



## Risk Factor for Knee Osteoarthritis Among Women

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### ABSTRACT

**Background and Aim:** Osteoarthritis is now firmly establish as a common health problem. It is the most disability problems in many countries. Knee osteoarthritis is regarded as the most common form of the disease in adults. Elderly women are more affect by this disorder. From the available evidences, it is now reasonable to consider this disease as one of the most important among the chronic diseases and investigation for the risk factors that are associated with this disorder is very important. The target of study to assess risk factors of osteoarthritis of the knee joint among women.

**Material and method:** Case control study, where 200 women with symptomatic knee osteoarthritis proved by physical examinations and radiological evidences were allocate as cases. In addition, 200 women proved to be without clinical or radiological evidence of knee osteoarthritis were allocate as controls. The study was applied from 15th November 2013 to 7th April 2014. Questionnaire which focus on the distribution of the study population according to personal characteristics such as (Family history, smoking, sedentary lifestyle, walk long, employment and urban), life events as (previous trauma, stress previous surgery), other variables such as (BMI, DM, HT, genitourinary, calcium intake).

**Results:** in this study the Smoking appeared highly associated with osteoarthritis of knee at (p-value =0.007), Sedentary lifestyle is development with Osteoarthritis of knee (P-value =0.000).Unhealthy calcium intake was highly associated with development of knee osteoarthritis(P-Value=0.000),Walking for long distances appeared unexpected negatively with occurrence knee's Osteoarthritis(P-value=0.84). Employment appears unexpected negatively with occurrence of Osteoarthritis of knee (p-value= 0.129).

**Conclusion:** Obese Women, diabetes mellitus, genitourinary infection, stress and previous surgery are the high risk for developing knee osteoarthritis, while hypertensive women or women with previous trauma has low risks for developing knee osteoarthritis.

**Recommendation:** the study recommended avoiding sitting for long times, apply exercise regularly and encourage calcium intake for women to decrease the incidence of knee osteoarthritis.

**Keyword:** Risk factor, Knee ,Osteoarthritis ,Women.

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## BACKGROUND

Osteoarthritis: major causes to functional impairment is becoming a highly prevalent worldwide due to its association with an age of population and growing prevalence of obesity with heavy weight (Berenbaum 2008). The osteoarthritis of knee is a common cause of pain and dysfunction of ability, the scientific reports on the relation between physical workload (e.g. kneeling/squatting, lifting/carrying of loads)

mention the osteoarthritis of knee into their national lists as occupational diseases (Andre et al,2010) however the age is strongly associated as the risk factors of knee osteoarthritis, on the other side the overweight is considered the most important risk factor for that problem (Dunlop, et al 2010) Obesity is found a major cause to be as a risk factor for knee's osteoarthritis. Body mass index (BMI) has been play a role with the chance incidence and progression symptoms for osteoarthritis of knee,

Beside the age and sex. The mechanisms by which obesity is linked to the disease of knee osteoarthritis are not clear completely

Biomechanical factors (like, decrease the physical activity and immobility abnormal knee adductor moment, high pressure on the articular cartilage) and metabolic mechanisms (like, hormonal dysregulation, adipokines) could be suggested as possible aiding factors for this joint dysfunction (Coggon et al,2001). Lifestyle elements, such as smoking habits' sports performance, and exercising, are inconsistently linked with a highly risk osteoarthritis of knee (Ding C, et al,2007). The suffering from symptoms knee Osteoarthritis increases with old age.

The other prevalence is set to increase further. Early management for detection Osteoarthritis of the knee is considered successful method and should be done initially.

However, it is undoable and the situation conservative management has failed Categorize and detail the surgical the available options for knee Osteoarthritis.

Key results from the researches will be done to clarify the present reasoning behind evidence-based practice in surgery for knee Osteoarthritis.

Especially we focus on evidence comparing surgical for knee Osteoarthritis. (Lewis et al,2009).Osteoarthritis: is Chronic synovial disease in the joints that leads to progressive softening Growth of the meniscus associated with growth and new cartilage and

bone in the joint area(Osteoporosis) Cyst formation and sclerosis in simple herniated bone and fibrotic fibrosis. It differs from simple wear and tear in that an asymmetric distribution is often associated with abnormal frictional wear. (Solomon and et al,2010)

### Rationale of study:-

- 1- Osteoarthritis is major cause of impaired mobility. 1990, Osteoarthritis was approximately to be the eighth causing non - fatal burden of the disease presenting for 2.8 % of the total years of patient living with dysfunction, and the higher ranking disease among the musculoskeletal disorders and contributes about 50% of the disease burden in that problem group (Woolf and et al, 2003)
- 2- The risks of osteoarthritis were increase in Iraq after last war, because of decreasing in exercise and prolonged sitting related to security situation limited.

