ORIGINAL ARTICLE

Rheumatology Quarterly

Bağlan Yentür et al. Knowledge About Foot in Rheumatoid Arthritis

DOI: 10.4274/qrheumatol.galenos.2023.21931
Rheumatology Quarterly 2023;1(2):51-6

INVESTIGATION OF KNOWLEDGE ABOUT FOOT HEALTH IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Abstract

Aim: Foot involvement is frequently observed in patients with rheumatoid arthritis (RA). However, the knowledge about foot health in patients with RA is limited and the awareness of physicians is not sufficient. The purpose of this study was to investigate knowledge about foot health and related factors in patients with RA.

Material and Methods: This study included 115 patients diagnosed with RA. Demographics of patients were recorded. The Overall Foot Health Questionnaire (OFHQ), Foot Function Index (FFI), and Health Assessment Questionnaire (HAQ) were used to evaluate knowledge level about foot health, foot function, and general health status, respectively.

Results: The study was completed with 111 patients with RA. It was found that the foot health knowledge level of patients with RA was 9.03±3.9, out of 18. A significant difference was found in gender, occupation, smoking, and education level according to OFHQ, and correlation was found between OFHQ and disability subscale of FFI ($p<0.05$). There was no significant correlation between OFHQ and pain and activity restriction subscales of FFI and HAQ ($p>0.05$).

Conclusion: It was found moderate level of knowledge of foot health in patients with RA. Therefore, it is important to provide more information about foot health protection and to include patients' education as a part of treatment.

Keywords: Foot health, knowledge, rheumatoid arthritis

INTRODUCTION

Rheumatoid arthritis (RA) is a systemic, inflammatory, chronic rheumatic disease that progresses with articular and non-articular findings, especially small joint involvement. The etiology of the disease is not known and it is seen two times more in women than in men (1,2). Synovial inflammation and joint destruction result in pain, loss of function, and muscle atrophy. These symptoms cause disability and decreased the quality of life (3). The foot involvement is commonly seen in RA. More than 80% of patients with RA complains of constant foot pain (4,5). Metatarsophalangeal joint and midfoot involvement is frequently observed. The transverse arch flattened may occur as a result of damage to the subtalar, tibiotalar, and talonavicular joints. Hammer or trigger finger may develop due to subluxation of metatarsal heads. Foot pain and paresthesia due to comprthe compressionostethe posterioral nerve, hallux

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Received: 29.05.2023 **Accepted:** 29.05.2023 **Publication Date:** 20.06.2023

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valgus and, rheumatoid nodule may be observed in RA patients. Rheumatoid nodule in Aschilles can cause spontaneous rupture in the tendon. Calluses in subcutaneous tissue caused deformities and skin ulcerations may cause foot pain (6). Although foot pain and disability are common in patients with RA, the foot is often overlooked in the routine examinations. There is no evaluation of foot and ankle in Disease Activity Score-28, which is used commonly for evaluating disease activity. Therefore, needs about foot remain in the background in these patients (7,8). Professional foot care is important for patients with RA in preventing new foot problems or reducing existing ones. However, some patients receiving podiatric support complain about just focusing on skin and nail care and not evaluating joint pain, self-care, or more detailed assessment of foot (9,10). It is important to evaluate foot in detail for determining potential problems and monitoring foot health (11). Therefore, patients should have a high level of knowledge about foot health to protect their foot health. Studies investigating knowledge of the disease in RA concluded with different results (12-14). However, to the authors knowledge, there is no study investigating knowlthe knowledgeoot health in patients with RA. The aim of this study was to evaluate knowledge of foot health and investigate the relationship between knowledge of foot health and demographics, foot function, and general health in patients with RA.

MATERIAL AND METHODS

This study was approved by the Fırat University Clinical Research Ethics Committee (decision no: 2022/06-33, date: 21.04.2022). A written consent form was obtained from the patients. This study was applied properly according to the Helsinki Declaration and ethical principles.

