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ORIGINAL ARTICLE

Impact of Lifestyle on Knee Osteoarthritis in Mosul Hospitals

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ABSTRACT

Background & **Objectives**: Osteoarthritis (OA) is the most prevalent form of arthritis. It is a chronic, degenerative disease of the musculoskeletal system that causes significant disability in patients all over the world. The knee is the most commonly affected joint by OA, especially in older people. Knee OA is a painful disorder that progresses with time and affects the whole knee joint, leading to varying degrees of severe joint failure. It can cause pain, stiffness, and swelling in the knee. It can also lead to disability ,and Lifestyle factors were found to be related to knee OA. This study's aim was to evaluate how lifestyle choices affected knee OA in patients visiting hospitals in Mosul, Iraq. The specific objectives of the study were to 1 Evaluate demographic characteristics of individuals with knee OA. 2 Discover the lifestyle factors for patients with knee OA. 3 Determine the relationship between lifestyle and the severity of knee OA.

Methods: A cross-sectional study design was adopted for the period extended from the 1st of December 2022, to the 20th of July 2023. It included 500 knee osteoarthritis patients collected from consulting clinics in four teaching hospitals in Mosul, Iraq, by using a developed interviewing questionnaire that assessed sociodemographic characteristics, health history, lifestyle factors, and the severity of knee OA.

Results: The mean age of patients (59.4) The majority of the participants were female (83.4%). (74.6%) of the sample were housewives, (75.4%) lived in urban. The most common risk factors for knee OA were obesity (27.2%), and family history (47.4%). (90.8%)of the patients had low education level. Patients had bilateral joint OA(right and left) were 64.6%. Most of patients have a sedentary lifestyle. There are significant association between lifestyle domains like health self-responsibility, nutrition, physical activity, stress management, and spiritual growth with joint OA severity. The highest association between lifestyle domains and severity is seen in the areas of health self-responsibility, diet, and physical exercise.

Conclusion: Certain demographic and socio-demographic factors, such as age, gender, education, residency, occupation, BMI, previous knee injuries, and family history, had a significant association with knee osteoarthritis patients. This study has shown that lifestyle factors play a role in the development and severity of knee OA. Physical inactivity, poor diet, and obesity are all major risk factors for knee OA. The findings can suggest that modification of lifestyle may be a protective against knee OA. Participants who reported being more physically active, eating a healthier diet, and maintaining a healthy weight were less likely to have severe knee OA. Interventions that target lifestyle factors may be beneficial in preventing and managing knee OA.

Keyword: Knee Osteoarthritis, Life-Style, Factor

INTRODUCTION

Osteoarthritis (OA) is one of the most prevalent forms of arthritis. It is a chronic, degenerative illness of the musculoskeletal system that causes significant disability in patients all over the world [(1)].

Osteoarthritis may affect practically every joint; it often affects the hands, knees, hips, and feet. It is characterized by pathologic alterations in bone, cartilage, synovium, ligament, muscle, and periarticular fat, which result in joint dysfunction, stiffness, pain and functional restriction [(2)].

The knee is the most often affected joint by OA, and symptoms of OA in the knee are very common in older people. Knee OA is a painful disorder that progresses with time and affects the whole knee joint, leading to varying degrees of severe joint failure. Aging, being obese, and having previously suffered a knee injury are risk factors for OA. [(3, 4).]

The pathophysiology of knee OA affects the entire joint, which causes synovitis (inflammation of the synovial membrane), effusion (excess synovial fluid inside the joint space), cartilage degradation (loss of articular cartilage), bone remodeling, and osteophyte formation. [(5)]

Knee OA is usually divided into two types: primary osteoarthritis and secondary osteoarthritis. [(6)]

Primary knee osteoarthritis is the most prevalent type of degenerative joint disease in older people. It is characterized by osteophyte development, subchondral alterations, and articular cartilage degeneration. [(7)]

Secondary osteoarthritis is caused by articular cartilage degradation for a suspected reason. It is usually the result of an abnormal concentration of pressure over the joint, such as for post-traumatic reasons or abnormal articular cartilage, as with rheumatoid arthritis (RA). [(8)]

