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Knowledge, Attitude, and Practice of Family Physicians on the Management of Osteoarthritis in Adults at Primary Healthcare Corporation, Qatar: 'A Cross-Sectional Web-Based Survey'

Muhammad Atif Waheed[1]*, Ahmed Rashid Shaik[1], Sana Arooj[2], Wajahat Ali Mohammad[3], Irfan Ahmed Shaikh[1], Kholoud Bastaki[4], Jamil Mahmoud Al Enbawi[5], Alaa Alanbawi[6], Walid Qoronfleh[7], Lolwa Al Mannai[8] and Samya Ahmad Al Abdulla[1]

[1]*Senior Consultant Family Medicine, PHCC, Qatar*
[2]*Research Trainee, Weill Cornell Medicine, Qatar*
[3]*GP Locum, South Street Surgery, Wales, UK*
[4]*Research Associate, Qatar University Health, Qatar*
[5]*Referral Coordinator, PHCC, Qatar*
[6]*Director of Nursing, Kings College Hospital, London, Jedda, Alzytona University, Saudia Arabia*
[7]*Q3 Research Institute, MI, USA*
[8]*Manager Referral Management Office and Community Call Center, PHCC, Qatar*

***Corresponding Author:** Muhammad Atif Waheed, Senior Consultant Family Medicine, PHCC, Qatar.

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Abstract

Background: Osteoarthritis (OA) is a chronic degenerative joint condition and is the 15th major cause of disability worldwide. Family physicians play a significant role in managing these patients; their up-to-date knowledge is essential for evidence-based management.

Objective: This study assesses family physicians' knowledge, attitude, and practice toward OA management. Furthermore, it explores knowledge gaps and discrepancies in practice and compares them with similar studies in the Arabian Peninsula.

Methods: We conducted a cross-sectional online survey at Primary Healthcare Corporation (PHCC), Qatar. We sent a targeted online survey link via PHCC intranet email to 724 family physicians working across twenty-eight health centers in Qatar.

Results: About 100 family physicians responded to the survey. Out of 100, 75 (75%) were male, 59 out of 100 (59%) were consultants, and the average age of respondents was 48 (SD 7.1). Overall knowledge of family physicians was 76.7%, exhibiting a positive attitude and good practice. A substantial majority of family physicians, 78 out of 100 (78%), acknowledged that OA adversely affects patients' mental well-being, leading to anxiety and concern. 75 out of 100 (75%) of the participants believed they had adequate training to manage OA. 88 out of 100 (88%) family physicians frequently recommended non-pharmacological management approaches, particularly weight loss. Oral non-steroidal anti-inflammatory drugs (NSAIDs) were offered (75%) most of the time by general practitioners compared to specialists (16.7%) (P = .019). Notably, female physicians exhibited significantly higher utilization rates of pharmacological treatments, which include topical capsicum (P = .013), topical NSAIDs (P = .048), and oral NSAIDs (P = .049), and non-pharmacological treatment like thermotherapy (P = .011).

Conclusion: Overall, this study found that PHCC family physicians' knowledge, attitude, and practice in managing OA were good. However, targeted educational interventions are required, along with professional development programs, to promote evidence-based practices and address gender disparities in prescribing. Future research is necessary to delve deeper into the factors that contribute to the existing gaps in prescribing behavior between male and female physicians. Enhancing OA management further can lead to better patient outcomes and improved quality of care.

Keywords: *Family Physicians; Osteoarthritis; Knowledge, Attitude, and Practice*

Introduction

Osteoarthritis (OA) is a chronic degenerative joint disease that is more prevalent among the elderly. It affects 7% of the global population [1] and is a major cause of physical disability. It is the 15th main reason for people living with disabilities in developed countries, where it is more prevalent. Over the period from 1990 to 2019, there has been a substantial global increase in the prevalence of OA (~113%) [2]. On a global scale, as per the World Health Organisation (WHO), about 9.6% of males and 18.0% of females who are sixty years of age or older suffer from symptomatic OA [3]. In the Gulf Corporation Council (GCC) countries OA incidence rate is estimated to be 3.5% and the prevalence is around 16.0% which is quite high [4]. In Qatar, OA prevalence is not well documented. In a study by Gerber., *et al*. [5], the prevalence of self-reported OA among females in their 40's was found to be 4.8% and 75% of these women were obese. About 1-2.5% of the gross national product (GNP) is spent on OA by developed nations suggesting a significant economic burden in managing these patients [6].