### Aim of the study:-

To identify the risk factors of osteoarthritis of knee joint among women

### Objectives of the study:-

- 1- To identify risk factors of knee joint osteoarthritis related to personal characteristic of women.
- 2- To assess risk factors of knee joint osteoarthritis related to life event.
- 3- To assess risk factors of knee joint osteoarthritis related to some diseases.

### Terms definitions

#### a. Theoretical definition of osteoarthritis

It common chronic, musculoskeletal disorder can be characterized by loss of articular cartilage gradually. The disease most commonly affects

With patients at the middle and old age, although it may started earlier as result of some disease like the knee hip and spine.(Blagojevic, et al 2010).

#### b. Operational definition of osteoarthritis

The patients with osteoarthritis who is living in Mosul city, who visit the hospital and diagnosed with osteoarthritis by orthopedic surgeons and rehabilitation physicians depending on clinical manifestation of the disease and approved by X-ray examination .

## MATERIALS AND METHOD

### The Ethical points

#### Administrative arrangement

Before of data collection, official permission was obtained from the University of Mosul/ Nursing College/ Research committee. (Appendix A)

#### Consent form to the sample:

Ethical issue was obtain from all clients and only who are agree to participate in the study they chosen. (Appendix B)

**Design of the study:**

To achieve study objective case-control study design was apply.

**Period of the study:**

The study was conducted from 15<sup>th</sup> November 2013 to 7<sup>th</sup> April 2014.

**Setting of the study:**

The study was conduct in Jumhory Teaching Hospital, Al-Salaam Teaching Hospital, Al-Khansaa Teaching Hospital, Ibn-Sena Teaching Hospital and Al-Batool Teaching Hospital in Mosul city.

**Sample and sampling of the study:**

This study adopted, 200 female with symptomatic knee osteoarthritis were enroll in this study as cases according the following inclusion criteria:

1. Positive finding for osteoarthritis in the X-ray and examination of the knee joint.
2. Suggestive history of the osteoarthritis.
3. Employment women and live in urban.

Exclusion criteria:

- 1- Negative finding for osteoarthritis in X-ray and examination of the knee joint.
- 2- No history of the osteoarthritis.
- 3- Women was doing house wife and live in rural.

Another 200 female were chosen as control for this study with the following inclusion:

1. Negative of the history to any previous episode for knee joint pain and swelling.
2. Negative X-ray finding for Osteoarthritis
3. Employment women and who live in urban.

**Tool of the study:**

In order to collect study information, a questionnaire was built by researchers and send

to expert for their opinions after that all modification by expert was done. It is composed of three parts:

**Part one:-**which focus on the distribution of the study population according to personal characteristics such as (Family history , smoking, sedentary lifestyle, walk long ,employment and urban ).(Appendix C).

**Part Two:-** Is distribution of the study population according to life events as (previous trauma, stress previous surgery )

**Part Three:-**Is distribution of the study population according to other variables such as (BMI, DM, HT, genitourinary, calcium intake).

Yes or No was the options for answering about study questionnaire.

**The Validity**

To ensure validity, questionnaire was send to ten experts to evaluate the proposed plan of the study tool, their opinions, suggestions and recommendations were depended to adapt and direct the study tool. (Appendix D).

**The Reliability**

Reliability of the study tools was examine by using split half = 0.81 approach of the computation of Cronbach Alpha Correlation coefficients.

**Data analysis:** -special statistical analysis (SPSS 21) was use to examine the effect for results in this study, data were analyze through statistical procedure by used the odd ratio was then calculated for every risk factors of the concern in this study with its P-value frequency and percentage.

**Borders of the study**1. Difficulty in collecting information .

2. Time consuming relating to large sample (400) clients a case control.

**RESULTS**

**Table (1) Distribution of the study population according to personal characteristics.**

Factors	Cases		Control		OR	P-value	95% C.I.	Sig.
	No.	%	No.	%				
Family History	65	32.5	23	11.5	0.538492	0.028687	0.19- 0.56	S.
Smoking	43	21,5	23	11.5	2.107726	0.007058	1.21- 3.65	S.
sedentary lifestyle	68	34	17	8.5	0.180328	0.000000	0.10- 0.32	S.
Walk long	103	51.5	105	52.5	1.040879	0.841355	0.70- 1.54	No S.

**Table (2) Distribution of the study population according to life events.**

Factors	Cases		Control		OR	P-value	95% C.I.	Sig.
	No.	%	No.	%				
Previous trauma	47	23.5	41	20.5	1.191296	0.468939	0.74- 1.91	No S.

Stress	83	41.5	52	26	2.019066	0.001046	1.32- 3.08	S.
Previous surgery	45	22.5	14	7	3.857143	0.000012	2.04-7.28	S.

**Table (3) Distribution of the study population according to social context.**

Factors	Cases		Control		OR	P-value	95% C.I.	Sig.
	No.	%	No.	%				
Employment	176	88	185	92.5	0.594595	0.129266	0.30- 1.17	No S.
Urban	138	69	111	55.5	1.784656	0.005355	1.18-2.68	S.

