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Factors influencing the Rheumatoid Arthritis Impact of Disease (RAID) score for Moroccan patients with rheumatoid arthritis (RA)

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ABSTRACT: *Objective:* This study aims to identify factors influencing the health related quality of life (HRQOL) for RA patients.
Methods: 103 patients diagnosed were enrolled in the study. Disease activity was assessed through the Disease Activity Score (DAS) 28 scale. Health Assessment Questionnaire (HAQ) was completed by all patients. Pain and fatigue were evaluated with pain Visual analogic scale (VAS) and fatigue VAS respectively. The psychological status was evaluated using the Arabic validated version of the Hospital Anxiety and Depression scale (HADs).The Rheumatoid Arthritis Impact disease (RAID) was used for the evaluation of the impact of rheumatoid arthritis.
Results: The mean RAID was 3.78 ±2,15. 7.7% had a score between 0 and 1, and 15.5% between 1 and 2, whereas 11.6% had scores upper to 7. The mean RAID score was similar in men/women patients (3.34/3.84, p=0.43). In univariate analysis RAID was significantly associated with pain disease duration (β =0.26 0;IC95%[0.002-0.01]; p=0.06), VAS (β = 0.79;IC95%[0.05-0.06]; p ‹0,001), fatigue VAS(r = 0,80;IC95%[0.05-0.07] ; p ‹0,001), DAS28 (β = 0.75; IC95%[0.78-1.11] ; p ‹0.001), HAQ (β = 0,75; IC95%[1.74-2.47] ; p ‹0,001),and HADS (β = 0.56; IC95%[0.10-0.18] ; p ‹0,001). After multivariate analysis pain VAS (β =0.23 ;IC95%[0.005-0.02];p=0.005), fatigue VAS (β =0.28 ;IC95%[0.01-0.03];p<0.001), DAS28 (β =0.15 ;IC95%[0.02-0.35];p=0.02), HAQ (β =0.26;IC95%[0.43-1.10];p<0.001) and HADS (β =0.12;IC95%[0.007-0.06];p=0.01) remains associated with RAID.
Conclusion: The strongest determinants of lower QOL in Morroccan RA patients were disease activity, functional capacity, Pain, fatigue and psychological status

KEYWORDS: rheumatoid arthritis, rheumatoid arthritis impact of disease.

1 INTRODUCTION

Rheumatoid arthritis (RA) significantly affects health-related quality of life (HRQOL), including physical functioning, pain, fatigue and vitality, emotional and social well-being, and work productivity (1, 2, 3, 4, 5). The importance of patient-reported outcomes has traditionally been recognised within the rheumatology community, as evidenced by their presence in the core set of end points for rheumatoid arthritis (RA) clinical trials formulated at the first Outcome Measures in Rheumatology Initiative (OMERACT) conference in 1992(6). Current standard assessment of RA includes some dimensions or domains assessed by Patient reported outcomes (PRO), namely patient assessment of pain, functional disability and/or patient global assessment (7, 8). However, current scores mainly include only these three PRO, and these domains are the only PRO usually reported, while other domains of health appear important from the patient's perspective, such as fatigue, wellbeing and sleep pattern (9, 10, 11, 12). In this context, the European League Against Rheumatism (EULAR) elaborated a new composite

response score for clinical trials in RA based on the patients' perception of the impact of the disease on domains of health: the patient-derived rheumatoid arthritis impact of disease (RAID) score(13). This composite index includes seven domains (pain, function, fatigue, physical and psychological wellbeing, sleep disturbance and coping). Each domain is evaluated using a single question answered by a 0 to 10 numerical rating scale. Each domain also has a specific weight assigned by a patient survey. The RAID score is a continuous variable ranging from 0 (best) to 10 (worst) (14, 15, 16). This study aims to identify factors influencing the RAID score for RA patients.

2 PATIENTS AND METHODS

2.1 PATIENTS

Our study included 103 consecutive patients with RA fulfilling the 1987 revised American College of Rheumatology classification criteria (17) over a period of 6 months (between October 2012 and March 2013) at the department of rheumatology of El Ayachi tertiary university hospital of Rabat-Sale from outpatient and inpatient services. Informed consent was obtained from all patients.

2.2 METHODS

MEASUREMENT OF THE CLINICAL VARIABLES

The demographic and clinical characteristics of the patients such as age, sex, height, weight, educational level, the disease, degree of morning stiffness, tender-swollen joint count and the physician's and patient's global assessments were determined. Drug use (all anti-rheumatic drugs and glucocorticoid), the duration of the morning stiffness (minutes), mean pain and mean daytime fatigue (100 mm visual analogue scale (VAS)) were also noted. The disease activity (DAS28) scores were evaluated using the disease activity score calculator.