Patients

This study included 115 patients who had been diagnosed with RA on the basis of the American College of Rheumatology/European League Against Rheumatism 2010 criteria, aged between 18 and 65 years and had no changes in medical treatment in the last three months. Patients who had malignancy and pregnancy were excluded from the study. Demographics including gender, age, length, weight, smoking, and education level were asked and recorded.

Outcome Measurements

Overall Foot Health Questionnaire

The Overall Foot Health Questionnaire (OFHQ) was developed by Reina-Bueno et al. (15) in 2019. The questionnaire includes 12 questions evaluating knowlthe knowledgeoot health in patients with RA. Patients want to reply as “yes”, “no”, “do not know” or “do not answer” in questions 1 to 7, 9 and 10. The role of podiatrist is asked and the patients are asked to mark among various options in question 11. Question 12 is only informative. Total score is calculated for questions 1 to 7, and 10, have 1 point each, when patients answer “yes”, and 0 points when the answer is any other, for question 8 has 1 point when patients answer “straight, without trimming the tips”, and 0 points when the answer is any other, for question 9 has 1 point when patients answer “no”, and 0 points when the answer is any other and for question 11 has 1 point for each selected option, except “do not know” and “do not answer”, which has 0 points. High scores indicate a high knowledge level of foot health in RA.

Health Assessment Questionnaire

The Health Assessment Questionnaire (HAQ), which evaluates disease-specific functional status, was modified by Pincus et al. (16). Turkish validity and reliability was conducted by Küçükdeveci et al. (17). The questionnaire is frequently used to evaluate functional status and level of daily living activities in patients with rheumatic diseases. It consists of 20 questions evaluating 8 activities including dressing and grooming, arising, eating, walking, hygiene, reach, grip, and common daily activities. Scoring for each activity was determined according to the highest score obtained from the questions in that group. The total score is calculated by adding the obtained scores and dividing by eight. The total score ranges between 0 and 3, and high scores indicate more functional dependence (17).

Foot Function Index

The Foot Function Index (FFI) is a widely used questionnaire developed to measure the impact of foot pathologies (18). The index consists of 23 questions including 3 subscales of pain, disability, and activity restriction. The pain subscale consists of 9 questions evaluating foot pain level. The disability subscale, which consists of nine questions, assesses the difficulty in functional activities due to foot problems. Activity restriction includes 5 questions and evaluates the activity restriction due to foot problems. Each item scored between 0 and 10, and a high score indicates more disability, pain, or activity restriction. A Turkish validity and the reliability study was published in 2014 in patients with plantar fasciitis (19).

Statistical Analysis

Statistical analysis was performed using SPSS 21.0. Categorical measurements were expressed as number and percentage, and numeric measurements were presented as the mean and

standard deviation. The Independent samples t-test was used for two-group variables and one-way ANOVA was used for variables with more than two groups. Pearson correlation test was used for correlation analysis. A p value of <0.05 was considered statistically significant.

RESULTS

A total of 115 patients were enrolled in the study. Four of them were excluded from the study because 3 patients had pregnancy and one were not fulfill the questionnaires. Thus, the study was completed with 111 patients with RA. Demographics and measurement results are summarized in Table 1. Significant differences were found in gender, occupation, smoking, and education level ($p<0.05$). The scores of OFHQ were significantly higher in males than females, having occupation than non-occupation, smoking than non-smoking, and high school and graduate than primary school ($p<0.05$) (Table 2). A significant correlation was observed between OFHQ and FFI disability subscale, while no significant differences were observed between OFHQ and HAQ and pain and activity restriction subscales of FFI. Other correlations are summarized in Table 3.

DISCUSSION

This study was designed to evaluate the knowledge of foot health in patients with RA. As a result, patients participating in this study had a moderate level of knowledge of foot health. Gender, occupation, smoking, and education level were found to affect knowledge of foot health. Additionally, a correlation was found between knowledge level and foot disability. In the light of these results, knowledge of foot the foot health of patients with RA was found to be insufficient and demographics were concluded to be effective on knowledge level.

