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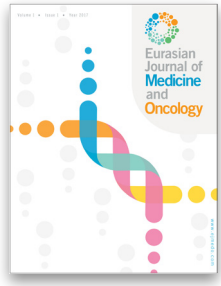

Research Article

Anxiety and Depression Levels in Patients with Rheumatoid Arthritis

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Abstract

Objectives: The purpose of this study was to investigate the anxiety and depression levels in patients with rheumatoid arthritis (RA), which is a chronic disease progressing with intermittent arthralgia.

Methods: This prospective study consisted of 50 RA patients followed clinically in the rheumatology clinic and 50 patients with arthralgia excluding the diagnosis of RA forming a control group. The mean age of the patient group was 50.70±12.48 years, and 78% of the sample were women. The mean age of the control group was 38.46±10.88 years, and 54% of the sample were women. In the RA patient population, the mean duration of disease was 145.56±105.97 months. Beck Depression Inventory-II (BDI-II), Spielberger's State-Trait Anxiety Inventory (STAI), Health Assessment Questionnaire (HAQ), and Disease Activity Score for Rheumatoid Arthritis (DAS28) scores were recorded and analyzed. The patient and control groups were subdivided according to age, sex, and educational level. The patient group included a larger number of people with less formal education then the control group.

Results: The DAS28 score was low or absent (remission) in 78% of the patients and HAQ-DI score of the patients was significantly higher than in the control group ($p=0.001$; $p<0.01$). STAI results indicated that both groups had primarily trait anxiety (STAI-T). Both groups also had minimal depression, according to BDI-II scores. Correlations between scores were evaluated, and a positive relationship between the BDI–II and HAQ-DI scores of the patients and the STAI-T and HAQ-DI of the control group ($p<0.001$) was observed. There was no other statistically significant relationship between scores.

Conclusion: Anxiety and depression levels was not significantly associated with disease activity in patients with rheumatoid arthritis. Due to fact that, 78 of of the patients was in remission state, the patients had minimal depression state. Remission state of the disease did not cause anxiety and depression. Further researchs are needed to enlight the association between rheumatoid arhtritis disease activity and anxiety and depression levels .

Keywords: Beck Depression Inventory-II, Disease Activity Score for Rheumatoid Arthritis, Health Assessment Questionnaire, rheumatoid arthritis, Spielberger State-Trait Anxiety Inventory

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Rheumatoid arthritis (RA) is a chronic, progressive, inflammatory autoimmune disorder that leads to joint disability and structural deformity. Though the primary etiology of RA is not known, genetic and environmental causes are believed to have a role, as in other autoimmune diseases. The incidence rate is high in the female population.[1–3]

RA is a chronic disease with acute exacerbations and relapses. During these attacks, the comorbid pain may lead to emotional and physical exhaustion in patients. Moreover, the physical inability to perform some tasks may cause additional suffering. Dominick et al.[4] reported that people with RA were 40% more likely to report poor gener-

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al health. The report also mentioned that they often needed help with personal care and had health-related activity limitations. In short, we may conclude that the chronicity and destructive progression of the disease negatively affects the quality of life of an RA patient.[4–10]

Here, we analyzed affects of chronicity together with anxiety and depression levels in RA patients.

Methods

Our study population comprised 50 RA patients who fulfilled the American College of Rheumatology 2010 classification criteria[11] from the rheumatology clinic of Dr. Lutfi Kirdar Education and Research Hospital in Istanbul. All of the patients were provided with detailed information about the study and gave written, informed consent. The study group patients had no other systemic, rheumatological, or psychological disease. The control group was made up of 50 healthy volunteers. This prospective study design was approved by the ethics committee of Dr. Lutfi Kirdar Education and Research Hospital.