The risk factors for OA are classified into unmodifiable and modifiable risk factors. Unmodifiable risk factors include age, gender, genetic makeup, ethnicity, and musculoskeletal abnormalities. Whereas obesity, hormonal factors, and occupational overuse are modifiable risk factors that contribute to the development of OA [7]. Obesity is one of the major risk factors for developing knee OA among female patients [8]. Although the pathophysiology of OA is somewhat complex, inflammation plays a major role in the disease's clinical manifestation and progression [9]. History and physical examination are the cornerstone for OA diagnosis, though X-rays may be used for confirmation of diagnosis [10]. In OA, pain is the most prevalent symptom and the major cause of disability [11]. The character of pain is usually of the dull ache type, which is exaggerated with exercise and is relieved with rest and by using analgesics. The main goal of treatment for OA is to alleviate pain, improve joint function, prevent further joint deterioration, and at the same time, avoid medication-related side effects [12]. Family physicians play a significant role in treating most of the patients with mild to moderate OA without necessitating the need to be referred to a specialist [13]. However, within their busy clinical practices, family physicians may lag in keeping abreast of the latest evidence-based practices for more efficient OA management.

Family physicians' knowledge, attitudes, and clinical practices related to the optimal management of OA have not been previously studied in Qatar. Therefore, the extent of family physicians' knowledge of OA risk factors, diagnostics, and treatment, and the influence of their attitudes on OA management and patient outcomes remains uncertain within the PHCC in Qatar. Recognising these knowledge and perception gaps among family physicians is imperative for targeted interventions aimed at enhancing the standard of patient care within the PHCC. The main objective of this research is to evaluate the level of knowledge, attitude, and practice (KAP) in the management of OA among the practicing family physicians working at PHCC, Qatar. The other objective is to explore associations between the physicians' KAP and various sociodemographic factors, such as age, gender, years of practice, job title, and postgraduate qualifications. Moreover, this study also seeks to compare KAP with similar studies on OA in the Arabian Peninsula. Gaining insights on the management of OA by family physicians will help in the development of focused educational and training programs for family physicians to keep them up to date with the management of OA in Qatar.

Methods

This research is based on a quantitative approach with a cross-sectional study design.

Participants and data collection

In PHCC, there are 724 family physicians. The sample size is 252 based on a confidence level of 95%, an expected proportion of 0.5, and a margin of error of 5. The PHCC workforce is diverse and includes family physicians from different nationalities. The job titles of the family physicians are based on their postgraduate qualifications and years of experience. General practitioners do not have specialised training in family medicine. Family physicians are those who have completed their specialised training with substantial qualifications (Arab Board, MRCGP, etc.) and have titles of specialists, consultants, and senior consultants based on their years of experience.

The data was collected, by sending an online survey link via PHCC intranet email across all 28 health centres between September 2022 and February 2023. Three reminder emails were sent to increase the response rate. Only 100 family physicians fully completed the survey. The response rate was 13.8%, 100 out of 724.

A nonresponse bias analysis was conducted to compare the demographic characteristics of the early and late participants. The data was split into two groups based on the date of response. Statistically, early responders were similar to late responders in terms of gender (P = .817), nationality (P = .646), and years of practice (P = .749); hence, it can be assumed that the nonresponse bias was minimal.

