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Original Article

Quality of life in fibromyalgia, osteoarthritis and rheumatoid arthritis patients: Comparison of different scales

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ABSTRACT

Aim of the work: To compare fibromyalgia syndrome (FMS), osteoarthritis (OA) and rheumatoid arthritis (RA) patients in terms of their measured quality of life (QoL).**Patients and methods:** Fifty-nine FMS patients, 165 OA and 57 with RA were assessed. QoL Short Form (SF) scales, World Health Organization QoL (WHOQoL) Brief and Quick-Dash scales were measured. Covariance analysis was used for group comparisons.**Results:** The mean age of FMS patients was 40.4 ± 10.9 years; OA was 54.5 ± 15.7 years and RA 46.9 ± 15 years ($p < 0.001$) mostly were females. The disease duration in FMS was 4 ± 3.6 years; in OA was 6 ± 4.8 years and 5.1 ± 4.3 years in RA. After effects of age, gender and educational level on scores were eliminated, at least one SF scale was found to be significantly higher in FMS and OA in terms of Physical and Role function, General health, Vitality, Social function, Emotional role, mean of Mental health subscale in addition to the physical (PCS) and mental (MCS) summary scales. The Quick-Dash score was higher in the RA group. Physical sub-dimension scores of WHOQoL Brief scale were significantly lower in RA group. In addition, social relations sub-dimension score was found to be higher in OA than RA group. MCS scores of SF-36, SF-12 and SF-6D were found higher than PCS scores in the three diseases. PCS score was found significantly higher only in FMS group.**Conclusions:** RA patients had worse QoL than FMS and OA according to PCS and MCS. SF-12 and SF-6D can be used instead of SF-36 or WHOQoL Brief scales for faster results.© 2017 Egyptian Society of Rheumatic Diseases. Publishing services provided by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Quality of life (QoL) is the emotional and personal response to the difference between the activities that a patient can and should normally do and since it is a quality that is experienced subjectively, it is determined with a wide variety of scales [1]. QoL is predictive of morbidity and mortality [2] and its consideration has become increasingly important in decisions regarding resource allocation, intervention design, and treatment of individuals with rheumatic diseases [3].

Rheumatic diseases are the most common diseases all over the world. They cause pain, functional impairment, work disability, and affect individuals' QoL [4,5]. Disorders such as fibromyalgia syndrome (FMS), rheumatoid arthritis (RA) and osteoarthritis

(OA) constitute a large portion of these conditions. FMS is a complex clinical disease that can be accompanied by several symptoms and bodily pain [6]. It does not have any specific symptoms, radiological or laboratory findings yet negatively affects the QoL. OA which is characterized by the damage of joint cartilage and subchondral bone is the most common joint disease and causes a considerable disability [7,8]. RA is a chronic systemic inflammatory disease that primarily affects joints. The progressive damage in cartilage and bones causes severe functional restrictions [4,5,9,10]. RA, OA and FMS patients experience limitations in their daily activities and participation restrictions and as a result of these they become physically inactive. This causes gradual decrease in their life quality [11].

There are several scales that measure the QoL. The QoL short form (SF-36v2) scale which is made up of 36 items and 8 sub-dimensions is widely used to measure the QoL and evaluates health in positive and negative aspects [12,13]. This form also has other versions; a shorter version called SF-12 scale [14] com-

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posed of 8 sub-dimensions and 12 items, another scale called SF-8 scale [15] that excludes mental health and is composed of 7 dimensions and 8 questions and the last one called SF-6D [16] scale excluding 2 dimensions and including 6 dimensions and 11 questions. WHOQoL brief scale [17] which is developed by World Health Organization (WHO) and composed of 27 questions and 4 sub dimensions and Quick-Dash Scale [18] that gives quick results, composes of 11 questions but evaluates only one dimension are also used for this purpose. In Turkey, the use of SF-12, SF-8 and SF-6D scales to measure and compare the QoL of OA, RA and FMS patients has not been encountered. No information about the simultaneous use of these scales on rheumatologic diseases has been reported.