Although there are studies investigating knowledge level about the disease (20), general health (21), pain (21), self-control of the disease (21), perception of general health (22) and satisfaction (23) in patients with RA, to the authors knowledge, there is no study investigating knowledge about foot health and related factors. Foot involvement in RA is frequently seen and causes disability, physical inactivity and decreased quality of life in RA patients. In addition, it affects mobility, balance and gait (6). Therefore, protection of foot health is essential in patients with RA. A moderate level of knowledge about foot health was concluded in the study, which may be insufficient to protect foot health. This result indicates the necessity to provide more information about foot health. There was no chance to compare the results with other studies in the literature since no other study evaluating the knowledge level of foot health in patients with RA. Studies investigating knowledge about illness concluded a moderate or subpar level of knowledge in RA patients (12-14, 24). Long- or short-term patient education was suggested because

Table 1. Characteristic features and measurement results of patients with RA

Characteristic or measurements	Mean (± SD) or n (%) (n=111)
Age (years)	51.70±11.65
Height (m)	1.61±0.08
Weight (kg)	70.08±13.88
BMI (kg/m^2)	27.00±5.52
Gender	
Female	73 (65.8%)
Male	38 (34.2%)
Disease duration	12.10±9.95
Smoking	
Yes	25 (22.5%)
No	86 (77.5%)
Marital status	
Married	83 (74.8%)
Single	28 (25.2%)
Occupation	
Yes	19 (17.1%)
No	92 (82.9%)
Chronic diseases	
Yes	-
No	-
Education level	
Primary school	92 (82.9%)
High school	8 (7.2%)
University	11 (9.9%)
OFHQ	9.03±3.9
FFI	
Pain subscale (L)	40.24±20.22
Pain subscale (R)	40.41±20.72
Disability subscale (L)	53.19±27.97
Disability subscale (R)	52.68±28.15
Activity restriction subscale (L)	32.27±23.84
Activity restriction subscale (R)	32.53±23.84
HAQ	1.54±5.39

BMI: Body Mass Index, OFHQ: Overall Foot Health Questionnaire, FFI: Foot Function Index, HAQ: Health Assessment Questionnaire, SD: Standard deviation, RA: Rheumatoid arthritis

of these studies (23). Studies investigating the knowledge and practice of foot care are focused on diabetic foot (25-28). It was found that one third of diabetic patients had poor knowledge about foot care (28) and needed a targeted educational program to promote knowledge of foot care and self-care management of patients with diabetes (25,26). A significant difference among knowledge about foot health and gender, occupation, smoking, and education level was found in this study. It was concluded that males, working patients, smokers, high school or university graduates had a high knowledge level about foot health according to females, non-working patients, non-smokers, and primary school graduates, respectively. Education level and having a profession that brings many innovations in socio-cultural terms (29) may affect knowledge level. Although RA mostly affects women, the study concluded that men had a higher level of knowledge. Males who participated in our study had a higher education level than females, which may be a reason for the difference. Similarly, most smokers were male, which may explain the high levels of knowledge about foot health according to non-smokers. Wardt et al. (30) found a positive correlation between education level and patient awareness level. In addition, they concluded that individuals with a higher education level were less prone to have information about rheumatic diseases than those with a lower level of education. It was underlined that training or talks on rheumatic diseases may provide an earlier diagnosis or treatment (31). A positive correlation between scores of knowledge about RA and education level in Bangladeshi patients (32). Vignos et al. (33) and Hill et al. (13) also concluded a positive correlation between the level of education and knowledge scores. Our results were parallel to the results of these studies. HAQ and FFI were used to evaluate general health status and foot function, respectively. A significant correlation was found between knowledge of foot health and disability subscale of FFI, although no significant correlation was found between knowledge level and HAQ, pain subscale, and activity restriction subscale of FFI. These results

Table 2. The comparison of foot health knowledge level according to characteristic features