Data analysis

The research instrument was adapted and modified from previously published and validated studies on OA management [14,15]. It consisted of 4 sections with a total of 31 questions. The 1st section of the questionnaire aimed to capture demographic information, which included age, gender, qualifications, job title held, nationality, and years of practice experience of family physicians. The 2nd section of the questionnaire assessed the knowledge and consisted of nine items which were based on aetiology, clinical presentation, diagnosis, and management. These questions were adapted from Homoud's study on OA management among healthcare physicians in Al Jouf Province, Saudi Arabia [14]. It included a mix of true/false and single-best-answer questions. Overall knowledge of >70% was regarded as good knowledge. The third section assessed physicians' attitudes toward OA patients and consisted of 16 items. These statements were adapted from Homoud's study [14]. Tawfeeq., *et al*. [15] also used these same questions in their OA study in Al Rusafa, Baghdad, Iraq. The two items were modified to fit the study's context in Qatar. This section used a Likert rating scale (agree, neutral, and disagree). The final section of the questionnaire assessed physicians' practice on OA management and consisted of one main question with 20 sub-questions. Its main purpose was to assess physicians' OA practices related to pharmacological and non-pharmacological treatments, physical and occupational therapy, social support, patient education, and self-management programs. The items in this section were rated on a Likert scale to choose from three options- 'most of the time', 'occasionally', and 'not at all' to indicate the frequency of their practice.

The research survey was initially piloted with 14 family physicians for the content validity of the research instrument. Feedback obtained was used to remove any ambiguity from the questionnaire. The pilot data was excluded in the final analysis. Cronbach alpha was .778 for 44 items, excluding the six demographic variables which suggests the tools' internal reliability.

Data obtained from the research instrument was downloaded as an Excel file from Microsoft Office Forms. The data was meticulously scrutinised and coded before being transferred to SPSS version 26. Descriptive and inferential statistics were used. Descriptive statistics visualised central tendency and dispersion in the data. The association between physician KAP and various demographic factors was determined by using inferential statistics such as the Chi-square test. The threshold for statistical significance was set at the standard *P*-value of ≤ 0.05 to ensure a high degree of statistical accuracy.

Results

Demographic characteristics

Most survey participants were male physicians, constituting 75 out of 100 (75%) of the sample. This resulted in a male-to-female ratio of 3:1. The mean age of the respondents was 48 years, with a standard deviation of (SD 7.1) years. The age range of the participating physicians was between 33 and 72 years, showing a diverse age distribution. Most respondents had a family medicine diploma 62 out of 100 (62%), consultants 59 out of 100 (59%), and non-Qatari 95 out of 100 (95%). The socio-demographic characteristics of the participants are summarized in table 1.

		n	(%)
Gender	Male	75	75.0
	Female	25	25.0
Age	<40	9	9.0
	40-50	59	59.0
	50-60	26	26.0
	60-70	4	4.0
	>70	2	2.0
Qualifications	MBBS	12	12.0
	Family Medicine diploma (MRCGP, Arab board etc)	62	62.0
	Master's degree	21	21.0
	Ph.D.	5	5.0
Job tile	General Practitioner	16	16.0
	Specialist	12	12.0
	Consultant	59	59.0
	Senior consultant	13	13.0
Nationality	Qatari	5	5.0
	Non-Qatari	95	95.0
License years	<5	8	8.0
	5-10	27	27.0
	10-20	50	50.0
	20-30	11	11.0
	>30	4	4.0

Table 1: *Demographic characteristics n = 100.*

OA: Knowledge.

Table 2 ranks the percentage of correct answers among family physicians from highest to lowest, based on their qualifications and statistical significance. The correct answer statements that were <70% included: diagnosis of OA can almost be made on history and physical examination 67 out of 100 (67%), radiographic OA changes (except symmetrical joint space narrowing) by 50 out of 100 (50%) and the joints commonly affected and spared in OA (shoulder joint) 50 out of 100 (50%). Family physicians with a family medicine diploma, as compared with those having only an MBBS qualification, in a pair hoc comparison with Bonferroni correction, there was a higher proportion of correct responses to the question, 'treatment of OA should not be based on radiographic abnormalities only' (95.2% vs 58.3%, respectively; P = .002). There was no statistically significant association of knowledge levels regarding age, gender, years of professional experience, and job title.

