulting in the development of knee OA. According to this study, there was no link between smoking and the development of knee OA (p=0.750). This result agreed with Hui et al. (2011), who found no significant relationship (OR = 1.34, 95 % CI 0.68-2. (24) Between smoking and the occurrence of knee OA in a cross-sectional investigation. However, (24) discovered that smoking is a protective factor against knee OA (O.R= 0.74, CI: 0.55-0.98). There was no biological reason why smoking may help prevent OA. Smoking can help you lose weight and preserve your joints from mechanical stress. The history of intense sport and the development of knee OA were shown to have a highly significant association (P=0.0001), which coincided with (25). The theory was that intense sports cause more damage to the knee joint's shape, resulting in further OA. The findings of this study revealed a significant (P=0.004) link between abnormal BMI (including obesity and overweight) and the development of knee OA. These findings were confirmed by data from (26) and and (27) in their cross-sectional research of 82 women and 18 men with unilateral or bilateral knee OA done in New York. Most people with knee OA had high BMI, according to the researchers. Furthermore, being overweight may have a little influence on knee joint impact and discomfort. Having a high body weight can increase the risk of bilateral knee and hip joint OA. This study discovered a highly significant link between prior knee joint damage and the development of knee OA (P=0.0001), which matched the findings of (28). The concept that past knee joint trauma causes greater deformation of the normal architecture of the knee joint and leads to more OA alterations in the joint. This study found a positive (OR=2.812) but not statistically significant (P=0.121) link between congenital abnormalities and the development of knee OA. This conclusion was consistent with Yamanaka et al. (2015) findings from a case control study conducted in November 2015 at the University of Oita in Japan, which indicated that congenital anomalies of the knee, such as dislocation of the patella, were not associated with knee OA (29). On the other hand, Allen et al. (2010) observed a substantial relationship (OR=3.65,C.1:1.60-11.20) between congenital abnormalities and the development of knee OA in a case-control study of 200 patients with knee OA and 200 control individuals done in 2010. This finding might be explained by the limited sample size in the study (30). These findings revealed a highly significant link between knee OA and a family history of OA (P=0.0001). Hämäläinen et al. (2014) discovered a link between having a family history of OA and developing knee OA (31). This study found no significant link between systemic illnesses and the development of knee OA (p=0.747), but Sima et al. (2012) found a link between systemic diseases such as HT, CHD, peripheral vascular disease, HF, renal dysfunction, diabetes and respiratory disease and knee OA. This might be owing to the study's small sample size (32).

Conclusion:

Osteoarthritis steadily increases with age mainly between 45 to 64 years old which represent 72% of cases. In addition, in this study knee OA is dominant among married, females, people aged 45-64 years as well as overweighed/ or obese people. Also, manual workers have risk of knees OA two times more compared to non-manual worker. Furthermore, athletes are less likely to develop Osteoarthritis; whereas history of trauma, strenuous sports, and Family history of Osteoarthritis increase the risk of Osteoarthritis.

Authors' contributions:

Dr. Dhafar Mahmoud Omar: the primary coordinator of data collection, interpretation, and writing of article.

Dr. Ammar Q. : help dr. Dhafar Mahmoud Omar in statistical analysis of data and writing results. 3. Dr. Tuka Younis Hassan: help dr. Dhafar Mahmoud Omar in statistical analysis of data and writing results.

References:

1. *Losina E, Weinstein A M, Reichmann W M, Burbine S A, Solomon D H, Daigle M E, et al. (2013). Lifetime risk and age at diagnosis of symptomatic knee osteoarthritis in the US. Arthritis care & research, 65(5): 703-711.*

2. Abramson SB, Attur M. Developments in the Scientific Understanding of Osteoarthritis. Journal Arthritis Research & Therapy, 2009; 11: 227.

3. Brandt KD. Defining osteoarthritis: What it is, and what it is not. Journal of Musculoskeletal Medicine, 2010; 27: 9.

4. Pereira, D, Ramos E, Branco J. (2014). Osteoarthritis. Acta medica portuguesa, 28(1): 99-106.

5. Tanasie D A, Nemes D, Catan L. (2011). PROFESSIONAL CHRONIC LOW BACK PAIN IN DENTAL MEDICINE. Revista de Ortopedie si Traumatologie a Asociatiei de Ortopedie Româno-Italo-Spaniole, (1): 21.

6. Rosemann T, Laux G, Szecsenyi J. Osteoarthritis: quality of life, comorbidities, medication and health service utilization assessed in a large sample of primary care patients. Journal of Orthopaedic Surgery and Research 2007; 2: 12.

7. Murphy L, Schwartz T A, Helmick CG, et al., Lifetime risk of symptomatic knee osteoarthritis. J. Arthritis and Rheumatism. 2008; 59: (9): 1207-1213.

