# DISEASE ACTIVITY AND FUNCTIONAL STATUS IN TURKISH PATIENTS WITH RHEUMATOID ARTHRITIS

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## ABSTRACT

**Objective:** Turkish patients with rheumatoid arthritis (RA) followed in a university rheumatology clinic, were evaluated cross-sectionally for clinical, socio-economical and laboratory features, correlations with disease activity (DAS) and functional outcome were assessed using a Modified Health Assessment Questionnaire (M-HAQ).

**Methods:** Sixty-five patients with RA (F/M: 8/1, mean age: 49.7 ± 11,9 years) were investigated. Besides socio-demographic evaluations, patients were analyzed for clinical disease activity, laboratory findings and medication. Univariate and logistic regression analysis of the scores with DAS and M-HAQ were performed.

**Results:** Despite a long disease duration (97,0+76,9 months) the functional indices (M-HAQ: 0,6+0,6 and ACR: 2,1+0,9) of the patients were limitedly elevated. However, pain visual analog scale (VAS: 3,5+2,7), tender joint score (TJS: 8,3+8,3), swollen joint score (SJS: 1,9+3,2), disease activity score (DAS: 3,3+1,3), deformed joint score (DJS: 3,2+5,6) and acute phase responses (ESR: 57,8+58,2 mm/h, CRP: 15,9+15,2 mg/dl) were moderately high in our population. DAS was found to correlate with most activity criteria, whereas M-HAQ had a limited correlation.

**Conclusion:** Our results suggest that the average RA patient has a limited disability after a mean of 8 years of disease duration in a Turkish university clinic setting. However, disease activity was not suppressed adequately in most patients. DAS was observed to be a good composite measure of disease activity, in good correlation with most single activity measurements.

**Key Words:** Rheumatoid arthritis, Disease activity scores, Health Assessment Questionnaires

## INTRODUCTION

Rheumatoid arthritis (RA), a chronic, systemic disorder characterized by synovial inflammation and hypertrophy, causes functional losses and disability in the long term. Factors determining the long term prognosis of RA are well studied in Caucasian populations and the association of parameters such as functional scores, joint activity, acute-phase responses and education with functional outcome are well established. However, studies in other ethnical groups,

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especially with lower economical status and with different genetic backgrounds, are limited (1). We previously reported that HLA-DR "shared epitope" alleles, shown to be associated with susceptibility and severity of RA, are also prevelant in Turkish seropositive RA patients with radiological erosions (2).

In this study, we aimed to analyze the socio-demographic, clinical and laboratory findings of Turkish patients with RA, and establish their associations with functional outcome.

## MATERIALS AND METHODS

In this study, 65 patients with rheumatoid arthritis (Female/ Male: 8/1, mean age: 49,7+11,9 years) classified according to the American College of Rheumatology (ACR) 1987 criteria were enrolled (3). All patients were taken from the rheumatology out-patient clinics of the Marmara University Hospital, Istanbul. This is a tertiary referral center for a population of approximately 3 million. However, due to the lack of rheumatology departments in the state hospitals of the region, the unit serves as a general rheumatology department covering all types of RA patients.

The age when the patient got RA and the duration of the disease (in terms of months) were determined by assuming the date when the symptom of joint pains and swellings first appeared as the beginning of RA. The date when the patient learned that he/she had RA or the beginning date of the treatment has been considered as the "date of diagnosis". The period between the date of the beginning of the disorder and the date of diagnosis has been determined as the "period of non-treatment". The patients were also evaluated socio-demographically according to age, gender, marital and social security status, career, income source, and smoking and alcohol history.

Most patients (75%) were using a combination of second-line agents (methotrexate: 85%, Sulphasalazine: 75% and antimalarial drugs: 50%). Non-steroidal anti-inflammatory drugs were used in 95%, and low-dose corticosteroids in 70%.

The results were analyzed according to the visual analog score (VAS) for pain, tender (TJS), swollen (SJS) and deformed joint (DJS) scores, doctor (DA) and patient (PA) global assessments, disease activity score (DAS), acute phase response (erythrocyte sedimentation rates (ESR) and C-reactive protein (CRP) levels), the functional status of the patients (Functional Index of American College of Rheumatology (ACR)) and finally a modified health assessment questionnaire (M-HAQ) which was composed of 20 questions. Doctor and the patient global assessments were graded through 0-4 (very good, good, average, bad, very bad). M-HAQ evaluation was validated by *Şenerdem et al.* for the Turkish population (4). The grip strength was measured with a 'sphingomanometer' with right and left hands separately evaluated. In addition patients were evaluated according to their past lives, information about their family members' lives, laboratory findings and usage of medicine.

