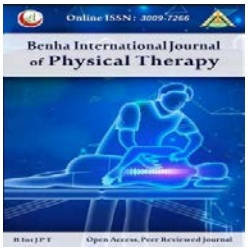
Benha International Journal of Physical Therapy

Online ISSN: 3009-7266 Home page: https://bijpt.journals.ekb.eg/



Original research

Prevalence of knee osteoarthritis

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Article history:
Submitted: 20-12-2023
Revised: 29-12-2023
Accepted: 29-12-2023

Abstract

Background: Knee OA is a highly prevalent chronic degenerative joint disease that causes significant disability. To the researcher's knowledge, local epidemiological studies of knee OA and patient characteristics of patients attending orthopedic outpatient clinics have not been carried out previously in Egypt. **Purpose:** The present hospital-based record trial aimed to determine how prevalent knee OA is (and its features) in Kasr ALAiny (in Cairo) and Qalubiya (in Qalubiya) hospitals in Egypt**. Methods:** The physical therapy records of patients referred to orthopaedic outpatient clinics at these hospitals were reviewed from 1/1/2019 to 31/12/2019. **Results:** It was found that the one-year prevalence of knee OA ranged from 6.6% (107/1633) to 9.25% (151/1633 cases), based on including combined cases, patellofemoral OA, and arthroplasties or not. The male-to-female ratio was approximately 1:4.2. Most cases were affected unilaterally (37.75%), with more on the right side (25.2%). Knee OA was commonly combined with medial meniscal injuries (59%). Knee OA mainly affects females unilaterally (right more than left) and is commonly combined with medial meniscal injury. **Conclusion:** Knee OA is prevalent among Egyptians. So, prophylactic measures should be taken by the stakeholders based on the determined features of knee OA.

Key Words: Knee osteoarthritis; Gender; Egypt; Prevalence; Side.

Introduction

Knee osteoarthritis (OA) is a highly prevalent disease characterized with chronic articular cartilage degeneration causing marked pain and dysfunction[1,2]. There are several factors contributing to the knee OA.[3] In general, OA affected 14-37% of females and 12-24% of males.[4-7] In particular, knee OA affects female more than male (about 2:1).[8] This report of difference in gender is confirmed in a recent meta-analysis.[9] Moreover, bilateral knee OA affects female more than male with a ratio of 2:1.[10] Another study found a lower gender difference (tends to be similar among female and male) in the incidence of knee OA.[11] Unilateral knee OA affects more than 50 % of the cases.[12,13]

Prevalence of OA in general was 12.6-28%.[6,7] Prevalence of knee OA changes among Ancient Egyptians were 7.7% (4/52 mummies; 2 were men and 2 were women).[14] In Egypt, OA affects about 5.5 million or 7% of the population.[15,16]

Please cite this article as follows: Shalash K, Zedan A. Prevalence of knee osteoarthritis. B Int J PT. 2023;1(1): 19-23. DOI: 10.21608/BIJPT.2023.258594.1003.

Knee OA prevalence differs among countries around the world. It varies between 3.8 and 70% based on the study methodology. Knee OA affects about 24.5% of the population in Saudi Arabia.[11] Radiological knee OA is associated with symptoms in 8.5% of the patients and knee pain was 9.1% in Egypt.[17]

Prevalence information in knee OA may help to increase the awareness about its preventive management. Knee OA significantly limits daily activities and life quality. It also may decrease knee OA burdens, by implementing prophylactic measures to decrease the knee OA consequences.

To the knowledge of researchers, this is the first study to determine how prevalent is the knee OA and its features among Egyptian population attending orthopedic outpatient clinics in Cairo and Qalubiya governorates that can help researchers and heath care providers in Egypt. So the aim of this research is to determine how prevalent is the knee OA and its features among Egyptian general population.

Methods

This study is a hospital- based record. It involved all knee osteoarthritis cases at the out-patient clinics of Kasr Al-Ainy (in Cairo) and 23rd of July (in Qalubiya) Hospitals in Egypt during the period between 1/1/2019 and 31/12/2019. The information was gathered from the record of each patient referred to the orthopedic out-patient clinics of two hospitals (Kasr AlAiny and 23rd July) of two Governorates (Cairo and Qalubiya) in Egypt. They were chosen for the availability of large number of patients due to low price of services.

Inclusion criteria:

This trial involved patients with knee OA (including chondromalacia or patellofemoral osteoarthritis and arthroplasties) who got complained and referred in between January 2019 and December 2019. Cases were diagnosed by orthopedist, using X-rays radiographs.

Exclusion criteria:

Patients with Rheumatoid Arthritis and Osteochondritis Dissecans were excluded.

Statistical analyses:

Age, Sex, and affected limb (when available) were extracted, using pilot form, from records of the patients. There was shortage of data availability about the age and the affected limb. Categorical variables were presented as count (percentage). Continuous variables were presented as average and Standard Deviation (SD).

Results

Prevalence of knee OA

The overall count of patients were 1633 cases, among them 151 patients were knee OA (including replacement, patellofemoral, combined injuries), a one-year prevalence of 9.24 %. Specific prevalence of isolated knee OA, patellofemoral OA, arthroplasties, and combined injuries were 6.6%, 0.4%, 0.4%, and 1.9%, respectively. See table (1).

Sex:

Sex distributions are presented in (Table 2). On an average, 19.2% of the cases were males and 80.8% were females. The males: females ratio was about 1:4.2.

Side:

Knee OA mainly occurs bilaterally (32.45%), followed by the right side (25.17%) followed by left side (14.57%). Collectively, occurrence of knee OA unilaterally was 37.75 % (25.2 right + 14.6 left). See table (2).

