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Knee-Related Quality of Life and Disease Severity Osteoarthritic Patient Groups with & without Active Religious Prayer Performance.

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ABSTRACT

Introduction: Knee osteoarthritis is a degenerative disease of joints and is the major cause of chronic impairment in older ages. This is the consequence of several years of use accompanied by the effect of wear and tear of bone, joint, and cartilage.

Aims & Objectives: To evaluate the quality of life among patients with osteoarthritis actively and non-actively performing religious prayers in district Swat, Pakistan.

Place and Duration of Study: The study was conducted at District Swat, from November 2019 to September 2020.

Material & Method: A comparative cross-sectional study was conducted among osteoarthritic patients. A pre-tested and validated KOOS questionnaire was administered to osteoarthritic patients (group 1), who had modified their prayer method by using a chair to perform prayers, and compared to another group of osteoarthritic patients (group 2) who were practicing normal praying position. Pain, symptoms, everyday activities, sports and recreation, and knee-related quality of life (QOL) were assessed. SPSS version 22 was used for statistical analysis. P-value ≤0.05 was considered significant.

Results: The total number of patients in both groups was 800. Among those, 54.8% had a family history of knee pain, 60.4% had bilateral knee problems and 93.4% had no prior knee injuries. Group 1 was found to have more complaints related to the knee as compared to group 2 in all subscales of KOOS. Statistically significant relationship was observed between duration of knee pain, family history, knee problem, and previous knee injury between group 1 and group 2. (P <0.05)

Conclusion: The study found that knee function and quality of life deteriorated over the years. By using an alternative way of offering prayers, deep flexion can be limited, thus reducing the pain during prayers.

Keywords: Knee osteoarthritis, pain, prayers, religion, Pakistan

INTRODUCTION

Knee osteoarthritis (OA) is a degenerative disease of joints and is the major cause of chronic impairment in older ages. This is the consequence of several years of use accompanied by the effect of wear and tear of bone, joint, and cartilage. This condition affects health in a variety of ways including physical, mental and cultural, and also the quality of life[1]. According to the Global Burden of Disease (2010), knee and hip osteoarthritis have been named the eleventh highest contributor to global disability[2]. Approximately 80% of people with osteoarthritis will have mobility restrictions and 25% will not be able to perform their main daily activities[3].The prevalence of osteoarthritis is increasing due to an increase in population ageing and risk factors of osteoarthritis in both advanced and developing nations[4].

Knee OA is between 14% to 71% in the Asian population,[5, 6] and its prevalence is higher among females than males at 32% and 28% respectively[7]. Recently, a study reported prevalence of knee osteoarthritis was 56.7% in Pakistan[8].

Knee osteoarthritis is linked to various factors, for instance, sex, ethnic group, occupation, previous history of a knee injury and surgery, and the activities of the daily life of individuals concerning various aspects of culture in particular religious' practices[9]. The stability of knee joint and its range of motion, is significantly important for sitting and rising. The daily religious activities involve an act of sitting on the ground and kneeling at a very young age and is necessary for the individual to hold his legs in an uncomfortable position which leads to improving the muscle flexibility.

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There is, however a difference in the prevalence of knee osteoarthritis among countries that are having the same religious practices. In Saudi Arabia, the prevalence of knee osteoarthritis has shown to be 90%, whereas the prevalence in Turkey is 21% among Muslim adherents[10, 11].

While offering prayers in masjids or at home, the use of a chair as a substitute for an authentic Islamic praying practice on the ground has been generally known among the population of Muslim around the world. Nevertheless, one explanation could be knee osteoarthritis as this is associated with ageing[12]. Knee OA has a significant impact on the social and health status of patients. After a thorough search for the relevant literature, it was identified that no published data were available in Pakistan to explore knee pain and its function, and knee-related quality of life among the practicing Muslims who offer prayers on a chair in Swat, Pakistan. The study aimed to evaluate the quality of life among patients with osteoarthritis actively and non-actively performing religious activities in district Swat, Pakistan.

MATERIAL AND METHODS

A comparative cross-sectional study was conducted from November 2019 to September 2020 in Swat District, a segment of mountainous ranges, the peaks of which are covered by eternal snow in Khyber Pakhtunkhwa province. The approval was obtained from the Ethical Research Committee of Hamdard College of Medicine & Dentistry, Karachi, Pakistan. (HCMD/CHS/188/2019).

Non-actively performing religious prayers (Group 1) comprised of osteoarthritic patients using a chair to offer their prayers five times a day. Actively performing religious prayers (Group 2) included patients with osteoarthritis who are practicing normal praying position.

An equal number of participants were selected from both the groups, and from the same population. Both groups were evaluated for osteoarthritis and their quality of life was assessed. A pilot study involving 60 patients, with 30 individuals assigned to each group, was conducted to assess the prevalence of osteoarthritis. The study revealed a prevalence rate of knee osteoarthritis of 50% in group A and 40% in group B. The sample size was calculated by estimating the difference between two independent proportions, with 95% confidence interval, 5% margin of error, 80% power of test, and 50% prevalence in group 1 and 40% prevalence in group 2. The sample size was found to be 776. However, keeping in view of rejection for participation and non-response rate, the sample size was increased by 5%. A total of 800 participants with equal number of patients in group 1 and group 2, aged 50 years or above, and agreed to participate, were included by using a non-probability convenient sampling technique. Individuals having backache and recent eye surgery were excluded.