		Qualifications								X^2	P-value
	Correct	MBBS		Diploma		Masters		Ph. D			
	n = 100	n = 12	(%)	n = 62	(%)	n = 21	(%)	n = 5	(%)		
X-ray can be normal in early OA: (True)	98	12	100	62	100	19	90.5	5	100	7.677	0.053

The cause of Primary OA is: (Multifactorial)	92	12	100	57	91.9	18	85.7	5	100	2.606	0.456
Key recommendations for management of knee OA include all following except: (Pharmacological therapy is cornerstone for management of OA)	89	11	91.7	58	93.5	17	81.0	3	60	7.082	0.069
Treatment of OA should not be based solely on radio-graphic abnormalities: (True)	88	7	58.3	59	95.2	17	81.0	5	100	14.682	0.002
Primary and secondary OA must be differentiated: (True)	82	9	75	49	79	19	90.5	5	100	2.888	0.409
Patients with OA usually presents with all except: (Joint moderate hotness)	74	6	50	51	82.3	13	61.9	4	80	7.480	0.058
Diagnosis of OA can almost always be made on history and physical examination: (True)	67	5	41.7	42	67.7	16	76.2	4	80	4.683	0.197
Radiographs: OA changes include all following changes except: (Symmetric joint space narrowing)	50	6	50	29	46.8	14	66.7	1	20	4.391	0.222
All the following joints are commonly affected in OA except: (Shoulders)	50	4	33.3	34	54.8	10	47.6	2	40	2.162	0.54

Table 2: *Knowledge questions correct answers and base on qualifications.*

OA: Attitude.

Table 3 shows the attitudes of family physicians toward OA. Most of the respondents, 93 out of 100 (93%), agree that collaboration with other healthcare professionals, like trained nurses, dieticians, and physiotherapists, is essential in caring for patients with OA. About 90 out of 100 (90%) physicians agree that patients with OA should receive more attention, and 87 out of 100 (87%) recognize that OA is a common health problem in Qatar. 76 out of 100 (76%) perceive it to be an underestimated health problem in Qatar. Family physicians also expressed a strong interest in involving the patient's family in the management of OA, 82 out of 100 (82%); and 91 out of 100 (91%) recognized themselves as useful persons to support patients with OA. Moreover, around 78 out of 100 (78%) respondents believe that OA causes extensive anxiety and concerns in patients. About 75 out of 100 (75%) expressed that their training was adequate for managing OA, and they believed that non-drug therapy would be more beneficial than drug therapy for most OA patients.

	Agree		**Neutral**		**Disagree**	
	n	**(%)**	**n**	**(%)**	**n**	**(%)**
Collaborations with other health professionals, especially trained nurses, dietitians, and physiotherapist are important tools for the care of patients with osteoarthritis	93	93.0	0	0.0	7	7.0
The primary health care physician could be a useful person to support osteoarthritis patients	91	91.0	1	1.0	8	8.0
More attention should be offered to OA patients	90	90.0	0	0.0	10	10.0
Do you think OA is a common health problem in Qatar?	87	87.0	3	3	10	10

Do you have an interest to involve the family in management of patients with osteoarthritis?	82	82.0	1	1.0	17	17.0
Do you think an OA causes patients extensive anxiety and concern?	78	78.0	1	1.0	21	21.0
Do you perceive OA is an underestimated health problem in Qatar?	76	76.0	5	5.0	19	19.0
Did you perceive your training prepared you adequately to manage patients with osteoarthritis?	75	75.0	5	5.0	20	20.0
Do you perceive that nondrug therapy would be more beneficial than drug therapy for most osteoarthritis patients?	75	75.0	7	7.0	18	18.0
Do you think OA is a part of growing old?	70	70.0	13	13.0	17	17.0
Do you feel that Oral non-opioid analgesics (e.g., acetaminophen) usually produce satisfactory results in the treatment of osteoarthritis patients in general practice?	56	56.0	17	17.0	27	27.0
During counselling of patients with osteoarthritis, education of weight loss should be offered only to adults who are obese [BMI >30 kg/m 2]	26	26.0	67	67.0	7	7.0
Would you prescribe medications for asymptomatic patients, but x-ray positive osteoarthritis findings?	14	14.0	72	72.0	14	14.0
Do you perceive the statement that "an osteoarthritis is not amenable to change"?	14	14.0	59	59.0	27	27.0

Table 3: *Attitudes of family physicians towards Osteoarthritis n = 100.*

OA: Practice.