Statistically, univarity analysis of all evaluation criteria was applied with DAS and M-HAQ as dependant criteria. For DAS and M-HAQ the logistic regression analysis of the scores that were statistically defined were also performed.

## RESULTS

Fifty-eight patients (89.2%) were female and the ratio of the women to men was 8/1. The patients were aged between 22 and 74, with the average age 49,7+11,9 years. The average duration of RA in the patient group was 97,0±76,9 months and the average period of diagnosis was 37,9±60,6 months. Eighty percent of our patients were married, 62% were housewives and 89% had social security coverage for medical expenses. A family history of RA or arthralgia was present in 23% and 26% were smoking. The demographic characteristics of our patients are shown in Table I.

Our patients were limited mildly in functional status despite the long disease duration (M-HAQ: 0,6±0,6 and ACR: 2,1±0,9). However, DAS (3,3± 1,3) score, number of swollen (SJS: 1,9±3,2) and tender (TJS: 8,3±8,3) joints, pain score (VAS: 3,5±2,7), number of deformed joints (DJS: 3,2±5,6) and acute phase responses (ESR: 57,8±58,2 mm/h, CRP: 15,9±15,2 mg/dl) were moderately high. In addition, although, mean

VAS value was 3,5 ± 2,7, VAS levels of 30 patients (46%) were ≥ 5. Disease activity values of our patients are shown in Table I.

**Table I:** Demographic and Clinical Characteristics of the patient group.

| Baseline Variable | Value |
|---|---|
| Sex, Women (%) | 89,23 |
| Age | 49,7 ± 11,9 years |
| Disease Duration | 97,0 ± 76,9 months |
| Period of diagnosis | 37,9 ± 60,6 months |
| Marital status: Married (%) | 80 |
| Education (%) | |
| University | 23 |
| High School | 18 |
| Primary School | 48 |
| Smoking (%) | 26 |
| DAS | 3,3 ± 1,3 |
| M-HAQ | 0,6 ± 0,6 |
| TJS | 8,3 ± 8,3 |
| SJS | 1,9 ± 3,2 |
| DJS | 3,2 ± 5,6 |
| ESR (mm/h) | 57,8 ± 58,2 |
| CRP (mg/dl) | 15,9 ± 15,2 |
| VAS | 3,5 ± 2,7 |
| ACR Functional Status | 2,1 ± 0,9 |
| Grip strength (left) | 30,0 ± 16,1 |
| Grip strength (right) | 31,2 ± 17,1 |
| DA | 2,0 ± 0,9 |
| PA | 1,8 ± 0,9 |

Disease activity score (DAS), modified heatlh assessment questionnaire (M-HAQ), tender joint score (TJS), swollen joint score (SJS), deformed joint score (DJS), erythrocyte sedimentation rates (ESR), C-reactive protein (CRP) levels, pain visual analog scale (VAS), the functional status of the patients (Functional Index of American College of Rheumatology (ACR) ) , doctor (DA) and patient (PA) global assessments

**Univarity analysis**: In the univarity analysis, the DAS score seemed to be well correlated with all disease activity scores except M-HAQ, VAS and left hand grip strength. M-HAQ had a statistically significant correlation with all disease activity scores except VAS, DJT, left hand grip strength, PA, and acute phase responses. And finally M-HAQ, compared to other dependent scores, was the least correlated score with other disease scores. The univarity results of our patients are shown in Table II.

Increasing age was associated with all activity parameters, except M-HAQ. A correlation between the educational level of the participants and M-HAQ was also observed ($p<0,05$).

**Logistic regression analysis**: When DAS and M-HAQ scores were treated as dependant criteria and multivarity analysis was applied, DAS had a high correlation with DA and DES and M-HAQ had a correlation with ACR and right hand grip strength (Table III).

**Table III:** Logistic Regression Analysis (M-HAQ, DAS) of Demographic and Clinical Parameters

| DAS | Coefficient | SE | OR | 95% CI | P |
|---|---|---|---|---|---|
| DA | 1,474 | 0,459 | 4,366 | 1,870-10,295 | 0,001 |
| DJS | 1,562 | 0,637 | 4,771 | 1,369-16,625 | 0,014 |
| M-HAQ | | | | | |
| ACR | 1,05 | 0,453 | 2,859 | 1,17-0,69 | 0,02 |
| Grip strength (right) | -0,56 | 0,025 | 0,946 | 0,9-0,99 | 0,026 |