Classification of combined problems with Knee OA:

The higher prevalence appears for meniscal injuries (mainly medial counting 21 versus 2 for lateral) (59%), followed by lumbar problems (15.4%). See table (3)

Table 1: Prevalence of Knee OA by type (N=1633)

	KOA	PFOA	Arthroplasty	Combined	total
count (percent)	107 (6.55)	7 (0.4)	6 (0.36)	31 (2)	151 (9.25)

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Table 2: Characteristics of Knee OA by gender and side (n=151), data expressed as count (percentage).

		KOA	PFOA	Arthroplasty	Combined	Total
Gender	Male^	18 (16.8)	5 (71.4)	1 (16.7)	5 (16.13)	29 (19.2)
	Female^	89 (83.2)	2 (28.6)	5 (83.3)	26 (83.87)	122 (80.8)
Side	Right	21 (19.6)	2 (28.6)	2 (33.33)	13 (42)	38 (25.17)
	Left	19 (17.8)	1 (14.3)	-	2 (6.5)	22 (14.57)
	Bilateral	41 (38.3)	2 (28.6)	1 (16.7)	5 (16)	49 (32.45)
	NR	26 (24.3)	2 (28.6)	3 (0.5)	11 (35.5)	42 (27.81)

PFOA: Patellofemoral osteoarthritis; KOA: knee osteoarthritis; NR: not reported

Table 3: Classification of combined cases with Knee OA (n=31), data expressed as count (percentage).

		Meniscal injuries	**Lumbar problems**	**ACL injuries**	**MCL injuries**	**Others**	**Total**
Gender	**Male**	4 (17.4)	5 (83.3)	-	-	-	9 (23.1)
	Female	19 (82.6)	1 (16.7)	3 (100)	2 (100)	5 (100)	30 (76.9)
Total		23 (59)	6 (15.4)	3 (7.7)	2 (5.1)	5 (12.8)	39 (100)

ACL: anterior cruciate ligament; MCL: medial collateral ligament; others: include calcaneal spur, hip OA, and cervical spondylosis: total was 39 (instead of 31) as 5 cases shared more than one classification, as ACL plus MCL, so counted as 2 cases.

Discussion

Determination of the distribution and features of knee OA, as gender and side distributions, in Egypt (Cairo and Qalubiya cities) has many vital values; (1) helping accurate sample size calculations for other observational and experimental studies in knee OA, (2) determining the priorities for funding, (3) helping prevention of injury.

The current survey was performed on the knee OA for patients referred to orthopedic physical therapy out-patient clinics of Kasr El-Ainy and 23rd of July Hospitals from 1/1/ 2019 to 31/12/ 2019. There was lack of research about the distribution and features of knee OA in general populations in Cairo & Qalubiya-Egypt .

First finding of the current research showed that prevalence of knee OA ranged from 6.6% (isolated knee OA) to 9.24% (isolated and combined knee OA plus arthroplasty and patellofemoral). This finding differs from the knee OA prevalence in Kingdom of Saudi Arabia that was reported to be 24.5%11. However, this finding can be supported with Fritsch et al.[14] who

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found that prevalence of knee OA changes among Ancient Egyptians were 7.7% (4/52 mummies).

It also can be supported with report of World Health Organization in 200715 and Hassan16 that more than 5 million or about 7 % of the Egyptian patients have OA, representing about 7% of the population. In addition to that, knee OA is symptomatic in about 8.5% of the population and knee pain was 9.1% in Egypt.17 Result of the present report about that prevalence of knee OA in Egypt was 9.24% at maximum, also falls in the range of knee OA prevalence in several countries worldwide that was between 3.8% and 70%.

Second finding of the present study revealed that occurrence of knee OA was larger in female than male with a ratio of 4.2:1. This finding agreed with Felson et al.[8]; Felson and Zhang[10]; Srikanth et al.[9]; Ubaidula et al.6; Vishnoi et al.7; and AlKuwaity et al.[11], who found that, the OA prevalence (as a whole or knee) was more in females (twice at maximum) than males.

Third finding of the present study revealed that knee OA was more prevalent unilaterally (37.75%) than bilaterally (32.5%), and in right side (25.2%) than left side (14.6%). This finding support what is reported by Landefeld et al.[12] and Linton & Lach13 that unilateral knee OA presents in > 50% of the patients. This study is limited by absence of information on patients who were medically managed, including two hospitals only with no information about others, and lack of data as affected limb of some patients, which may slightly affect the specific prevalence.

Conclusion:

This study provided the prevalence and some characteristics of knee OA among Egyptian population living in Cairo and Qalubiya and attending orthopedic outpatient clinics of Kasr AlAiny and 23rd of July hospitals. The study revealed that prevalence of knee OA was 9.24% at maximum. Females have higher risk for knee OA. The most common affected side was right, but occurs bilaterally more than unilaterally. Prevention and treatment of knee OA is warranted.

List of abbreviations

OA: Osteoarthritis; SD: Standard Deviation.

Declarations

Ethics approval and consent to participate were not applicable, as data were taken from records, no access to patients, data were confidential. Permission was taken from health personnel who save the records. Second author registers the demographic and clinical data in these records in the hospital

Consent for publication:

Not applicable, from patients as data taken from records, no access to patients, data were confidential.

Availability of data and materials:

Available by the corresponding author upon reasonable request, by email.

Competing interests:

The authors declare that they had no competing interests.

Funding: No funds or support received.

Acknowledgments:

Authors of this study want to thank Fatma E. R. El-desoqi; Physical therapist at 23rdof July hospital, for her help to extract raw data from physiotherapy records.

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