Lifestyle factors such as physical activity, self-awareness, and experience of pain were found to be related to knee OA. The pathophysiological element of chronic musculoskeletal pain caused by OA may be affected by lifestyle choices. [(9,10)]

The concept of a healthy lifestyle is an active action of living with the aim of protecting and improving human health. [(11)]

An unhealthy lifestyle is defined as changes that occur in the behavioral patterns of people, such as obesity or physical inactivity, malnutrition, an unhealthy diet, stress, smoking, alcohol consumption, abuse of drugs, and other factors that are employed as the dominant form of lifestyle. [(12)]

METHODOLOGY

Aim of the Study: to evaluate how lifestyle choices affected knee OA in patients visiting hospitals in Mosul, Iraq"

Design of the study: A quantitative technique was applied in a descriptive, non-experimental prospective, Cross-Sectional study design.

Setting and Time: The data were collected from the four rheumatology consulting clinics at hospitals in Mosul (Ibn Sina teaching hospital, Al-Salam teaching hospital, Al-Jumhory teaching hospital, and Al-Mosul general hospital). The data collection was done in the period between January 22th2022, and June 27th2023.

Sample of the Study: A non-probability sample was purposively composed of 500 knee osteoarthritis patients who make periodic visits to the hospital's rheumatology consulting clinics in Mosul, Iraq. The sample size was calculated based on the prevalence of knee osteoarthritis (OA). The exclusion criteria included:

1. Patient's age less than 40 years old.
2. Patients with medical disorders as mental deterioration, dementia or delirium. Pregnant women.
3. Patients had rheumatoid arthritis, serious pathological conditions (inflammatory arthritis and malignancy).
4. Total or partial arthroplasty of the affected joint.

Data collection and Instrumentation: The data collection tool used in this study was a developed self-administered questionnaire form. The questionnaire was designed in English and then translated into Arabic. It consisted of four parts.

Part 1: sociodemographic characteristic includes (Age, Gender, Marital status, Occupation, Educational level, Residence, and Smoking, BMI, Previous injuries to the Knee joint).
Part 2: Radiological studies (X-ray) include: This part includes the results of Radiological studies (X-ray) and determined the severity of disease by using Kellgren and Lawrence (KL) scale.
Part 3: Lifestyle factors include: Health-Promoting Lifestyle Profile-II HPLP-II is scale initially designed by (Walker & Hill-Polerecky, 1996) in English that assesses adult participation health promotion Life-Style, which include (6) aspects of health Lifestyle, HPLP-II include: physical activity (PA), nutrition (N), spiritual growth (SG), interpersonal relations (IR), stress management (SM), and health responsibility (HR).

The data was collected using a self-administered questionnaire. After radiographic film was taken for participants diagnosed with knee osteoarthritis and Kellgren-Lawrence degrees were obtained with x-ray photos, those who visited the hospital's consulting clinics and agreed to participate in the research were informed, and their written consent was obtained.
Statistical Analysis: The data were analyzed using SPSS version 26 to interpret the study's findings.

RESULTS

Table 1 show shows that the mean age of patients (59.4)year ,The majority of the participants were female (83.4%). (74.6%) of the sample were housewife, (75.4%) lived in urban. The most common risk factors for knee OA were obesity (27.2%), and family history (47.4%). (90.8%) of patients had low education level.

Table 2 show (27.04%) of respondents take responsibility for their health through regular checkup, and routine health visits, while a (17.60%) never do so. (29.96%)of participants consume have a healthy diet. Regular exercise was reported by (7.13%), while a significant (58%) never exercised. Relaxation techniques were used by 26.75% of respondents for stress management, while 11% never used them. Strong social support networks were reported by 50.12%, A sense of purpose was found by 43.89% of respondents .

Table 3 show The data additionally shows that 177 patients (35.4%) had unilateral knee joint OA, and 323 patients (64.6%) had bilateral knee joint OA.

The severity of Knee joint OA in the right and left joints, both unilaterally and bilaterally. The majority of cases, 80 and 50 in unilateral cases and 97 and 116 in bilateral cases, are first-degree joint OA. The second most prevalent joint disease is second-degree joint OA, which accounts for 18 and 15 cases in unilateral cases and 115 and 93 cases in bilateral instances. With 9 and 6 instances in unilateral cases and 69 and 10 cases in bilateral cases, third-degree joint disease is the least prevalent.