The data was collected using the Knee Injury and Osteoarthritis Outcome Score (KOOS) questionnaire based on previously published studies[13,14,15]. The questionnaire has been translated and culturally adapted to 49 different languages worldwide so far[16]. KOOS is a self-administered questionnaire and it measures five domains: pain, symptoms, activities of daily living (ADL), exercise and recreational activities, and knee-related quality of life (QOL). All questions were based on a five point Likert scale that scored from 0 (No problems) to 4 (Extreme problems) and each of the five scores was measured as the sum of the items included. Scores are translated from a scale of 0 to100. Zero signifying that the individual has extreme knee problems and 100 representing no knee problems, as usual in orthopaedics scales and standardized steps. Scores between 0 and 100 reveal the percentage of total possible score obtained.

Data from male participants was collected from different mosques located in the Swat area, while KOOS was administered to female participants at their homes. Before administration of the questionnaire to all participants, a briefing was given on the intent and different aspects of the study. It was also emphasized that the collected data will only be used for research purposes.

After ensuring completeness of the questionnaires, the data was entered in SPSS version 22. Frequency tables have been used to explain the data. Descriptive statistics were used to measure the mean and standard deviation of KOOS score and its subscales. Inferential Statistics were calculated by Chi Square test to observe the association of personal characteristics with group 1and group 2. Linear regression model was used to compare the differences of mean scores of KOOS subscales of group 1and group 2. P-value ≤ 0.05 was considered as statistically significant.

RESULTS

A total of 800 participants with equal number of patients with osteoarthritis in group 1 and group 2 filled the KOOS questionnaire. The majority of participants were male 602 (75.2%) while 198 (24.8%) were female. Slightly more than half of the participants 415 (52.0%) were less than or equal to 60 years of age. The vast majority of 611 (76.4%) participants have been suffering from knee joint pain for less than five years and 438 (54.8%) had a family history of knee pain. A significant proportion of the participants 747 (93.4%) had no prior knee injury while 483 (60.4%) had bilateral knee joint pain. Statistically significant relationship has been observed between duration of knee pain, family history, knee problem, and previous knee injury between group 1 and group 2 (P<0.05).

Among different domains of KOOS subscales, mean and standard deviation of group 1 and group 2 pain domain as 51 ± 13.4 & 84 ± 17.6; symptoms as 48.5 ± 17.6 & 75.8 ± 19.6; activities of daily living as 54.7 ± 11.6 & 84.3 ± 21.7; sports and recreation functions as 46.8 ± 14.7 & 82.4 ± 24.6; and knee-related quality of life as 45 ± 16.9 & 78 ± 13.7. Group 1 were found to have more complaints related to the knee as compared to group 2 in all subscales of KOOS. Statistically significant difference has been observed between age, symptoms, activities of daily living, sports & recreation and knee-related quality of life with group 1 and group 2 (P<0.05). (Table 2)

Age and gender related differences were studied separately in both the groups. In group 1, more difficulty was seen in females and with increasing advance age. Knee related complaints are much lesser in group 2 than group 1 in both genders. (Figure 1)

Figure 1: Mean KOOS score of group 1 and group 2 for men and women in different age groups

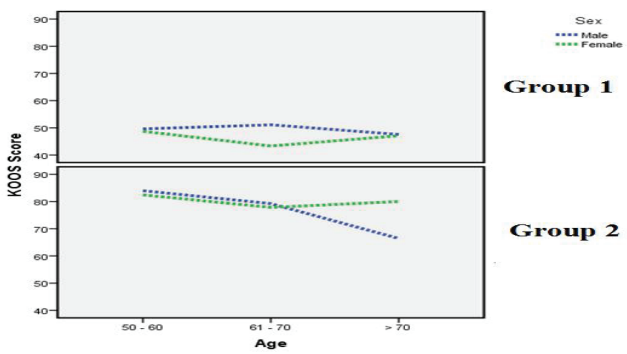

Table 1: Association between different variables and knee problems

Variable	Group 1 n = 400 (%)	Group 2 n = 400 (%)	Total n = 800 (%)	p-value
Age in years				
≤ 60	216 (54.0)	199 (49.8)	415 (51.9)	0.258
> 60	184 (46.0)	201 (50.2)	385 (48.1)	
Sex				
Male	302 (75.5)	300 (75.0)	602 (75.2)	0.935
Female	98 (24.5)	100 (25.0)	198 (24.8)	
Duration of Knee Pain (Years)				
< 5	231 (57.8)	380 (95.0)	611 (76.4)	<0.0001
5 – 10	114 (28.4)	20 (5.0)	134 (16.7)	
> 10	55 (13.8)	0 (0.0)	55 (6.9)	
Family History of Knee Pain				
Yes	130 (32.5)	308 (77.0)	438 (54.8)	<0.0001
No	270 (67.5)	92(23.0)	362 (45.2)	
Knee Problem				
Unilateral	34 (8.5)	3 (3.1)	57(7.1)	<0.0001
Bilateral	366 (91.5)	95 (96.9)	483 (60.4)	
None	0 (0.0)	260 (65.0)	260 (32.5)	
Previous Injury				
Yes	43 (10.7)	10 (2.5)	53 (6.6)	<0.0001
No	357 (89.3)	390 (97.5)	747 (93.4)	