The purpose of this study is to compare common rheumatologic diseases namely, FMS, OA and RA in terms of QoL that is an important patient-reported outcome measure useful for the evaluation of treatment and patient follow up. In addition, to analyze whether the comparison results of the 3 diseases change in regard to various scales. According to the results to be obtained, we aim to show in what dimension the QoL of rheumatic patients differ and to determine the most useful scale hoping to fill a gap in the present literature.

1.1. Patients and methods

In this cross-sectional study, patients diagnosed with FMS [20], OA (shoulder, hand, knee or hip) [21,22] and RA [23] according to American College of Rheumatology (ACR) criteria were recruited from the Physical Medicine and Rehabilitation clinic. The 281 patients included 59 with FMS, 165 with OA and 57 with RA. Before starting the study, the ethical approval was obtained from the non-invasive clinical research ethics committee of Düzce University in April 2016 (2016/29). Patients provided their informed consent before being enrolled in the study.

1.2. Quality of life scales

Six short forms (SF) of the QoL scales were used in the present study; SF-36v2 [13], SF-12 [14], SF-8 [15], SF-6D [16], WHOQoL Brief [17] and Quick-Dash [18]. Both SF-8 and SF6D were not previously used for any disease in Turkey while only SF-36 was used for rheumatic diseases. Accordingly translated forms of SF-36, SF-12, WHOQoL Brief and Quick-Dash scales were used while original forms of SF-8 and SF6D were considered.

SF-36v2, SF-12, SF-6D, WHOQoL Brief and Quick-Dash scale forms were filled on a face to face session. Each patient filled out all short forms simultaneously. SF-36v2 and SF-12 scales have 8 sub-dimensions. SF-8 has 7 and SF-6D has 6 sub-dimensions. All SF scales include physical (PCS) and mental (MCS) summary scales. PCS dimension is composed of Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP) and General Health (GH). MCS is composed of Role Emotional (RE), Social Functioning (SF), Mental Health (MH) and Vitality (VT) [19,20,24]. In accordance with the second version of SF-36, scale sub dimension scores and summary measure scores were calculated. The second item in the scale was not calculated. In this version of the scale, responses to the second question were used to identify the GH changes over the last year. In the other short forms, the second item is absent. In calculating SF-12, SF-8 and SF-6D scale scores, score calculation of SF-36 scale was considered. Each sub dimension of SF scales was calculated by dividing the (raw score minus the lowest score) by the potential raw score x100. Score values range from 0–100. High scores represent good QoL.

WHOQoL Brief scale consists of four domains: Physical Health, Psychological, Social relationships and Environmental Health. This scale does not have a grand total score. Each section and domain is

scored to a maximum of 20 or 100. In this scale, General Health is evaluated by the first and the second questions.

Quick-Dash scale is composed of 11 questions. It does not have any sub dimensions but is represented with a total score. Since this scale measures the QoL arising from upper extremity problems, it is also called arm, shoulder and hand questionnaire. The higher Quick-Dash scores signify a worse QoL on the contrary the lower SF and WHOQoL scores signify a worse QoL. Reliability and validity of these 6 QoL scales have been verified [25,26].

Statistics Analysis: Descriptive statistics of the data obtained were calculated as mean, standard deviation, minimum and maximum values, number and percentage frequencies according to type of variables. Cronbach's alpha coefficient was calculated for internal consistency of the scales. The three patient groups' means were adjusted for age, gender and educational level to eliminate their effect on QoL scores by using covariance analysis (ANCOVA). Age, gender and educational level were accepted as covariate in this model. In determining the significant differences among disease groups after ANCOVA, Turkey post hoc test was used. In addition paired samples *t*-test was used for comparison PCS and MCS scores in each groups. $p < 0.05$ was considered significant. SPSS (ver.18) was used.