Table 4 The table reveals a significant association between lifestyle and joint disease severity in both right and left joints. The significance level is 0.05. Health self-responsibility had a statistically significant association with the severity of joint disease in both the right and left joints (X2 = 117.4, p 0.001) for the right joint and X2 = 97.98, p 0.023) for the left joint. Nutrition shows a statistically significant relationship with the severity of joint disease in the right joint and left joint (X2 = 103.2, p = 0.021) and left joint (X2 = 115.499, p 0.002).Physical activity had a statistically significant association with the severity of joint disease in the right joint (X2 = 64.956, p = 0.042) and left joint (X2 = 90.055, p 0.000).Right and left joint stress management (X2 = 153.74, p = 0.036 and 154.57, p 0.033, respectively) are statistically significantly associated with the severity of joint disease. Stress management shows a statistically significant relationship with the severity of joint disease in both the right and left joints (X2 = 153.74, p = 0.036) for the right joint and X2 = 154.57, p = 0.033) for the left joint. Interpersonal relationships do not have a statistically significant association with the severity of joint disease in either the right or left joints (X2 = 55.98, p = 0.981 for the right joint and X2 = 60.91, p 0.945 for the left joint). Both the severity of joint disease in the right and left joints are statistically significantly associated with spiritual growth (X2 = 162.03, p = 0.001) for the right joint and X2 = 153.64, p = 0.003) for the left joint.

Table 1: Socio-demographic Characteristics of the Study Sample

Demographic	Items	Freq.	%
Age	59.4 n ±7.8 SD		
Gender	Male	83	16.6
	Female	417	83.4
Occupation	Private Works	42	8.4
	Employed	38	7.6
	Retired	29	5.8
	Unemployed Un-work	18	3.6
	Housewife	373	74.6
Residence	Rural	123	24.6
	Urban	377	75.4
Educational Level	Low level education (Illiterate, Able to read and write, Primary school, Intermediate school, Secondary school,)	(194 + 24 + 173+22 + 41)	90.8%
	High level education (Institution, College and above)	(19 + 27)	9.2%
Body Mass Index	Obesity I	136	27.2
Total		500	100.0

Table 2: Statistical result of lifestyle domains for patients with knee OA

Life-Style Domains	Never	Rarely	Some times	Often	Routinely	%
Health Responsibility	17.60%	14.84%	20.96%	19.56%	27.04%	100
Nutrition	24.68%	10.64%	18.88%	15.84%	29.96%	100
Physical Activity	58%	13.67%	14.47%	6.73%	7.13%	100
Stress Management	11%	19.4%	22.05%	20.8%	26.75%	100
Interpersonal Relationships	7%	7.84%	15.44%	19.6%	50.12%	100
Spiritual Growth	15.63%	10.31%	15.83%	14.34%	43.89%	100

DISCUSSION

The demographic data of the participants in this study (83.4%) were female, have low levels of education (63.8%), are housewives (74.6%), reside in urban areas (75.4%), and have obesity I (27.2%).Women are more likely than males to have OA in the knee joint. Women's bones and joints are thinner than men's, causing for this.

Education: Compared to those with high levels of education, those with low levels of education are more susceptible to develop knee OA joints. This is because those with low levels of education are less likely to have access to healthcare and preventative treatment.

Occupation: Housewives are more at risk than employed individuals to develop knee joint OA. This is because housewives are more highly susceptible to be sedentary and engage in less physical activity. Place of residence: compared to persons who live in rural regions, urban residents are more likely to develop knee OA. because they are more likely to be overweight or obese. Obese individuals have a high body mass index (BMI). Compared to those with a healthy BMI, they are more likely to have joint problems. This is due to the stress that being overweight causes on the joints.

Other studies results show similar findings in China, USA, and from six continents in over world. [13-15]

In table 2 The findings show the majority of knee osteoarthritis patients do not routinely follow healthy lifestyle habits. For example, just 27.04% of patients said they regularly took responsibility for their health, and only 7.13% of patients said they regularly exercised.