8. Saleh E, Turki K, Alosami M. The role of Chloroquine phosphate on rheumatoid factor in

patients with knee osteoarthritis. JFacMed Bagdad [Internet]. 1Apr.2009 [cited 26 Jul.2021]; 51(1):60-1. Available from: https://iqjmc.uobaghdad.edu.iq/index.php/19JFacMedBaghdad36/article/view/1175

9. Alobidi F. Arthroscopic micro fracture and intra articular whole bone marrow injection for the treatment of articular cartilage lesions in the knee joint. JFacMedBagdad [Internet]. 3Apr.2016 [cited 26Jul.2021]; 58(1):32-7. Available from: https://iqjmc.uobaghdad.edu.iq/index.php/19JFacMedBaghdad36/article/view/193

10. Ashkavand Z, Malekinejad H, Vishwanath B S. (2013). The pathophysiology of osteoarthritis. Journal of Pharmacy Research, 7(1): 132-138.

11. Sheikh S I, Khanam A. (2014). Osteoarthritis in postmenopausal women. World J Pharm Sci 2014; 2(1): 49-51. Available at: http://www.wjpsonline.com/

12. Stevens-Lapsley J E, Kohrt W M. (2010). Osteoarthritis in women: effects of estrogen, obesity and physical activity. Women's Health, 6(4): 601-615.

13. Linn S, Murtaugh B, Casey E. (2012). Role of sex hormones in the development of osteoarthritis. PM&R, 4(5): S169-S173.

14.Cross M, Smith E, Hoy D, Nolte S, Ackerman I, Fransen M, et al. (2014). The global burden of hip and knee osteoarthritis: estimates from the global burden of disease 2010 study. Annals of the rheumatic diseases, 73(7): 1323-1330.

15. Hiadari B. Knee Osteoarthritis Diagnosis, Treatment and associated factors of progression: part II. Caspian J Intern Med, 2011; 2(3): 249-255.

16. Jerosch J. Effects of Glucosamine and Chondroitin Sulfate on Cartilage Metabolism in OA: Outlook on Other Nutrient Partners Especially Omega-3 Fatty Acids. Int J Rheumatol. 2011;2011:969012. doi: 10.1155/2011/969012. Epub 2011 Aug 2. PMID: 21826146; PMCID: PMC3150191.

17. Nilsdotter A, Bremander A. (2011). Measures of hip function and symptoms: Harris hip score (HHS), hip disability and osteoarthritis outcome score (HOOS), Oxford hip score (OHS), Lequesne index of severity for osteoarthritis of the hip (LISOH), and American Academy of orthopedic surgeons (AAOS) hip and knee questionnaire. Arthritis care & research, 63(S11): S200-S207.

18. Bliddal H, Leeds A R, Stigsgaard L, Astrup A, Christensen R. (2011). Weight loss as treatment for knee osteoarthritis symptoms in obese patients: 1-year results from a randomised controlled trial. Annals of the rheumatic diseases, 70(10), 1798-1803.

19. Ringdahl E N., Pandit S. (2011). Treatment of knee osteoarthritis. American family physician, 83(11): 1287-1292.

20. Brosseau L, Rahman P, Toupin-April K, Poitras S, King J, De Angelis G, et al. (2014). A systematic critical appraisal for non-pharmacological management of osteoarthritis using the appraisal of guidelines research and evaluation II instrument. PloS one, 9(1): e82986.

21. McWilliams D F, Leeb B F, Muthuri S G, Doherty M, Zhang W. (2011). Occupational risk factors for osteoarthritis of the knee: a meta-analysis. Osteoarthritis and cartilage, 19(7): 829-839.

22. Kalichman L, Li L, Batsevich V, Malkin I, Kobyliansky E. (2010). Prevalence, pattern and determinants of radiographic hand osteoarthritis in five Russian community-based samples. Osteoarthritis and cartilage, 18(6): 803-809.

23. Arima K, Nishimura T, Abe Y, Aoyagi K. THU0478 longitudinal associations between painful knee osteoarthritis and difficulties in physical functioning among community-dwelling women: a 9 years follow-up study in Japan. Annals of the Rheumatic Diseases 2015;74:373.

24. Hui M, Doherty M, Zhang W. (2011). Does smoking protect against osteoarthritis? Meta-analysis of observational studies. Annals of the rheumatic diseases, 70(7): 1231-1237.

25. Andersen S, Thygesen L C, Davidsen M, Helweg-Larsen K. (2012). Cumulative years in occupation and the risk of hip or knee osteoarthritis in men and women: a register-based follow-up study. Occupational and environmental medicine, 69(5): 325-330.

26. Messier S P, Mihalko S L, Legault C, Miller G D, Nicklas B J, DeVita P, et al. (2013). Effects of intensive diet and exercise on knee joint loads, inflammation, and clinical outcomes among overweight and obese adults with knee osteoarthritis: the IDEA randomized clinical trial. Jama, 310(12): 1263-1273.