2. Results

Regarding the FMS patients, the mean age was 40.4 ± 10.9 years (20–77 years); 49 (90.7%) females and 10 (9.3%) males. The mean age of the OA patients was 54.5 ± 15.7 years (18–97 years); 116 (69.5%) females and 51 (30.5%) males. The RA patients mean age was 46.9 ± 15 years (17–77 years); 40 (70.2%) were females and 17 (29.8%) males. The age was significantly different among the patients of the 3 diseases ($p < 0.001$) being higher in OA. The frequency of females was significantly higher in FMS compared to that in OA and RA ($p < 0.001$). 45% of the FMS patients were illiterate or primary school graduates and the rest were high school or university graduates. In OA and RA patients, 70% were illiterate or primary school graduates and the rest were high school or university graduates. The education level of the FMS patients was higher than that in the OA and RA patients ($p < 0.001$), whereas it was comparable between OA and RA. The disease duration in FMS was 4 ± 3.6 years, in OA it was 6 ± 4.8 years and 5.1 ± 4.3 years in RA. FMS patients had widespread pain, fatigue, unrefreshed sleep and cognitive dysfunction; the majority of OA patients had knee OA of second stage while RA patients had polyarthritis with prolonged morning stiffness.

Internal consistency of the scales has been calculated as shown in Table 1. The effects of age, gender and educational level on scores of scales comparing RA, OA and FMS patients was taken into account. Adjusted means of the QoL scores in each group were obtained according to these effects (Table 2). Significant negative correlation was found between the Quick-Dash score with the age ($p = 0.015$) and educational level ($p = 0.019$). The Physical sub-dimension score of WHOQoL Brief scale significantly correlated with the educational level ($p = 0.008$). Neither Quick-Dash nor 4 sub-dimension scores of WHOQoL Brief scale were affected by gender. The relations between the 4 sub-dimension scores of WHOQoL Brief scale and age were not significant (Table 2).

When adjusted QoL score means were analyzed, the total Quick-Dash score was significantly higher in RA patients than OA but not from FMS. Physical sub-dimension scores of WHOQoL Brief scale was significantly lower in RA patients and the social relations sub-dimension score was higher in OA. Since high scores of WHOQoL Brief scale scores show better QoL, it can be said that OA and FMS patients have better life quality in physical health whereas OA patients have better life quality in social relations (Table 2).

Table 1

Internal consistency between items and sub-domains of the measured scales in fibromyalgia syndrome, osteoarthritis and rheumatoid arthritis patients groups.

Groups		Internal Consistency (Cronbach's- α)				WHOQoL Brief	Quick Dash
		SF-36	SF-12	SF-8	SF-6D		
FMS (n = 59)	Between items	0.89	0.80	0.86	0.82	0.94	0.94
	Between sub-domains	0.84	0.85	0.86	0.82	–	–
OA (n = 165)	Between items	0.83	0.72	0.81	0.71	0.94	0.94
	Between sub-domains	0.69	0.73	0.78	0.78	–	–
RA (n = 57)	Between items	0.81	0.73	0.85	0.79	0.93	0.92
	Between sub-domains	0.66	0.69	0.81	0.73	–	–

FMS: fibromyalgia syndrome, OA: osteoarthritis, RA: rheumatoid arthritis.

Table 2

Comparisons of fibromyalgia syndrome, osteoarthritis and rheumatoid arthritis in terms of scores calculated from the Quick Dash and WHOQoL Brief scales and correlation of the covariates with the scores.

Scales Mean $\pm$ SD		FMS (n = 59)	OA (n = 165)	RA (n = 57)	Correlation with scores (p)			
					Group	Age	Gender	Education
Quick-Dash		41.6 ^{ab} $\pm$ 29.9	36.8 ^a $\pm$ 28.3	48.1 ^b $\pm$ 27.2	(0.02)	(0.02)*	(0.09)	(0.02)*
WHOQoL Brief	Physical	50.9 ^a $\pm$ 20.7	51.6 ^a $\pm$ 21.8	43.9 ^b $\pm$ 20.4	(0.04)	(0.08)	(0.85)	(0.01)*
	Psychological	63.8 $\pm$ 23.1	63.4 $\pm$ 21.8	59.6 $\pm$ 20.4	(0.4)	(0.64)	(0.19)	(0.07)
	Social	58.01 ^a $\pm$ 28.4	65.3 ^b $\pm$ 26.9	55.3 ^a $\pm$ 25.7	(0.02)	(0.43)	(0.3)	(0.14)
	Environmental	62.3 $\pm$ 22.9	63.9 $\pm$ 21.8	60.7 $\pm$ 19.6	(0.56)	(0.69)	(0.64)	(0.08)

FMS: fibromyalgia syndrome, OA: osteoarthritis, RA: rheumatoid arthritis. (a,b,c,...): The completely different letters right upper on the means showed that significant differences between groups about the scores. * = negative correlation between the education level and the Quick-Dash scores. Bold values are significant at $p < 0.05$.