Beck Depression Inventory

The BDI-II, developed by Beck et al. (1996), uses 21 items to measure the intensity of depressive symptoms.[12] It is a self-administered inventory and each item is scored on a scale of 0 to 3. The sum of all responses is the total score and reflects the level of depression (0–13: minimal depression, 14-19: mild depression, 20–28: moderate depression, 29-63: severe depression). One measure of an instrument's usefulness is to see how closely it agrees with another similar instrument that has been validated against information from a clinical interview by a trained clinician. In this respect, the BDI-II is positively correlated with the Hamilton Depression Rating Scale with a Pearson r of 0.71, showing good agreement. The test was also shown to have high one-week test-retest reliability (Pearson r=0.93). A Turkish translation of the BDI–II was created by Ulusoy et al. (1998).[13]

Health Assessment Questionnaire-Disability Index

The HAQ-DI is the most frequently used test for rheumatoid arthritis. It is a 5-minute self-administered questionnaire. [14] Functional ability to perform activities is scored 0 to 3 (0=without any difficulty, 1=with some difficulty, 2=with much difficulty, 3=unable to do), and high score indicates severe disability.

Disease Activity Score for Rheumatoid Arthritis

The DAS28 score was calculated for patients using a complex formula that includes erythrocyte sedimentation rate / C-reactive protein and the number of tender, swollen joints (28 joints maximum). Generally, remission is considered achieved if the score is between 0 and <2.6. Low activity corresponds to score of 2.6 to <3.2. Moderate activity is between 3.2 and ≤5.1, while high activity is above 5.1.[15]

The State-Trait Anxiety Inventory

The STAI comprises 40 items, and distinguishes between a person's state (S) and trait (T) anxiety. All study patients completed the STAI-S and the STAI-T components. All items are rated on a 4-point scale. Higher scores indicate greater anxiety. The STAI is a frequently used inventory in studies examining anxiety.[16]

Statistical Method

NCSS 2007 (NCSS, LLC, Kaysville, UT, USA) software was used to perform the statistical analyses. Descriptive statistics (mean, standard deviation, median, frequency, rate, minimum, maximum) were used in common calculations. Student's t-test, Mann-Whitney U test, Pearson's chi-square test, and Yates' continuity correction (Yates' chi-square) were used as appropriate. Pearson correlation analysis and Spearman correlation analysis were also used. Statistical significance was defined as $p>0.01$ and $p<0.05$.

Results

The study group comprised 39 female (78%) and 11 male (22%) patients. The control group was made up of 27 females (54%) and 23 males (46%). The mean age of the patient group was 50.70±12.48 years, while the mean age of the control group was 38.46±10.88. The difference in age was of statistical significance (p=0.001). In the patient population, the mean duration of disease was 145.56±105.97 months.

Descriptive characteristics of the control and patient groups are provided in Table 1. The educational level achieved was lower among RA patients than the control group.

DAS 28 scores ranged between 1.6 and 6.1; the mean was 3.02±0.98. The distribution of scores is illustrated in Table 2. A total of 20 patients had low disease activity and 19 had a score that indicated absent (remission) disease activity, altogether constituting 78%. Only 1 patient had a DAS28 score greater than 5.1, which is defined as active disease.

Inventory scores of the patients and the control group are presented in Table 3. The results indicated that only the HAQ-DI scores were statistically significantly different (p=0.001; p<0.01). The mean HAQ-DI score of the patients (1.36±0.41 (1,27) was significantly higher than the mean of the control group (1.07±0.21 (1,02). HAQ-DI scores of

Table 1. Distribution of descriptive characteristics

	Total (n=100)		Patient (n=50)		Control (n=50)		p
	n	%	n	%	n	%	
AGE (years) Mean±SD	44.58±13.17		50.70±12.48		38.46±10.88		[a]**0.001****
Sex							[b]**0.020***
Female	66	66.0	39	78.0	27	54.0	
Male	34	34.0	11	22.0	23	46.0	
Education							[c]**0.058**
Primary	39	39.0	25	50.0	14	28.0	
High school-university	33	33.0	12	24.0	21	42.0	
Master	28	28.0	13	26.0	15	30.0	

SD: Standard deviation; [a]Student's t-test; [b]Yates' continuity correction test; [c]Pearson's chi-square test. **p<0.01; *p<0.05.