FUNCTIONAL DISABILITY AND PSYCHOLOGICAL STATUS ASSESSMENTS

The validated Moroccan Arabic dialect version of HAQ (18) was used for the evaluation of the functional status. The psychological status was evaluated using the Arabic validated version of HADs (19).

RAID

RAID measures seven domains, each with 0–10 numeric rating scales (NRS) that are perceived by patients to be particularly important for their health. Each domain has the following weight: pain 0.21, functional disability 0.16, fatigue 0.15, sleep problems 0.12, emotional well-being 0.12, physical well-being 0.12 and coping 0.12. 1 The score has a range from 0 to 10 (10 worst health).

STATISTICAL ANALYSIS

The statistical analyses were carried out using the SPSS 13 for Windows (SPSS Inc., Chicago, IL, USA). Data for patients were presented as mean and standard deviations for continuous variables and as frequencies and percentages for categorical variables. we performed a logistic regression to determine predictive factors for global RAID score and for each of the seven RAID domains ;firstly univariate logistic regression were done, and the remaining factors ($P < 0.05$) were entered into a final global multivariate logistic regression model, so multivariate analysis were secondly performed. Results were considered significant for $p < 0.05$, and Confidence intervals (CI) were computed at the 95% level.

3 RESULTS

The clinical and demographic characteristics of the patients are listed in Table 1. Of the 103 patients with RA enrolled, 87.4% were women. The mean (SD) age of the patients was 49.7 ± 11.4 years, and the median illness duration was 8.2 [3.2 - 14] months. The mean disease activity at 28 joints (DAS28) score was 4.2 ± 1.7. The mean pain VAS and the median fatigue VAS were 39.1± 29.3 and 40 [10 – 40] respectively. The median HAQ and PQSI scores were 0.5 [0 - 1.5], and [2.1 - 9] respectively. The mean HADS was 15±8 .The mean RAID was 3.78 ±2.15. Table 2 show the distribution of the RAID score.

7.7% had a score between 0 and 1, and 15.5% between 1 and 2, whereas 11.6% had scores upper to 7. The mean RAID score was similar in men/women patients (3.34/3.84, p=0.43).

FACTORS AFFECTING THE RAID SCORE

In univariate analysis RAID was significantly associated with pain disease duration (β =0.26 0;IC95%[0.002-0.01]; p=0.06),VAS (β = 0.79;IC95%[0.05-0.06]; p ‹0.001), fatigue VAS(r = 0.80;IC95%[0.05-0.07] ; p ‹0.001), DAS28 (β = 0.75; IC95%[0.78-1.11] ; p ‹0.001), HAQ (β = 0.75; IC95%[1.74-2.47] ; p ‹0.001),and HADS (β = 0.56; IC95%[0.10-0.18] ; p ‹0.001) .After multivariate analysis, pain VAS (β =0.23 ;IC95%[0.005-0.02];p=0.005), fatigue VAS (β =0.28 ;IC95%[0.01-0.03];p<0.001), DAS28 (β =0.15 ;IC95%[0.02-0.35];p=0.02), HAQ (β =0.26;IC95%[0.43-1.10];p<0.001) and HADS (β =0.12;IC95%[0.007-0.06];p=0.01) remains associated with RAID.

4 DISCUSSION

The importance of assessing HRQOL in RA patients has been highlighted in different studies (20). HRQoL in medicine was adopted to describe the effect of diseases and its treatment on physical, psychological, and social aspects of patients' well-being. HRQoL is one of the components of quality of life, which can be Vected by many factors, not only medical health, but also the cultural, socio-economic, and other factors as well as other areas of human activity. The RAID instrument provides a weighted profile of seven health domains of major importance to patients (12).

According to the results, it is no gender difference in the RAID score. In fact, few authors have examined gender differences in the HRQoL in RA (21) .This is in agreement with an Indian study in which gender of RA patients did not influence their HRQOL (22).

The pain has the highest weight in the RAID score. This study demonstrated that by increasing pain, a significantly decrease patients' quality of life. This is in agreement with a Norwegian study who found a strong correlation between RAID and pain (23). West et al demonstrated that bodily pain was highly sensitive to changes in the HRQOL, and assumed that it is an important measure of disease outcome in the early stages of RA (24). A Moroccan study reported that QOL is significantly correlated with joint pain intensity (25).