Sub-dimension scores of SF scales and summary measures were compared (Table 3). A significant negative relation was found between age and SF scores. There were a significant relationship between scale scores and the educational level and between some sub-dimensions of SF scales and gender. The scores in men were significantly higher than in female. Aging and female gender have a decreased QoL while high educational levels enhance it. After adjusting the SF scores for the effects of age, gender and educational level, results comparing the 3 diseases were as follow: In PF dimension, only SF-36 scale score was significantly higher in FMS and OA than RA ($p = 0.044$). In RP and BP dimensions, SF-36, SF-12 and SF-6D scale scores were significantly higher in FMS and OA than in RA. A similar trend was observed in SF-8 scale as well, however, the differences were not significant. In GH dimension, three SF scales were evaluated. SF-36 and SF-12 scale scores were significantly higher in FMS and OA than in RA. In VT dimension, SF-12, SF-8 and SF-6D scale scores were significantly higher in FMS and OA than in RA. In SF dimensions, only SF-12 was significantly higher in FMS. The other SF sub-dimension scores in each groups were similar ($p = 0.02$). In RE and MH dimensions, only SF-12 scale score was significantly higher in FMS and OA than in RA. A similar trend was observed in SF-36 and SF-8 scales for RE and in SF-36 and SF-6D for MH, however, insignificantly different.

When compared in terms of PCS, SF-36, SF-12 and SF-6D scores were significantly higher in FMS and OA than in RA. When compared in terms of MCS, only SF-36 and SF-12 scores were significantly higher in FMS and OA than in RA (Table 3). When the difference between PCS and MCS scores of SF-36, SF-12 and SF-6D were evaluated, MCS scores were significantly high in the 3 diseases with thus a better mental than physical health. While the difference between PCS and MCS scores of SF-8 were not significant in OA and RA, the PCS was higher in FMS (Table 4).

3. Discussion

Measuring the QoL evaluates patients' health as a whole and in FMS, OA and RA can reveal undefined problems that the patients

might experience, help develop a better treatment plan and present the benefits and harms of health care services [1]. There are several scales for the QoL (either short or long form) in clinical practices. Among these, SF-36 [12,13] and WHOQoL Brief [17] scales are more commonly used. However, scales that will respond in a short time with the same effect in patients with chronic pain would be more practical. The SF-12, SF-8 and SF-6D scales were not used in this field especially in Turkey. The aim of the present study was to fill this gap in the literature, to compare the QoL in common rheumatic diseases and to analyze different short forms. The obtained data has shown in what ways the QoL in FMS, OA and RA differ and which scales were the most convenient in providing fast results.

The socio-demographics of the patients affect their QoL. In this study, when the age increases the Quick-Dash total score decreases while the educational level affects QoL positively. In addition, it was observed that neither Quick-Dash nor WHOQoL Brief scale scores were affected by gender. Also, a significant negative relation between age and SF scores was found. There were a significant relationship between gender and some sub-dimensions of SF scales. Scores in men were significantly higher than in female. When these results were considered, it can be said that aging decreases QoL, high educational level enhances it and women has lower QoL. To be able to analyze the direct effects of the diseases on QoL, the effects of age, gender and educational level on scores were taken into account and adjusted scores were compared.

Rheumatoid arthritis was found to be the disease that disturbs the QoL the most. This result has been observed in most sub dimensions of WHOQoL Brief, SF-36, SF-12 and SF-6D. Among the scales that have produced similar results, Quick-Dash, SF-12 and SF-6D can be used instead of SF-36 and WHOQoL Brief scales to reach results faster as they were the shortest forms that were also reliable and valid. Among these three short forms, that Quick-Dash scale result was described with only one dimension, namely, with a total score means that its evaluation of the QoL was too general. For this reason, using multi-dimensional, more comprehensive SF-12 and SF-6D scales will be more convenient.