27. Sanghi D, Srivastava R N, Singh A, Kumari R, Mishra R, Mishra A. (2011). The association of anthropometric measures and osteoarthritis knee in non-obese subjects: a cross sectional study. Clinics, 66(2): 275-279.

28. Waller C, Hayes D, Block J E, London N J. (2011). Unload it: the key to the treatment of knee osteoarthritis. Knee Surgery, Sports Traumatology, Arthroscopy, 19(11): 1823-1829.

29. Yamanaka H, Kawamoto T, Tamai H, Suzuki M, Kobayashi T, Eguchi Y, Nakajima H. (2015). Total knee arthroplasty in a patient with bilateral congenital dislocation of the patella treated with a different method in each knee. Case reports in orthopedics, 2015.

30. Allen K D, Chen J C, Callahan L F, Golightly Y M, Helmick C G, Renner J B, Jordan J M. (2010). Associations of occupational tasks with knee and hip osteoarthritis: the Johnston County Osteoarthritis Project. the Journal of Rheumatology, 37(4): 842-850.

31. Hämäläinen S, Solovieva S, Vehmas T, Luoma K, Leino-Arjas P, Hirvonen A. (2014). Genetic influences on hand osteoarthritis in Finnish women–a replication study of candidate genes. PloS one, 9(5): e97417.

32. Sima E S, Davoud S, Kamal A, Leili S, Azar T, Monavvar M S. (2012). The Impact Of Chronic Diseases On The Quality Of Life Among The Elderly People In The East Of Tehran. Payavard Salamat, 6(3).

عوامل الخطورة لهشاشة مفصل الركبة لدى المرضى الذين يترددون عللى عيادة الروماتيزوم في الموصل

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الخلاصة:
الخلفية: يمكن وصف هشاشة العظام على انه اخر مسار مشترك للعمليات التي تؤدي الى فشل المفصل . هذا المرض له أيضا تأثير اجتماعي و اقتصادي كبير على جميع الحضارات وأصبحت عبئا متزايد على عاتق الرعاية الصحية مع الشيخوخة .
اهداف البحث : الأهداف المحددة لقياس تكرار الحالات المتعلقة بكل عامل خطر مفترض من هشاشة الركبة بين عينات الدراسة وتقييم وجود علاقة سببية بين كل عامل خطر مفترض وتطور هشاشة الركبة. **الاعداد**: في هذه الدراسة , تم اعتماد تصميم دراسة الحالات والشواهد من الأول من تشرين الثاني 2020الى 31 أيار 2021 في مستشفى ابن سينا و مستشفى السلام التعليمي في الموصل العراق .
طريقة البحث: 100 فرد تم تشخيص اصابتهم بالتهاب مفصل الركبة يمثلون حالات هذه الدراسة , وتم اخذ 100 فرد اخر غير مصاب بالتهاب مفصل الركبة كعناصر تحكم .
النتائج : كان الجزء الأكبر من الحلات والضوابط (72% و 53% على التوالي) بين سن 45 و64. كما بلغت نسبة الاناث 76% من الحالات و 57% فقط من الضوابط. تم اكتشاف ان 74% من الحالات و81% من الضوابط تعيش في المدينة. شكل المتزوجون 93% من الحالات و 79% من الضوابط . تكشف النتائج الحالية ان العمال اليدويون شكلوا 82% من الحالات 27و% من الضوابط .لا توجد علاقة بين التدخين والامراض الجهازية وتطور التهاب مفصل الركبة . الاناث فوق ال 45 عام يمثلن 65% من الحالات و 31% من الضوابط . الأشخاص الذين يعانون من زيادة الوزن والسمنة هم اكثر عرضة للإصابة بالتهاب الركبة مقارنة بالمجموعة الضابطة . الصدمة في الماضي ترتبط ارتباط قوي بالتهاب مفصل الركبة . اكثر من نصف المرضى لديهم تاريخ عائلي إيجابي من التهاب المفاصل بينما 17% فقط من الضوابط لديهم تاريخ عائلي إيجابي من التهاب المفاصل .
الاستنتاجات :خلصت الدراسة الى ان هشاشة العظام تحدث بشكل متكرر في الاناث المسنات اكثر من الذكور والشخص المتزوج اكثر عرضة للإصابة بهشاشة العظام وكذلك زيادة الوزن والسمنة .كما ان العمل اليدوي يزيد من فرص الصابة بهشاشة العظام . الرياضيين اقل عرضة للإصابة بهشاشة العظام .الاصابة والتاريخ العائلي للإصابة بهشاشة العظام يزيدان من خطر الإصابة بهشاشة العظام
الكلمات المفتاحية: هشاشة العظام ، مفصل الركبة ، العمل اليدوي، السمنة، الرياضيون.