Table 4 shows family physicians' practice in managing OA. Most family physicians, 75 out of 100 (75%), frequently educate their patients about the condition and self-management programs related to OA and non-pharmacological interventions, such as weight loss (88 out of 100), proper footwear (50 out of 100), mood improvement (50 out of 100), sleep hygiene (47 out of 100), and aerobic conditioning (46 out of 100). About 63 out of 100 (63%) refer to them most of the time for physical and occupational therapy and strengthening exercises. Around 43 out of 100 (43%) will occasionally contact social support through the telephone. 48 out of 100 (48%) of the participants would not consider dietary supplements like *Boswellia* extract, pycnogenol, and curcumin at all, but 33 out of 100 (33%) would most of the time offer patients glucosamine, chondroitin sulfate, vitamin D, vitamin E, omega-3, rose hip, avocado, and ginger. Nearly 40 out of 100 physicians (40%) will not consider thermotherapies. In terms of pharmacological management of OA, topical nonsteroidal anti-inflammatory drugs (NSAIDs) (68 out of 100, 68%), topical capsicum (32 out of 100, 32%), oral non-opioid analgesics (e.g. acetaminophen) (65 out of 100, 65%), and oral NSAIDs (47 out of 100, 47%) were offered to the patients most of the time, while 82 out of 100 (82%) would not offer at all tramadol, other opioids 77 out of 100 (77%), and duloxetine 55 out of 100 (55%), respectively.

The association between the offering of oral NSAIDs and job titles was found to be statistically significant (P = .019). Subsequent post-hoc pairwise comparisons showed that general practitioners exhibited a notably higher rate of 'most of the time' provision of oral NSAIDs (75%) compared to specialists (16.7%). Pharmacological treatments such as topical capsicum, topical NSAIDs, oral NSAIDs, and non-pharmacological treatments like thermotherapy were statistically significantly associated with gender (P = .013; P = .048, P = .049; P = .011, respectively). The results of the post hoc pairwise comparisons indicated significant differences in the provision of treatment options for OA among physicians. Female physicians were more inclined to offer topical capsicum 'most of the time' (52%), compared to their male counterparts (25.3%), as well as topical NSAIDs (84% vs. 62.7%) and oral NSAIDs (64% vs. 41.3%), respectively. Additionally, female physicians (20%) offered thermotherapy more frequently than male physicians (4%).

There was no statistical significance between practice variables and age groups, postgraduate qualifications, license years, or nationality.

	Most of time		Occasionally		Not at all	
	N	(%)	n	(%)	n	(%)
Patient education and self-management programs	75	75.0	22	22.0	3	3.0
Social support through telephone contact	19	19.0	43	43.0	38	38.0
Physical and occupational therapy	63	63.0	34	34.0	3	3.0
Range of motion and strengthening exercises	64	64.0	31	31.0	5	5.0
Aerobic conditioning	46	46.0	30	30.0	24	24.0
Assistive devices for ambulation and activities of daily living	22	22.0	39	39.0	39	39.0
Optimal footwear	50	50.0	33	33.0	17	17.0
Weight loss	88	88.0	10	10.0	2	2.0
Sleep hygiene	47	47.0	31	31.0	22	22.0
Mood improvement	50	50.0	36	36.0	14	14.0
Dietary supplements like *Boswellia* extract, pycnogenol, curcumin	26	26.0	26	26.0	48	48.0
Glucosamine/chondroitin sulfate/Vitamin D/Vitamin E/ Omega-3 /Rose hip/Avocado/Ginger	33	33.0	33	33.0	34	34.0
Thermotherapy	8	8.0	52	52.0	40	40.0
Topical capsicum	32	32.0	61	61.0	7	7.0
Oral non-opioid analgesics (e.g., Acetaminophen)	65	65.0	28	28.0.	7	7.0
Topical Nonsteroidal anti- inflammatory drugs	68	68.0	28	28.0	4	4.0
Oral Nonsteroidal anti-inflammatory drugs (NSAIDS)	47	47.0	50	50.0	3	3.0
Opioid's (excluding Tramadol)	6	6.0	17	17.0	77	77.0
Tramadol	2	2.0	16	16.0	82	82.0
Duloxetine	4	4.0	41	41.0	55	55.0