Table 3
Comparisons of fibromyalgia syndrome, osteoarthritis and rheumatoid arthritis in terms of sub-domain and summary measures calculated from the four short form quality of life scales and correlation of the covariates with the scores.

SF scales Mean ± SD	FMS (n = 59)	OA (n = 165)	RA (n = 57)	Correlation with scores (p)			
				Group	Age	Gender	Education
<i>GH</i>							
SF-36	57.3 ^a ± 23.8	56.5 ^a ± 23.1	49.2 ^b ± 21.1	(0.04)	(0.04)*	(0.11)	(0.32)
SF-12	50.8 ^a ± 31.5	48.3 ^a ± 29.5	38.4 ^b ± 27.9	(0.02)	(0.01)*	(0.06)	(0.06)
SF-8	40.3 ± 35.3	38.6 ± 33.4	33.9 ± 31.0	(0.47)	(0.4)	(0.04)	(0.09)
<i>PF</i>							
SF-36	52.2 ^a ± 33.0	51.6 ^a ± 30.8	41.5 ^b ± 28.7	(0.04)	(0.04)*	(0.31)	(0.001)*
SF-12	40.6 ± 37.6	40.1 ± 36.0	32.8 ± 33.2	(0.3)	(0.01)*	(0.53)	(<0.001)*
SF-8	40.9 ± 36.9	43.2 ± 34.7	35.6 ± 32.5	(0.3)	(0.16)	(0.29)	(0.03)*
SF-6D	47.2 ± 32.3	45.1 ± 30.8	40.9 ± 28.7	(0.4)	(0.01)*	(0.57)	(0.01)*
<i>PR</i>							
SF-36	32.1 ^a ± 39.9	32.7 ^a ± 37.3	19.7 ^b ± 34.7	(0.04)	(0.004)*	(0.35)	(0.003)*
SF-12	34.9 ^a ± 46.9	32 ^a ± 45.0	19.1 ^b ± 41.5	(0.04)	(0.04)*	(0.6)	(0.002)*
SF-8	7.3 ± 33.0	10.9 ± 30.8	3.6 ± 28.7	(0.24)	(0.1)	(0.34)	(0.07)
SF-6D	18.5 ^a ± 34.6	19.5 ^a ± 32.1	8.1 ^b ± 31.0	(0.04)	(0.01)*	(0.33)	(0.02)*
<i>RE</i>							
SF-36	46.3 ± 52.2	38.2 ± 48.8	31.8 ± 46.1	(0.22)	(0.21)	(0.18)	(0.39)
SF-12	39.1 ^a ± 53.0	35.8 ^a ± 50.1	18.5 ^b ± 46.8	(0.02)	(0.21)	(0.82)	(0.19)
SF-8	42.8 ± 63.0	48.1 ± 59.1	41.1 ± 55.1	(0.52)	(0.71)	(0.72)	(0.16)
<i>SF</i>							
SF-36	51.1 ± 25.3	46.9 ± 23.1	49.4 ± 21.9	(0.48)	(0.01)*	(0.24)	(0.95)
SF-12	63.5 ^a ± 36.1	51.8 ^b ± 34.7	47.8 ^b ± 31.7	(0.02)	(0.3)	(0.57)	(0.76)