Demographics		n	Mean ± SD	p
Gender	Female	73	8.41±3.87	**0.019***
	Male	38	10.23±3.71	
Occupation	Yes	19	11.52±3.06	**0.002***
	No	38	2.16±9.09	
Smoking	Yes	25	11.00±3.64	**0.004***
	No	86	8.46±3.81	
Marital status	Single	28	9.42±4.41	0.541
	Married	83	8.90±3.74	
Education level	Primary school	92	8.34±3.83[A]	**0.000****
	High school	8	12.50±2.61[B]	
	Graduate	11	12.27±1.84[B]	

*p<0.05, **p<0.001, Significant difference was observed among different letters (p<0.05).
SD: Standard deviation

Table 3. Correlations among OFHQ, HAQ and pain, disability, and activity restriction subscales of FFI

	OFHQ	HAQ	FFI (Pain) (L)	FFI (Pain) (R)	FFI (Disability) (L)	FFI (Disability) (R)	FFI (Activity restriction) (L)	FFI (Activity restriction) (R)	FFI (Total) (L)	FFI (Total) (R)
OFHQ	1	0.042	-0.010	-0.011	**-0.211***	**-0.225***	-0.158	-0.149	-0.151	-0.152
HAQ	0.042	1	0.124	**0.221***	0.152	-0.002	0.049	0.164	0.118	**0.540****
FFI (Pain) (L)	-0.010	0.124	1	**0.986****	**0.827****	**0.814****	**0.745****	**0.747****	**0.908****	**0.905****
FFI (Pain) (R)	-0.011	**0.221***	**0.986****	1	**0.820****	**0.793****	**0.730****	**0.744****	**0.97****	**0.905****
FFI (Disability) (L)	**-0.211***	0.152	**0.827****	**0.820****	1	**0.987****	**0.839****	**0.843****	**0.962****	**0.962****
FFI (Disability) (R)	**-0.225***	-0.002	**0.814****	**0.793****	**0.987****	1	**0.843****	**0.829****	**0.954****	**0.961****
FFI (Activity Restriction) (L)	-0.158	0.049	**0.745****	**0.730****	**0.839****	**0.843****	1	**0.993****	**0.923****	**0.927****
FFI (Activity restriction) (R)	-0.149	0.164	**0.747****	**0.744****	**0.843****	**0.829****	**0.993****	1	**0.924****	**0.927****
FFI (Total) (L)	-0.151	0.118	**0.908****	**0.897****	**0.962****	**0.954****	**0.923****	**0.924****	1	**0.999****
FFI (Total) (R)	-0.152	0.540	**0.905****	**0.905****	**0.962****	**0.961****	**0.927****	**0.927****	**0.999****	1

*p<0.05, **p<0.001.
OFHQ: Overall Foot Health Questionnaire, FFI: Foot Function Index, HAQ: Health Assessment Questionnaire

indicate that difficulties experienced by patients with RA during activities of daily living affect their level of knowledge. However, the fact that the level of knowledge was not correlated with general health status on other subscales of FFI may be due to patients' ignorance of the necessity of protecting foot health in coping with foot problems. Foot skin care choosing suitable shoes, and getting support from podiatrists in necessity may be beneficial for these patients. Talks or educaeducationuding foot health should be provided to patients with RA.

Study Limitations

Foot deformities of patients were not recorded and the correlation between knowledge level and presence of foot deformities was not investigated in this study, which may be considered a limitation.

CONCLUSION

Patients with RA have moderate level of knowledge about foot health according to this study. In addition, gender, occupation, smoking, education level and disability of foot were found to effect knowledge level about foot health in RA patients. It may be beneficial to inform RA patients by organizing talks or enlightening them during individual appointment. Future studies should contain the effects of educations about foot health protection.

Ethics

Ethics Committee Approval: This study was approved by the Fırat University Clinical Research Ethics Committee (decision no: 2022/06-33, date: 21.04.2022).

Informed Consent: A written consent form was obtained from the patients.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: R.P.S., Concept: S.B.Y., Design: S.B.Y., Data Collection or Processing: S.B.Y., Analysis or Interpretation: S.B.Y., Y.G., Literature Search: S.B.Y., R.P.S., Writing: S.B.Y.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study received no financial support.

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