Table 4: *Family physicians practice on management of osteoarthritis n = 100.*

Discussion

Principal findings

This is the first study to our knowledge that has assessed the level of knowledge, attitude, and practice of family physicians on OA management in Qatar. The overall findings indicate that family physicians in Qatar possess a good level of knowledge (76.7%), exhibit a positive attitude, and use effective management practices for treating patients with OA. Family physicians educate their patients most of the time, 75 out of 100 (75%), and offer non-pharmacological agents such as weight loss, 88 out of 100 (88%), proper footwear and mood improvement, 50 out of 100 (50%), sleep hygiene, 47 out of 100 (47%), and aerobic conditioning, 46 out of 100 (46%). Family physicians with a family medicine diploma showed superior knowledge of the statement that management of OA should not exclusively depend on radiographic abnormalities, compared to those with an MBBS degree (P = .002). Furthermore, general practitioners provided oral NSAIDs most of the time (75%) at a significantly higher rate than specialists (16.7%, P = .019). Additionally, female physicians have shown a significantly higher propensity compared to their male counterparts to prescribe topical capsicum (P = .013), topical NSAIDs (P = .048), oral NSAIDs (P = .049), and thermotherapy (P = .011). This study did not find any statistically significant associations between knowledge of OA and factors such as age, gender groups, license years, and job title among family physicians.

Comparison with previous literature

Our study has shown that those family physicians with a family medicine diploma exhibited higher knowledge in certain knowledge statements, which is consistent with previous literature findings. The board-certified individuals exhibit better knowledge compared to general practitioners [15]. When we compare the knowledge questions in this study with those in previous literature, as illustrated in table 5, we find notable differences. Homoud's study in Saudi Arabia [14] revealed inadequate overall knowledge, with overall correct answers at only 49.7%. In comparison, Tawfeeq., *et al*. study in Iraq reported higher correct response rates, which ranged from 64.2% to 83.3% [14]. Importantly, our study revealed that only 50 out of 100 (50%) of the participants provided correct answers to the following statements: 1) OA typically affects all the joints except the shoulders, and 2) changes observed in OA encompass all the following except symmetric joint space narrowing. Remarkably, the proportion of correct responses for these two statements was much higher in the previous similar study by Tawfeeq., *et al*. [15] (73% and 64.2%, respectively). However, correct responses to these statements were much lower in the study by Homoud [14] (27.3% and 39%, respectively). The differences in knowledge among family physicians in this study, compared to the previous two similar studies, could be attributed to variations in healthcare systems, clinical guidelines, medical curricula, regulatory frameworks, and opportunities for continuous medical education.

Henry Blake., *et al*. [16] conducted a systematic review that confirmed the limited role of X-rays in the diagnosis of OA due to their minimal clinical correlation. Over-reliance on imaging can lead to negative outcomes. The patient's history and examination can readily lead to a preliminary diagnosis of OA [17-20]. In this study, only 67 out of 100 (67%) answered correctly to the statement that OA diagnosis can almost always be made based on history and physical examination compared to Tawfeeq., *et al*. [15] which was (76.5%) and Homoud [14] 71.4% respectively, which suggests knowledge gaps and the need for further training to reduce reliance on X-rays.

Statements with correct answers	**Correct answer (%)**		
	PHCC **n = 100**	**Tawfeeq., *et al*. (2019)** **n = 204**	**Homoud, (2012)** **n = 77**
X-ray can be normal in early OA: (True)	98.0	-	-
The cause of Primary OA is: (Multifactorial)	92.0	78.4	59.7
Key recommendations for management of OA include all of following except: (Pharmacological therapy is cornerstone for management of OA)	89.0	78.4	42.9
Treatment of OA should not be based solely on radio-graphic abnormalities: (True)	88.0	81.4	74.0
Primary and secondary OA must be differentiated: (True)	82.0	83.3	74.0
Patients with OA usually presents with all except: (Joint moderate hotness)	74.0	75.0	39.0
Diagnosis of OA can almost always be made on history and physical examination: (True)	67.0	76.5	71.4
All of the following joints are commonly affected in OA except: (Shoulders)	50.0	73.0	27.3
Radiographs: OA changes include all of following changes except: (Symmetric joint space narrowing)	50.0	64.2	39.0