SF-8	58.1 ± 34.6	57.8 ± 32.1	51.7 ± 30.2	(0.36)	(0.44)	(0.85)	(0.1)
SF-6D	44.5 ± 39.9	44.9 ± 37.3	55.5 ± 35.5	(0.1)	(0.09)	(0.24)	(0.03)*
<i>BP</i>							
SF-36	48.8 ^a ± 28.4	48.9 ^a ± 27.0	40.5 ^b ± 25.7	(0.05)	(0.18)	(0.02)	(0.008)*
SF-12	50.9 ^a ± 32.3	46.4 ^a ± 30.8	37.1 ^b ± 28.7	(0.02)	(0.54)	(0.05)	(0.03)*
SF-8	54.9 ± 35.3	57.1 ± 35.3	50.7 ± 31.0	(0.39)	(0.64)	(0.04)	(0.03)*
SF-6D	50.9 ^{ab} ± 32.3	55.2 ^a ± 30.8	45.2 ^b ± 28.7	(0.04)	(0.22)	(0.34)	(0.001)*
<i>MH</i>							
SF-36	54.2 ± 17.7	52.1 ± 16.7	50.3 ± 15.9	(0.4)	(0.39)	(0.74)	(0.39)
SF-12	54.5 ^a ± 27.7	56.5 ^a ± 25.7	46.9 ^b ± 24.9	(0.03)	(0.3)	(0.04)	(0.52)
SF-6D	52.9 ± 27.7	54.6 ± 25.7	57.6 ± 24.2	(0.54)	(0.3)	(0.5)	(0.24)
<i>VT</i>							
SF-36	48.3 ± 26.1	45.1 ± 24.4	40.9 ± 23.4	(0.21)	(0.29)	(0.28)	(0.33)
SF-12	64.1 ^a ± 47.6	67.9 ^b ± 45.0	51.3 ^b ± 42.3	(0.03)	(0.12)	(0.03)	(0.27)
SF-8	45.9 ^a ± 36.9	48.1 ^a ± 34.7	34.8 ^b ± 32.5	(0.02)	(0.67)	(0.03)	(0.56)
SF-6D	54.1 ^a ± 33.8	58.6 ^a ± 32.1	40.5 ^b ± 29.4	(<0.001)	(0.04)*	(0.02)	(0.89)
<i>PCS</i>							
SF-36	47.4 ^a ± 23.8	47.2 ^a ± 23.1	37.9 ^b ± 21.1	(0.01)	(0.006)*	(0.05)	(<0.001)*
SF-12	44.3 ^a ± 26.9	41.7 ^a ± 24.4	31.8 ^b ± 24.2	(0.006)	(0.02)*	(0.13)	(<0.001)*
SF-8	35.9 ± 26.1	37.4 ± 24.4	30.9 ± 23.4	(0.17)	(0.14)	(0.16)	(0.007)*
SF-6D	38.5 ^a ± 23.8	39.6 ^a ± 25.7	31.4 ^b ± 24.2	(0.04)	(0.008)*	(0.3)	(0.007)*
<i>MCS</i>							
SF-36	49.9 ^a ± 17.7	45.6 ^{ab} ± 16.7	43.1 ^b ± 15.9	(0.04)	(0.88)	(0.29)	(0.12)
SF-12	55.3 ^a ± 26.1	53 ^a ± 24.4	41.1 ^b ± 23.4	(0.001)	(0.22)	(0.07)	(0.27)
SF-8	47.5 ± 35.3	51.3 ± 33.4	42.6 ± 31.0	(0.18)	(0.21)	(0.51)	(0.31)
SF6D	50.5 ± 16.1	52.7 ± 15.4	51.2 ± 14.3	(0.61)	(0.52)	(0.81)	(0.45)