Table 2: Association of KOOS score for group 1 and group 2

KOOS Subscales		Mean	Std. Deviation	95% CI	p-value
Pain	Group 1	50.9	13.4	(14.3 – 21.2)	<0.001
	Group 2	84.0	17.6		
Symptoms	Group 1	48.5	17.6	(17.0 – 25.2)	<0.001
	Group 2	75.8	19.6		
Activities of daily living	Group 1	54.7	11.6	(21.2 – 28.9)	<0.001
	Group 2	84.3	21.7		
Sports & Recreation functions	Group 1	46.8	14.0	(6.8 – 15.7)	<0.001
	Group 2	82.4	24.6		
Knee-related QoL	Group 1	45	16.9	(8.41 – 16.0)	<0.001
	Group 2	78	13.7		

DISCUSSION

The purpose of this comparative cross-sectional study was to assess knee difficulty (loss of function) and quality of life in Swat, Pakistan, using a knee-specific outcomes measure. Group 1 who were adapted to use a chair five times a day to offer their prayers had more knee-related complaints than group 2 who practiced normal praying position.

To determine the process of a knee injury and the result of its treatment, the KOOS questionnaire meets the fundamental requirements of the outcome measures. The study revealed that self-reported measures are much effective when assessing impairment along with clinical examination[17]; the 'Knee injury and Osteoarthritis Outcome Score' (KOOS) is one of the self-evaluated measures, where the maximum score point toward no difficulty and the minimum score indicates the highest level of difficulty.

In our study, mean values of KOOS subscales for group 1 are; pain (50.9), symptoms (48.5), daily life activities (54.7), sports and leisure activities (46.8) and knee-related quality of life (45.0). The KOOS scores found in our sample are higher than other studies conducted in Saudi Arabia[12], Malaysia[1] and India[16]. Overall, the quality of life in subjects suffered from knee osteoarthritis is poor but still higher than in other countries.

The mean age of the participants was 61.4 ± 7.2 years, with the majority 415 (51.9%) between 50 to 60 years of age. Many other studies using the KOOS questionnaire were also carried out on subjects older than 50 years[1,8,12].

Most of the participants 611 (76.4%) had knee pain for less than five years. Other studies also found that the length of knee pain among most participants was less than five years[1,18]. Family history of knee joint pain was present in more than half of the participants 438 (54.8%). Studies have reported that the offsprings of people with knee osteoarthritis are at higher risk of knee joint pain[19].

Most of the patients 483 (60.4%) had bilateral knee joint pain and 747 (93.4%) had no prior knee injury. Research has shown that the majority of patients with bilateral knee joints are affected and there are other risk factors associated with knee osteoarthritis instead of previous knee injuries[18,20].

In all subscales of KOOS, group 1 was found to have more knee related complaints as compared to group 2. Statistically significant differences were observed between the age, symptoms, activities of daily living, sports & recreation, and knee-related quality of life with group 1 and group 2 ($P<0.05$). Other studies also reported the similar KOOS scores in subjects with knee osteoarthritis[12,18].

The present study found that females were almost twice as likely to report knee pain, symptoms, daily activities and sports or recreational limitations. Studies have also pointed out that females are at an increased risk of knee injury risk, musculoskeletal pain and knee osteoarthritis[21,22,23].

Patient with knee osteoarthritis at an advanced stage, the risk of the stiffness of joint and contracture of flexor muscle increases and the range of motion of the knee flexion decreases. Avoiding physical activity enhances knee impairment by reducing movement, which may further exacerbate the chronicity of the disability[21]. Patients with knee osteoarthritis change their actual way to using a chair when offering prayers to resolve terminal knee joint stiffness, particularly reduced knee flexion range of motion. Moreover, the temperature in Swat due to its geographical location remains low throughout the year which further supports that low temperature increases the intensity of pain[24]. The study may suffer from sampling bias because it focuses only on patients from District Swat, Pakistan. This limits the generalizability of the findings. Another limitation of this cross-sectional study is that it cannot establish causality or determine the temporal relationship between altered prayer methods and knee symptoms or quality of life changes over time.

CONCLUSION

The study found that the knee function and quality of life have deteriorated with the progressing years of age. Most patients with osteoarthritis of knee suffer from pain and disability. Awareness regarding knee osteoarthritis in the community especially high-risk group should be promoted. Education regarding the importance of daily exercise, the proper position of the knee joint during daily activities and sports should be given from the early stages of life. Future studies should prioritize the evaluation of KOOS measurement error in different age and condition subgroups.

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