Table 5: *Comparative analysis between PHCC and previous two studies.*

Family physicians working at the PHCC in Qatar have shown an overall positive attitude toward OA. It is important to note that physicians' perspectives and attitudes shape their clinical practices. A significant proportion of family physicians in our study perceived OA as a prevalent issue, with 87 out of 100 (87%) considering it a common problem and 78 out of 100 (78%) believing that it is underestimated. The scoping review by Nissen., *et al.* [21] revealed that clinicians, particularly general practitioners, hold a negative

view of physical therapy, as they perceive OA as a degenerative disease that ultimately requires a joint replacement. In our study, 93 out of 100 (93%) of the participating physicians recognized the importance of collaborating with other healthcare professionals, like trained nurses, dietitians, and physiotherapists, in managing OA patients. About 82 out of 100 (82%) of the family physicians agreed that patients' families should be involved in managing patients with OA. Our study has shown that 75 out of 100 (75%) physicians perceived that they had received appropriate training for managing OA patients, which is significantly higher than the two previous studies conducted in Saudi Arabia (16.9%) and Iraq (44.2%), as shown in table 6.

	PHCC n = 100	**Tawfeeq., *et al.* (2019) n = 204**	**Homoud, (2012) n = 77**
Collaborations with other health professionals, especially trained nurses, dietitians, and physiotherapist are important tools for the care of patients with osteoarthritis	93.0	81.9	93.5
The primary health care physician could be a useful person to support osteoarthritis patients	91.0	89.7	80.5
More attention should be offered to OA patients	90.0	84.3	85.7
Do you think OA is a common health problem in Qatar?	87.0	-	-
Do you have an interest to involve the family in management of patients with osteoarthritis?	82.0	76.5	77.9
Do you perceive the physicians in primary care centres are capable of achieving a major role in control of osteoarthritis?	80.0	72.5	59.7
Do you perceive OA is an underestimated health problem in Qatar?	78.0	-	-
Do you think an OA causes patients extensive anxiety and concern?	78.0	62.7	89.6
Did you perceive your training prepare you adequately to manage patients with osteoarthritis?	75.0	16.9	44.2
Do you perceive that nondrug therapy would be more beneficial than drug therapy for most osteoarthritis patients?	75.0	70.6	58.4
Do you think OA is a part of growing old?	70.0	79.9	67.5
Do you feel that Oral non-opioid analgesics (e.g., acetaminophen) usually produce satisfactory results in the treatment of osteoarthritis patients in general practice?	56.0	61.8	50.6
During counselling of patients with osteoarthritis, education of weight loss should be offered only to adults who are obese [BMI ≥30 kg/m^2]	26.0	31.9	55.8
Would you prescribe medications for asymptomatic patients, but x-ray positive osteoarthritis findings?	14.0	21.6	40.3
Do you perceive the statement that "an osteoarthritis is not amenable to change"?	14.0	61.3	29.9

Table 6: *Attitude towards management of OA with previous two studies.*

Nonpharmacological therapies and self-management programs play significant roles in the treatment of OA [22]. In addition to weight loss, which is considered a core treatment for overweight and obese patients with OA [23], specifically knee and hip OA, preventing weight gain is also important to improving outcomes [24]. In this study, 88 out of 100 (88%) physicians recommended weight loss, along with other non-pharmacological options such as exercise, aerobic conditioning, optimal footwear, and sleep hygiene, all of which

can effectively manage symptoms and slow the progression of OA. There is no evidence to suggest that dietary supplements such as glucosamine, chondroitin sulfate, vitamin D, vitamin E, omega-3, rose hip, avocado, and ginger have any role in the treatment of OA. 33 out of 100 family physicians offered these supplements most of the time, which suggests family physicians are not adhering to the latest evidence-based practice and clinical guidelines.