Table 2. DAS28 score of rheumatoid arthritis patients

	n	%
DAS28 Min-Max (median) median±SD	1.6–6.1 (2.9)	3.02±0.98
Absent (≤2.4)	19	38.0
Low (2.4–3.6)	20	40.0
Medium (3.6–5.5)	10	20.0
High (>5.5)	1	2.0

SD: Standard deviation; DAS28: Disease Activity Score for Rheumatoid Arthritis.

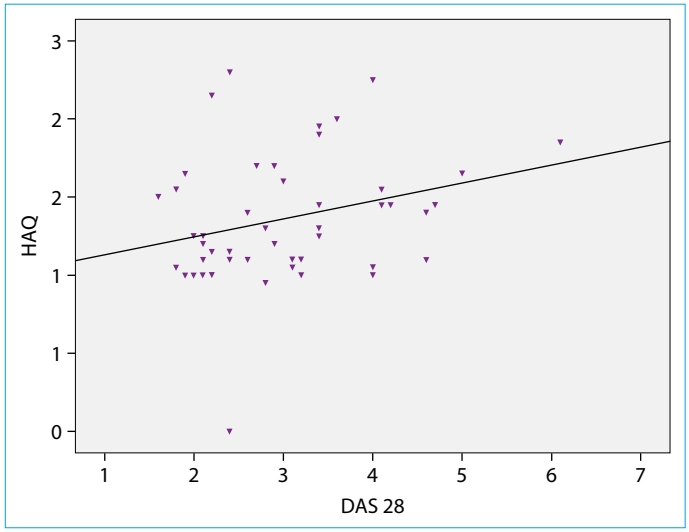

Figure 1. Scatter plot of DAS28 and HAQ-DI scores. DAS28: Disease Activity Score Calculator for Rheumatoid Arthritis; HAQ: Health Assessment Questionnaire.

both groups suggested that they were having some difficulty doing daily tasks. On the other hand, HAQ scores was significantly correlated wtih DAS 28 scores in patients with rheumatoid arthritis (Figure 1). The mean BDI-II score of patients was 2.46±3.18 (1,5) and it was 2.30±2.08 (2,0) in the control group. There was no significant statistical difference in the BDI-II scores. The STAI-S score of the patients was 43.70±6.50 (43,5) and STAI-T score of the patients was 48.10±7.58 (47,0). STAI S&T scores did not demonstrate a significant difference compared with those of the control group. However, the STAI results were in favor of trait anxiety in both groups.

As seen in Table 4, analysis of correlations between scores yielded a positive relationship between the BDI-II and HAQ-DI scores of the patients and the STAI-T and HAQ-DI of the control group (p<0.001). There was no other statistically significant relationship between scores.

Discussion

The number of studies examining the effects of RA on quality of life has increased in recent years. RA is a concern of global health and social productivity. Various treatment

Table 3. Results of inventories

	Total (n=100) Median±SD	Patient (n=50) Median±SD	Control (n=50) Median±SD	p
HAQ-DI	1.21±0.36 (1.10)	1.36±0.41 (1.27)	1.07±0.21 (1.02)	[b]**0.001****
STAI-State	42.61±6.08 (42.0)	43.70±6.50 (43.5)	41.52±5.48 (41.5)	[a]**0.073**
STAI-Trait	47.18±7.32 (46.0)	48.10±7.58 (47.0)	46.26±7.00 (46.0)	[a]**0.210**
BDI-II	2.38±2.67 (2.0)	2.46±3.18 (1.5)	2.30±2.08 (2.0)	[b]**0.483**

SD: Standard deviation; [a]Student's t-test; [b]Mann-Whitney U test. **p<0.01. BDI-II: Beck Depression Inventory-II; HAQ: Health Assessment Questionnaire; STAI: State-Trait Anxiety Inventory.