**Table (4) Distribution of the study population according to other variables.**

Factors	Cases		Control		OR	P-value	95% C.I.	Sig.
	No.	%	No.	%				
BMI less than 30	178	89	169	84.5	2.484131	0.044099	1.82- 4.66	S.
D.M	55	27.5	47	23.5	2.809863	0.038764	1.51- 1.27	S.
H.T	109	54.5	108	54	0.980056	0.920056	0.66- 1.45	No S.
Genitourinary	79	39.5	66	33	2.754393	0.016333	0.50- 3.13	S.
Calcium intake	156	78	183	91.5	3.036199	0.000173	1.66- 5.52	S.

**DISCUSSION**

The analysis of the results with regard to distribution of the study population according to personal characteristics indicates that family history significantly associated with knee osteoarthritis at (p- value 0.28)

In this study smoking has significantly associated with knee osteoarthritis at (p- value 0.007), This result dis agreement with Ilias and et al (2009) who indicates that heavy tobacco smoking was associated with a decreased osteoarthritis of knee as a risk in comparison with non-smoking (OR 0.2; 95% CI 0.1–0.5). While study with Blagojevich et al (2010) in who indicates that smoking reveled a moderate preventive effect from knee osteoarthritis.

In this study show, that sitting for long time was sedentary life significantly associated with knee osteoarthritis at (p- value 0.000)

Same situation in French by Kristina et al, (2007) who found that female with sedentary life are about four folds increase risk of knee Osteoarthritis than those with active movement.

No significantly, relationship between walking for long time associated with knee osteoarthritis at (p- value 0.841)

The study conducted that there were no relationship between knee and previous trauma not significantly at (P-vale 0.4)

Different study in Germany by Andre et al. (2010) who indicates that genetic issues (women, OR 2.17; men, OR 2.37); and sports performance with a risk of no clear trauma

The result of the present study indicates that Stress in respect of distribution of the study population according to life events is significantly associated at (P-vale 0.001), Actually stress is very difficult to be assessed, since it is more subjective symptoms and the

reaction to it differ considerably in different humans. As (Okma and Hopman, 2001) found in their study that the onset and symptoms of the knee Osteoarthritis will be more Sever if they are associated with stressful life events. Also Gretchen et al, 2005 found that reaction to stress would differ considerably in different population with knee and other forms of Osteoarthritis.

The result of the present study indicates that previous surgery in respect of distribution of the study population is significantly associated at (P-vale 0.0000)

A key results of study found a surgical history of previous knee (essentially arthroscopic surgery) strongly linked with a higher prevalence of NP-like symptoms. Trescot AM, Brown MN, Karl HW (2013).

The result of the present study indicates that Employment has no associated with Osteoarthritis at (P-vale 0.12)no significant relationship among osteoarthritis patients and occupation who was found by Frnklin et al (2010)

The result of the present study indicates that Urban has significantly associated with knee osteoarthritis at (P-vale 0.005), Same study by Friedrich M ,Cermak T , Heiller I ( 2000) who revealed that the role of occupation, for Osteoarthritis Trauma, lack of education, and primitive work environment are the other risk factors,

The result of the current study indicates that BMI significantly associated with Osteoarthritis at (P-vale 0.04) similar studies by domains Mark ( 2007) , Losina et al ,( 2011) who revealed that there is significant relationship among osteoarthritis patient and weight status of these patient

In this study, there were relationship between Diabetes Mellitus and Genitourinary with knee Osteoarthritis at (P-value 0.038), same result in Germany by Miksch et al. (2009) who represent that significant relationship among Osteoarthritis with Diabetes Mellitus and Genitourinary

The result of the present study found that there no relationship between Osteoarthritis and Hypertension at (p-value 0.92) as study of the Thommansen and Zhangs (2006) who found that hypertension does not increase incidence of Osteoarthritis, while in the result of Zahariea et al (2009) who revealed that 84.8% of Osteoarthritis patient having hypertension

The result of the present study indicates that calcium intake is significantly associated in case group at (P-value 0.000) the study of Jenny H Ledikwe (2003) mentioned that unhealthy dietary behaviors such as high calcium intake appeared in man studies to be associated with many health problems and it is found to be as a main contributor to the development of Osteoarthritis in different types of body.

## CONCLUSION

Women with unhealthy calcium intake urbanization, general obesity, diabetes mellitus, genitourinary, stress, smoking, family history, sedentary life style, previous surgery, rural are of high risk of development of knee Osteoarthritis, walk long employment hypertension, previous trauma, and unexpected change in economic, status appeared to be negatively associated with the happen of knee's osteoarthritis in women post-menopausal.

## RECOMMENDATIONS

The study recommended avoiding sitting for long times, apply exercise regularly and encourage calcium intake for menopausal women to decrease the incidence of knee osteoarthritis. Avoids or stop smoking and complications of genitourinary infection, both of them put people at risk of osteoarthritis. Maintain ideal weight according to BMI measurement to avoid over weight and obesity.

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