Our study has shown a discrepancy in the perceived prescribing behavior of female and male physicians to prescribe pharmacological treatments such as topical NSAIDs, oral NSAIDs, topical capsicum, and non-pharmacological treatments like thermotherapy ($P < .05$), which is consistent with previous research findings. The female physicians showed more inclinations toward prescribing opioids or antidepressants compared to their male counterparts in frail elderly patients with unmanaged pain, depression, or advanced metastatic prostate cancer in a study by Shugarman., *et al*. [25]. Similarly, Safdar., *et al*. [26] found that female physicians were more likely to administer analgesics overall to all patients and opioids to female patients, whereas male physicians were more likely to prescribe opioids to male patients in emergency settings. Conversely, Veldhuijzen., *et al*. [27] found that female physicians are likely to recommend nonpharmacological agents such as physical therapy and exercise, whereas male physicians were more inclined to prescribe first-line pharmacological agents for lower back pain. Similarly, Lazkani., *et al*. [28] found that there was no gender difference among general practitioners in how they prescribe analgesics for the WHO pain ladders 1-3. However, the study did show that female practitioners tend to lean more toward prescribing those slow-acting, symptomatic medications, whereas male physicians prefer the newer anti-neuropathic medications when they're treating older adults with osteoarthritis. This could be due to many gender-related factors, such as female physicians being more empathetic and careful, having a conservative approach [29], being more patient-centered, having distinct attitudes toward pain management, and adhering more to clinical guidelines.

Duloxetine is a treatment option for knee OA, but due to its potential gastrointestinal side effects, its usage is limited. Moreover, it is not recommended for patients who have concomitant gastrointestinal and cardiovascular morbidities [30]. In this study, the utilization of duloxetine by physicians is relatively low, with only 4 out of 100 (4%) of them offering it frequently, whereas the majority, accounting for 55 out of 100 (55%), do not offer it as a treatment option for OA. Similarly, the utilization of tramadol among physicians was quite low, with only 2 out of 100 (2%) of them offering it 'most of the time', while the majority, 82 out of 100 (82%), did not offer it at all. It is important to note that tramadol at a dosage of 300 mg per day demonstrated only a marginal improvement in pain and function in a recent systematic review and network of randomized controlled trials that evaluated its efficacy and safety in knee and hip osteoarthritis, but it was also associated with an increase in adverse events [31].

Limitations of the Study

There are a few limitations in this study. This study has relied on self-reported data from physicians, which can potentially introduce a recall bias, affecting the data's accuracy. Moreover, our targeted sample represents 13.8% of the physicians' population from a single institute, which limits its generalizability. However, PHCC is the main provider of primary health care services in Qatar via its 28 health centers scattered across all regions of the country. Furthermore, this study has not investigated the underlying reasons for gender-based disparities in prescribing patterns among physicians. Investigating the factors responsible for the difference in prescribing behaviors is important. This will help to formulate strategies to minimize any bias that may affect patient outcomes. We recommend future research to explore patient experiences and outcomes related to OA management.

Conclusion

This study has provided very useful insights into the knowledge, attitude, and practice of OA management among family physicians working at the PHCC, Qatar. Overall, family physicians' KAP scores on the management of OA were good. However, we observed some variations in the depth of knowledge based on the physicians' qualifications and job titles. The physicians with a family medicine diploma demonstrated a deeper understanding in specific areas compared to those with only an MBBS degree. Similarly, general practitioners tend to prescribe oral NSAIDs more frequently than specialists. This study has also found a difference in prescribing behaviors based on physician gender. Female physicians are more inclined to prescribe topical capsicum, topical NSAIDs, and oral NSAIDs, and recommend

thermotherapy than their male counterparts to OA patients. Additionally, a difference in the level of KAP compared with the other two similar studies in the Arabian Peninsula suggests contextual factors and different healthcare systems may influence family physicians' knowledge and practice related to OA. Delivering tailored educational, training, and professional development programs could further enhance the knowledge and practice of family physicians on OA management, addressing the variations in knowledge and practice. Future research can investigate the factors influencing gender prescribing behavior and examine its potential impact on patient safety and clinical outcomes. We can assess this by examining the dynamics of patient-provider communication and health outcomes and conducting qualitative research and longitudinal studies to understand the deeper and richer perspectives of both physicians and patients. This will help to formulate strategies to improve physicians' knowledge and competence, enhancing the overall quality and standard of care provided to OA patients.

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Ethics Approval

This research was approved by Primary Health Care Corporation's Institutional Review Board with reference number: PHCC/DCR/2022/06/037.

Informed Consent Statement

Implied consent was obtained from all the study participants.

Data Availability Statement

All data is included within the article or supplementary material.

Conflicts of Interest

The authors declare no conflict of interest.

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