Table 4. Correlation between inventories

	Patient (n=50)		Control (n=50)	
	r	p	r	p
STAI-S/HAQ-DI	-0.089	**0.540**	0.193	**0.180**
STAI-T/HAQ-DI	0.216	**0.132**	0.532	**0.001****
BDI-II/HAQ-DI	0.491	**0.001****	0.269	**0.059**
STAI-S/STAI-T	‡0.248	**0.146**	‡0.364	**0.009****
STAI-S/BDI-II	0.041	**0.777**	0.001	**0.997**
STAI-T/BDI-II	0.164	**0.256**	0.136	**0.345**

r: Spearman's correlation coefficient; ‡r: Pearson's correlation coefficient. **p<0.01 BDI-II: Beck Depression Inventory-II; HAQ: Health Assessment Questionnaire; STAI: State-Trait Anxiety Inventory.

modalities may reduce its destructive and painful architecture, but the social suffering of patients can change a patient's psychology. There have been many studies, such as that of Hawley and Wolf, who examined a series of 400 patients, that have reported a negative relationship between RA and socioeconomic status and depression. However, they did not find a relationship between disease activity and psychological status.[17] Matusek and Raspe observed a strong relationship with both pain and anxiety, and pain and depression in a series of 346 arthritis patients. [18] Hagglund and Affleck reported a high correlation with pain and anxiety.[7, 19] Smetstad et al., in a series of 238 RA patients, demonstrated a relationship among self-reported pain, anxiety and depression.[20–22] Abdeel-Nasser et al. conducted a comparative study of osteoarthritis and RA in a series of 100 patients and concluded that RA patients have more depressive symptoms.[23] Clemmey and Nicassio examined the hypothesized illness self-schema construct in depressed and non-depressed RA patients. Their major findings revealed that depressed RA patients exhibited a pervasively negative self-description and biased processing of negative, illness-related information. Arango et al. investigated the role of perceived daily stress as a potential moderator in the relationship between disease activity and pain of patients with rheumatoid arthritis and psychological status.[24, 25]

Our study has produced some additional observations. First of all, trait anxiety (85%) was seen more often than state anxiety (54%) in RA patients. The continuous stress felt by RA patients should be kept in mind. Second, BDI-II scores revealed no significant difference between the patient and control groups (p>0.05). In the literature, we frequently encountered a pairing of depression and RA. However, in our study, the scores reflected only minimal depression. Another interesting finding was that our study population was mostly composed of people with a low level of formal education. To some degree, this finding may indirectly demonstrate a relationship with socioeconomic status and depression. Unlike Hawley and Wolfe, who reported that RA patients of a low socioeconomic level felt more depression, our results indicated that RA patients with a low level of education felt less depression.

We found a positive correlation between DAS28 and HAQ-DI scores and disease activity. When these scores were evaluated together with the BDI-II, we encountered a positive relationship between HAQ-DI scores and patient depression, contrary to the findings of Hawley and Wolfe, whose study reported no relationship between them. It is clear that it becomes difficult for RA patients to cope with social events when the symptoms and the inflammation of the disease increase. Therefore, they are likely to experience more depression with greater disease activity.

STAI results were not found to be correlated with HAQ-II. That may have been because the patients were aware of which joints were involved in disease progression, and as activation increased they did not feel much anxiety. In the literature, the relationship between pain and anxiety is often underlined, but the relationship between health assessment and anxiety is less discussed .

In the control group, which included no diagnosis of RA, there was a positive correlation between the HAQ-DI and STAI-T scores that may reflect increased trait anxiety about arthralgia of undefined source. Those patients were likely feeling concern about the progress but had little information, since the arthralgia diagnosis had not been further defined. That anxiety probably increased as health assessment regressed.

Unfortunately, our study was limited by the small number of RA patients.

Given that it was a small series of RA patients, it may be speculative to draw conclusions about why trait anxiety was greater than state anxiety or the lack of difference in rate of depression between RA and other arthritis. We suggest that future studies of these associations be conducted in large series, with perhaps an extra parameter regarding patient knowledge about their disease. Our primary goal is to bring attention to the fact that depression is an expected disorder when disease activity increases and when the arthritis diagnosis is not specific. Global health measures involving people productivity should take this into account, and preventive measures like regular psychotherapy during arthritis attacks should be taken.

Disclosures

Ethics Committee Approval: This prospective study design was approved by the ethics committee of Dr. Lutfi Kirdar Education and Research Hospital.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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