FMS: fibromyalgia syndrome, OA: osteoarthritis, RA: rheumatoid arthritis. GH: general health, PF: physical functioning, PR: physical role functioning, ER: emotional role functioning, VT: vitality, SR: social role functioning, BP: bodily pain, MH: mental health. (a,b,c,...): The completely different letters right upper on the means showed that significant differences between groups about the scores. Bold values are significant at $p < 0.05$.

Picavet and Hoeymans [27] and Kolahi et al. [28] used Behavioral Risk Factor Surveillance System healthy day's measures to evaluate QoL. In this scale, one of the questions is in 5-point Likert type and evaluates general health, other questions ask about the number of days that the patients' physical and mental health wasn't good in the past 30 days. After eliminating socio-demographic effects on the QoL scores it was found that both mental and physical dimensions in FMS patients had worse QoL than OA and RA patients while RA patients have worse QoL than OA. Wolfe and Hawley [29] measured the QoL in FMS, OA and RA patients with EuroQol and EuroQol VAS. However, they showed that EuroQol was not good enough to evaluate the QoL in rheumatic diseases. According to the scores of this scale, RA and OA patients were found to have similar QoL whereas FMS patients

were found to have worse life quality. In these comparisons, effects of socio-demographics on QoL haven't been taken into consideration. Luo et al. [30] examined the validity and reliability of EQ-5D scale in determining the QoL in Singaporeans with rheumatic diseases and they have used SF-36 scale to test its reliability. It appears to be valid however, its reliability requires further investigation. Burckhardt et al. [31] compared RA, OA and FMS patients according to the QoL scores determined by SF-36 scale on women and the scores of FMS patients were found to be lower denoting a worse QoL than RA and OA in all domains of the scale. Kolahi et al. [28] compared the QoL of the middle-aged women who were diagnosed with FMS, OA or RA and matched for age, body mass index, education and occupation using SF-36. The QoL in RA patients was found to be worse than in FMS and OA in all domains. On the other

Table 4

Comparisons of two summary measure scores in fibromyalgia syndrome, osteoarthritis and rheumatoid arthritis patients.

Summary measures mean $\pm$ SD	FMS (n = 59)	p	OA (n = 165)	p	RA (n = 57)	p
<i>SF-36</i>						
PCS	48.9 $\pm$ 3.0	0.048	41.3 $\pm$ 20.6	0.001	36.6 $\pm$ 20.4	0.047
MCS	53.9 $\pm$ 18.4		45.9 $\pm$ 18.0		42.5 $\pm$ 17.4	
<i>SF-12</i>						
PCS	45.9 $\pm$ 25.3	0.001	34.9 $\pm$ 23.1	0.001	29.7 $\pm$ 21.9	0.001
MCS	59.2 $\pm$ 23.8		54.8 $\pm$ 20.6		45.5 $\pm$ 18.1	
<i>SF-8</i>						
PCS	37.7 $\pm$ 26.1	0.014	32.3 $\pm$ 20.6	0.73	29.1 $\pm$ 20.4	0.51
MCS	30.9 $\pm$ 11.5		31.9 $\pm$ 11.6		27.6 $\pm$ 9.8	
<i>SF-6D</i>						
PCS	40.7 $\pm$ 26.9	0.001	34.4 $\pm$ 21.8	0.001	29.9 $\pm$ 20.4	0.001
MCS	54.9 $\pm$ 20.7		52.9 $\pm$ 19.3		46.5 $\pm$ 16.6	

FMS: fibromyalgia syndrome, OA: osteoarthritis, RA: rheumatoid arthritis. PCS and MCS: physical and mental summary scale respectively. Bold values are significant at $p < 0.05$.

hand, the QoL of RA was worse than FMS and OA patients in all domains with comparable results between FMS and OA patients. Patients of matched socio-demographic factors had similar results into those of RA. Disease activity, physical disability, depression and anxiety scores as well as co-morbidities can all affect QoL and therefore could account for the inconsistent results between studies. Wysocka-Skurska et al. [32] showed that OA patients, despite their older age, had a higher evaluated QoL according to SF-36 scale than RA. Overall QoL in terms of mental functioning in both diseases was assessed at a higher level than in the area of physical functioning. Geryk et al. [33] assessed the health-related quality of life (HRQoL) in OA and RA patients using the SF-12v2 and found no significant differences on any HRQoL dimension.

In sub dimensions, the differences among the 3 diseases might change relatively when compared to SF scales but when the results of summary scales were also considered, the QoL was similar in OA and FMS patients and better in RA patients. Moreover, SF-12 or SF-6D scales can be used instead of SF-36, however, SF-8 was not found to be represent SF-36 adequately.

In some studies, it was shown that the QoL of the patients with the diseases in question was lower than healthy people's [12,27,28,34–36]. Accordingly, a control group was not included in this study. Among the other limitations of this study was that disease activity, physical disability, depression and anxiety scores as well as co-morbidities were not taken into consideration.

In conclusion, to the best of our knowledge, this is the first study in the literature comparing the scores obtained from the 4 short forms on 3 rheumatic diseases after eliminating the effects of age, gender and education level on QoL. As a result of this study, both physical and mental quality of life in RA patients were found worse than FMS and OA patients, but there was no significant difference between OA and FMS. SF-12 and SF-6D QoL scales can be used instead of SF-36 or WHOQoL Brief scales for faster results.

Conflict of interest

None.

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