

The Effect of Lifestyle on Pain Intensity in Knee Osteoarthritis Patients

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ABSTRACT

Background & Objectives: Knee osteoarthritis (OA) is a degenerative condition that damages the cartilage in the knee joint. The cartilage is a soft, rubbery tissue that acts as a joint cushion and friction reducer. As the joint's cartilage diminishes, the bones rub against one another, resulting in pain, stiffness, and less mobility. Knee OA is a painful disorder that progresses with time and affects the whole knee joint, leading to varying pain intensity, 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 the socio-demographic characteristics for knee OA patients.

To identify the lifestyle factors for patients with knee OA.

To assess the effect of lifestyle on the pain intensity 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 and self-admission questionnaire that assessed sociodemographic characteristics, health history, lifestyle factors, and the pain intensity on knee OA patients.

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. 37.2% of them at severe levels of constant pain intense. 28.6% of them at moderate levels of intermittent pain. Most of patients have a sedentary lifestyle. There are significant association between lifestyle domains with joint pain intensity. Lifestyle domains, except health self-responsibility and nutrition, significantly impact constant pain in knee and Health self-responsibility is associated with intermittent pain.

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 pain intensity of knee OA. Lifestyle factors, such as physical activity, stress management, and enough sleep, have been shown to be effective in managing joint pain. 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 knee pain.

Keyword: Knee Osteoarthritis, Life-Style, Factor

INTRODUCTION

Knee osteoarthritis (OA) is a degenerative condition that damages the cartilage in the knee joint. The cartilage is a soft, rubbery tissue that acts as a joint cushion and friction reducer. As the joint's cartilage diminishes, the bones rub against one another, resulting in pain, stiffness, and less mobility.⁽¹⁾

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.^(2, 3)

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.⁽⁴⁾

The development of osteoarthritis demonstrates an association with inflammation, but the source of KOA's disease is still unknown. Pain in KOA is directly caused by joint inflammation, which also causes cartilage loss and may cause intermittent pain sensitivity that finally turns into constant pain.⁽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 orthopedic 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 22nd2022, 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 orthopedic 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 three 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: Assess Pain intensity include: (A measure of Intermittent and Constant Osteoarthritis Pain, ICOAP: Knee Version). The ICOAP is an 11-item questionnaire. Each item is rated from 0 to 4 on a 5-point Likert scale. It has two subscales: constant pain (5 items) and intermittent pain (6 items).

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 for 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 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 3 The data shows that the statistical association relationship between sample lifestyle with the joint pain characteristic, there is a significant association relationship between all lifestyle domains with constant pain at p.value ≤ 0.05 except constant pain with health self-responsibility there is a non-significant association relationship at chi-square (92.27) with p.value (0.054), also with nutrition at chi-square (77.96) with p.value (0.416) only. There is a non-significant association relationship between all lifestyle domains with intermittent pain at

p.value ≤ 0.05 except for intermittent pain with health self-responsibility there is a significant association relationship at chi-square (109.97) with p.value (0.003) only. There is a non-significant association relationship between all lifestyle domains with frequent intermittent pain at p.value ≤ 0.05 except frequent intermittent pain with health self-responsibility there is a significant association relationship at chi-square (104.83) with p.value (0.007), also with stress management at chi-square (151.16) with p.value (0.049) only.

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

Life-Style Domains	Never	Rarely	Sometimes	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 statistical findings indicate there is a significant association between all lifestyle domains and constant pain, except for health self-responsibility and nutrition. According to this, people with knee osteoarthritis may find it difficult to manage their chronic joint pain due to lifestyle issues. The only lifestyle domain that was significantly associated with intermittent pain and frequent intermittent pain was health self-responsibility. As indicated by this, controlling intermittent joint pain may require a special focus on health responsibility.

This consists with some studies found these conditions are like this study found that pain was significantly reduced with

supplements and regular physical activity, while stiffness, physical function scores, and body mass index increased with pain. whereas self-reported health, servings of fruit, supplement use, and meeting physical activity guidelines significantly decrease OA supplement use, physical therapy use, servings of vegetables, or minutes walked per week. Healthy weight maintenance, exercise for at least 150 minutes per week, and supplements represent important modifiable factors for reduce knee OA pain. ^(19,20)

Table 3: Statistical Association Relationship between Sample Lifestyle with the Joint Pain Characteristic

Lifestyle	Constant pain		Intermittent pain		Frequently pain	
	X ²	Sign	X ²	Sign	X ²	Sign
Health self-responsibility	92.27	0.054	109.97	0.003	104.83	0.007
Nutrition	77.96	0.416	75.28	0.502	71.45	0.626
Physical activity	129.36	0.000	65.07	0.051	56.48	0.188
Stress management	184.57	0.000	150.696	0.052	151.16	0.049
Interpersonal relationships	105.53	0.030	85.51	0.316	93.26	0.147
Spiritual growth	162.09	0.001	138.72	0.025	131.57	0.061

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 and worse pain. 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 knee pain. Thus, interventions targeting lifestyle factors may be beneficial in preventing and managing knee pain.

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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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