This is consistent with previous research showing that people with knee osteoarthritis are less likely to engage in healthy lifestyle habits. Possible reasons include the pain and stiffness associated with knee osteoarthritis, the belief that joint damage is irreversible, and the lack of access to resources like exercise facilities or healthy food options. Overall, the study highlights the need for more targeted and accessible health care for patients with knee osteoarthritis. These results are consistent with a research studies found similar results. [16-18]

In table 3, The study reveals a significant difference in joint severity between the right and left (unilateral and bilateral) joints. The severity is classified into four degrees: normal, first degree, second degree, third degree, and fourth degree. The table also shows that the most common severity of joint disease in both the right and left joints is first degree, accounting for 80 and 50 of unilateral cases, respectively, and 97 and 116 of bilateral cases, respectively. Second degree joint disease is the second most common, accounting for 18 and 15 of unilateral cases, respectively, and 115 and 93 of bilateral cases, respectively. Third degree joint disease is the least common, accounting for 9 and 6 of unilateral cases, respectively, and 69 and 10 of bilateral cases, respectively. There are no cases of fourth degree joint disease in unilateral but in bilateral cases 42 and 42 case. the table shows that 177 patients (35.4%) had unilateral knee joint OA, 323 patients (64.6%) had bilateral knee joint OA. These findings suggest that bilateral joint involvement is associated with more severe joint disease. This is likely due to the fact that joint disease is more likely to affect both joints than just one joint. The results also reveal that mild joint disease is the most prevalent severity in both unilateral and bilateral joints. However, there are a few differences between the unilateral and bilateral joints. Joint disease severity is slightly higher in the left joint than in the right joint, and it is more common in the bilateral joint than in the unilateral joint. This consists with some studies found these conditions are bilateral affected knee joint more than unilateral affected knee joint and the most common severity degree is mild[19,20].

Table 4: The study found a significant association between lifestyle domains like health self-responsibility, nutrition, physical activity, stress management, and spiritual growth with joint severity. The table demonstrates that the highest association between lifestyle domains and severity is seen in the areas of health self-responsibility, diet, and physical exercise. Therefore, those who are more health conscious, maintain a good diet, and engage in physical activity are less likely to suffer from severe joint disease. For stress management and spiritual development, there is low association between lifestyle domains and severity. However, those who are better at managing stress and who practice their religion had a lower risk of developing severe joint disease. Many studies found that the lifestyle domains associated with the severity of Knee OA, especially diet and physical activity.[21] In France this study found the relationship between the level of life sedentariness and the severity of osteoarthritis symptoms[22].

Table 3: Statistical Results for the affected Joint Severity of the Study Sample

Joint Severity		Affected Joint	
		Unilateral Joint	Bilateral Joint
The severity of the right joint	Normal	70	0
	First Degree	80	97
	Second Degree	18	115
	Third Degree	9	69
	Fourth Degree	0	42
The severity of the left joint	Normal	107	0
	First Degree	50	116
	Second Degree	15	91
	Third Degree	6	73
	Fourth Degree	0	42
Total		177 (35.4%)	323 (64.6%)
		500 (100%)	

Table 4: Statistical Association Relationship between Sample Lifestyle with Severity of the Joint

Lifestyle	The severity			
	right joint		Left joint	
	X^2	Sign	X^2	Sign
Health self-responsibility	117.4	0.001	97.98	0.023
Nutrition	103.2	0.021	115.499	0.002
Physical activity	64.956	0.052	90.055	0.000
Stress management	153.74	0.036	154.57	0.033
Interpersonal relationships	55.98	0.981	60.91	0.945
Spiritual growth	162.03	0.001	153.64	0.003

CONCLUSION

This study concluded that lifestyle factors significantly influence the development and severity of knee osteoarthritis (OA). Factors such as physical inactivity, poor diet, and obesity are major risk factors for OA, which can cause increased stress on the knee joint, damage cartilage, and cause inflammation. However, the study also found that lifestyle factors may be protective against OA. Participants who reported being more physically active, eating a healthier diet, and maintaining a healthy weight were less likely to have severe OA. Thus, interventions targeting lifestyle factors may be beneficial in preventing and managing knee OA.

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Ethics-related matters: On 1st of December, 2022, Ministry of Education/Nineveh Directorate officially approved the collection of data Participants' verbal consent was also asked prior to data collection

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