**Table II:** Univarite Analysis (DAS, M-HAQ) of Demographic and Clinical Parameters

| Baseline Variable | DAS | | M-HAQ | |
|---|---|---|---|---|
| | (%95 CI) | P | (%95 CI) | P |
| Sex | 0,134-3,182 | 0,701 | 0,3-24,09 | 0,357 |
| Age | 1,12-12,51 | <0,05 | -12,60-7,5 | 0,053 |
| Disease Duration | -38,37-38,56 | 0,99 | -64,83-18,73 | 0,274 |
| Non-Treatment Duration | -13,07-47,4 | 0,261 | -24,86-41,83 | 0,613 |
| Smoking (%) | 0,22-2,14 | 0,58 | 0,3-3,41 | 0,985 |
| DAS | | | 9,7-1,47 | <0,05 |
| M-HAQ | 0,81-7,33 | 0,172 | | |
| TJS | 5,88-81,75 | <0,001 | 1,03-10,78 | <0,05 |
| SJS | 1,39-4,21 | <0,001 | 0,4-3,65 | <0,05 |
| DJS | 1,65-14,48 | <0,001 | 0,79-8,3 | 0,109 |
| ESR | 3,03-59,09 | <0,05 | -45,20-18,53 | 0,406 |
| CRP | 1,18-14,69 | <0,05 | 0,29-3,3 | 0,985 |
| VAS | 2,6-4,92 | 0,059 | -2,7-0,15 | 0,078 |
| ACR | 1,83-17,54 | <0,001 | 0,46-1,29 | <0,001 |
| Grip strength (left) | 4,78-68,98 | 0,08 | -11,95-69,68 | 0,163 |
| Grip strength (right) | 6,93-22,31 | <0,001 | 8,06-24,86 | <0,001 |
| DA | 0,47-1,26 | <0,001 | 0,23-1,16 | <0,05 |
| PA | 0,37-1,20 | <0,001 | -5,39-0,93 | 0,08 |

%95 CI: confidence interval

## DISCUSSION

In this study, we analyzed the Turkish RA patients' socio-demographic, clinical and laboratory characteristics and investigated their correlation with disease activity and outcome measures. Although a moderate disease activity was present, functional outcome after 8 years of disease duration was still not severely disabled in the study population.

A very long period of diagnosis (37,9+60,6 months) was observed in our study, suggesting that Turkish patients still have difficulties in reaching a RA specialist. As a window of effective early treatment is currently strongly emphasized efforts to shorten diagnosis delays is a significant priority in our population.

In socio-economic analysis, no correlation was found between marital status, business lives and careers, family relations and disease activity scores. In the univarity analysis of educational status and M-HAQ a significant correlation was observed, suggesting that M-HAQ score is affected by the educational status of our patients. Ward et al. have observed that after, over 9.5 years of follow-up in 282 patients the disease activity was lower in married patients, possibly related to the social support provided by the spouses (5). In our study however, there was no correlation between disease activity and marital status, possibly due to the high ratio of married patients (80%). Similarly, there was no correlation between the smoking history and disease activity. In contrast, Wolfe et al. have shown that the rheumatoid factor concentration of smoking patients is directly proportional to the duration of smoking. However, there was no statistical correlation between the disease activity and smoking, similar to our results (6).

In disease activity measurements, DAS appeared to be a good composite score in correlation with most other disease activity scores, suggesting that it can be used as a reliable and convenient indicator in determining the clinical activity. Similar to our results, Villaverde et al. have shown that DAS and DA (doctor global assessment), among other activities, have a good correlation with other activity indicators (7). In addition, Prevoo et al. have supported that DAS is as reliable as the other single disease activity scores, which include many joints similar to our results (8). DAS values below 1.6, are also shown to be similar to the "remission" definition by 1981 ARA criteria (9). On the other hand, Salaffi et al. have noted that DAS and the joint counts (TJS, SJS,DJS) were statistically correlated only in advanced patients (10). However, Welsing et al, found DAS scores more valuable in early RA compared to M-HAQ scores which might change according to the treatment period (11).

Evaluation of functional outcome with M-HAQ did not correlate with most disease actvity measurements in our study. Greenwood et al, have recorded the changes in HAQ scores of their patients for a year and could not find a statistical relationship between the changes in HAQ scores and loss of health, caused by arthritis (12). Jensen et al, also analyzed HAQ and the disease activity scores of 133 patients at the beginning of the disease and one year later and found no correlation between the period of complaints and HAQ. Although functional capacity was found to be correlated with disease activity at the beginning, no change was observed after 1 year (13). Wolfe et al, observed their patients for 17 years and although no severe functional disability was observed in the early years, M-HAQ became a valuble parameter in the later period. He suggested that M-HAQ, together with the data about other disease activity criteria and the duration of the disease, may provide information about the progress of RA (14).

As a result, among all disease activity measurements, DAS might show the clinical activity of RA adequately at a specified time. On the other hand, M-HAQ gives less information about the current disease activity, but may be a good indicator of the long-term prognosis of RA patients. Further studies with clinical follow-up of our patients are currently planned.

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