Functional disability and higher disease activity scores, in present study, caused a significant decrease in patients' quality of life. This finding is consistent with a Korean study who has reported that the strongest determinants of lower QOL in RA patients were functional disability and higher disease activity. Many studies confirm that functional disability was the main variable that influenced HRQoL, followed by disease activity in patients with established RA (26, 27). Turid et al found that disability, measured with HAQ, correlated moderately to RAID score (23). In Brazil, moderate to severe RA is associated with significant functional disability (28). Saled et al have reported that a higher disease activity scores, caused a significant decrease in patients' quality of life (29).

Higher fatigue and higher HADs were associated with poor QOL in the present study. Many studies showed that regard fatigue as a major determinant of quality of life (30, 31). Depression is highly prevalent in RA and associated with poorer RA outcomes (32). Ozcztin et al found that Quality of life is significantly low in patients with RA whose depression and/or anxiety scores are high (33).

Although this was the first study in the country using RAID for assessing QOL. Our study presents several limitations. First, the cross-sectional design did not allow us to assess changes in QOL as the disease progresses and factors that influence such change. Second, we did not consider effects on QOL due to drugs and specific comorbidities. Third, our subjects were recruited from a tertiary care setting our findings may not be generalizable to patients with milder conditions who are being followed up in the primary care setting.

Table1: Socio-demographic and clinical characteristics in RA

Age (years)[3]	49.7 ± 11.4
Gender, Female (%)[1]	87.4 (N=90)
BMI (kg/m2)[3]	26.5 ± 5.1
Pain (VAS 0-100)[3]	39.1± 29.3
Fatigue (VAS 0- 100)[2]	40 [10 - 40]
HAQ[2]	0.5 [0 - 1.5]
Disease duration (years)[2]	8.2 [3.2 - 14]
DAS28 ESR[3]	4.2 ± 1.7
HADS	15 ± 8
Corticosteroid use (%)[1]	81.6 (N= 84)
CsDMARDs use (%)[1]	68 (N= 70)
B-DMARDs use (%)[1]	23.3 (N= 24)
NSAIDs use (%)[1]	20.4 (N= 21)

1: Number and percentage N (%); 2: median and interquartile range IQR; 3: mean and standard deviation; BMI= Body Mass Index; VAS= Visual Analogical Scale; DAS28 ESR: disease activity score28 Erythrocyte Sedimentation Rate; HAQ= Health Assessment Questionnaire; HADS: Hospital Anxiety and Depression scale, CsDMARDS= Conventional Synthetic DMARDs, B-DMARDS= Biologic DMARDs, NSAIDs=non-steroidal anti-inflammatory drugs.

Table2: The distribution of the RAID score and the seven NRS

	Mean±SD	Median	%Lowest	% Highest
RAID	3.78±2.15	3.41	3.8	5.8
Pain NRS	3.79±2.74	3.00	11.6	11.6
Physical NRS	3.88±2.59	3.00	6.7	0.9
Fatigue NRS	4.34±2.61	4.00	2.9	3.8
Sleep NRS	3.17±2.65	2.00	17.4	0.9
Emotional wellbeing NRS	3.82±2.44	3.00	5.8	0.9
Physical wellbeing NRS	3.83±2.43	4.00	6.7	2.9
Coping NRS	3.76±2.11	4.00	15.5	1.9

NRS, numeric rating scales; RA, rheumatoid arthritis; RAID, Rheumatoid Arthritis Impact of Disease

	Univariate analysis			Multivariate analysis		
	β	IC95%	P	β	IC95%	P
Age	0.03	[-0.03-0.04]				
Disease duration	0.26	[0.002-0.01]	0.06	0.05	[-0.0016-0.003]	0.24
painVAS	0.79	[0.05-0.06]	‹0.001	0.23	[0.005-0.02]	0.005
fatigue VAS	0.80	[0.05-0.07]	‹0.001	0.28	[0.01-0.03]	<0.001
DAS28 ESR	0.75	[0.78-1.11]	‹0.001	0.15	[0.02-0.35]	0.02
HAQ	0.26	[1.74-2.47]	‹0.001	0.26	[0.02-0.35]	<0.001
HAD	0.56	[0.10-0.18]	‹0,001	0.12	[0.007-0.06]	0.01

VAS= Visual Analogical Scale; DAS28 ESR: disease activity score28 Erythrocyte Sedimentation Rate; HAQ= Health Assessment Questionnaire; HADS: Hospital Anxiety and Depression scale.

5 CONCLUSION

The strongest determinants of lower QOL in Moroccan RA patients were disease activity, functional capacity, Pain, fatigue and psychological status. Greater emphasis on managing disability and providing psychosocial support should supplement clinical management so that HRQoL of RA patients can improve and better treatment outcomes achieved.

COMPETING INTERESTS

The authors declare that they have no competing interests

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