ALEXITHYMIA, DEPRESSION, ANXIETY LEVELS AND QUALITY OF LIFE IN PATIENTS WITH RHEUMATOID ARTHRITIS

ALI YAVUZ KARAHAN[*], ADEM KUCUK[**], AYŞE BALKARLI[***], FATIH KAYHAN[****], NAIL OZHAN[*****], OMER NAS[******], TAYFUN GUNGOR[******], SAMI KUCUKSEN[******]

[*]Department of Physical Medicine and Rehabilitation, Konya Training and Research Hospital Konya/Turkey -[**]Department of Rheumatology, Necmettin Erbakan University, Konya, Turkey - [***]Department of Rheumatology, Pamukkale University, Denizli, Turkey [****]Department of Psychiatry, Mevlana University, Konya, Turkey - [*****]Department of Internal Medicine, Pamukkale University, Faculty of Medicine, Denizli, Turkey - [******]Department of Physical Medicine and Rehabilitation, Necmettin Erbakan University, Konya, Turkey

ABSTRACT

***Introduction**: Rheumatoid arthritis (RA) is a chronic inflammatory disease that manifests itself with joint swelling and pain. Although alexithymia is more commonly seen in painful rheumatic conditions such as RA, there is limited clinical data about the relations with other psychiatric conditions such as depression and anxiety and their impact on quality of life. We aimed to assess the level of alexithymia, depression and anxiety and their effects on quality of life in patients with rheumatoid arthritis.*

***Materials and methods**: A hundred forty-eight patients with RA and 100 healthy subjects were included in the study. After physical examination of the patients, Toronto Alexithymia Scale-20 (TAS-20), Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) were performed to determine levels of alexithymia depression and anxiety, respectively. The World Health Organization Quality of Life Scale Abbreviated Version (WHOQoL-BREF) was used to assess the quality of life. Disease Activity Score Calculator for Rheumatoid Arthritis-28 (DAS-28) was performed to evaluate disease activity.*

***Results**: The prevalence of alexithymia was 31.1% in patients with RA. Alexithymia was statistically significantly higher in the RA than the control group ($p<0.05$). 41.9% ($n=62$) of the patients with RA were diagnosed with depression. 20.9% ($n=31$) of the patients had severe anxiety symptoms. Although there was no statistically significant difference between alexithymia and depression scores, disease activity scores ($p> 0.05$) in patient with RA. The anxiety scores were significantly higher ($p <0.05$) in patients with RA. RA patients manifested poorer scores in all domains of WHOQoL-BREF than the control subjects ($p<0.05$).*

***Conclusion**: In this clinical trial it has been demonstrated that regardless of disease activity, alexithymia, symptoms of depression and anxiety are more commonly seen in RA patients that can negatively affect the quality of life. Further studies are needed to confirm this association.*

***Keywords**: Alexithymia, rheumatoid arthritis, depression, anxiety, quality of life.*

DOI: 10.19193/0393-6384_2016_5_149

***Received** April 30, 2016; **Accepted** July 02, 2016*

Introduction

Rheumatoid arthritis (RA) is a chronic inflammatory disease that manifests itself with joint swelling and pain. Although the etiology of RA is not known for certain, genetic and environmental factors have been blamed[1]. The worldwide prevalence of RA is around 1%. RA is seen 2-3 times more in women than in men[1, 2].

Being a systemic autoimmune disease, it affects the musculoskeletal, nervous, respiratory, renal and hematologic systems[3].

Alexithymia is a multifaceted personality construct characterized by a reduced ability to identify and describe one's emotions and a tendency to focus on external events rather than inner experiences[4]. Alexithymia is more commonly seen in painful rheumatic conditions such as RA and

fibromyalgia[5]. Depression is more commonly seen in patients with RA at a frequency ranging from 22-80%[6]. The prevalence of depression in RA was found to be around 13-20% in clinical studies[7]. Also RA may lead to a decrease in productivity and an increase in economic burden and deterioration of the quality of life (QoL) due to physical disability and comorbid medical disorders[8]. Therefore, evaluating QoL may be more effective than examining the number of joints and acute phase reactants[9].

In the current study, we aimed to assess the level of alexithymia, depression and anxiety and their effects on QoL in patients with rheumatoid arthritis. Although similar studies have related to RA have been carried out, the present study is the first in terms of an assessment combining the conditions such as depression, anxiety, alexithymia and quality of life.

Materials and methods

The study was conducted in the Rheumatology and Physical Therapy and Rehabilitation outpatient clinics at Necmettin Erbakan University Faculty of Medicine. A hundred and forty-eight patients with a diagnosis of RA according to the Association of American College of Rheumatology criteria were enrolle.

Inclusion criteria for this study were as follows:

(a) current age of at least 18 years;

(b) voluntary participation in the study;

(c) general medical condition and mental capacity of the patients appropriate for filling the scales.

Exclusion criteria included:

(a) patients with a history of any psychotic disorders;

(b) having comorbid other rheumatologic diseases.

Also 100 healthy subjects were included to the study as a control group. Healthy subjects were selected from the community without any rheumatologic diseases. The study was approved by the ethics committee of Meram Faculty of Medicine of Necmettin Erbakan University. Each patient was examined by the specialists of Rheumatology and Physical Therapy and Rehabilitation. Socio demographic features, drugs used in therapy and habits of patients who accepted to be included in the study were recorded. Patient psychiatric history and family psychiatric history were ascertained.

Disease activity was evaluated using the Disease Activity Score-28 (DAS-28) scoring system[10]. It consists of four domains (healing sense of patients according to the visual analog, number of tender and swollen joints and C-Reactive Protein (CRP) level). The evaluation of swollen and tender joints was done by other physicians blinded to the identity of subjects. DAS-28 is divided into four categories based on the disease activity (DAS-28 less than 2.6 is remission, less than 3.2 is mild, 3.2-5.1 is moderate and above 5.1 is severe)[11].

The level of alexithymia, depression, anxiety and quality of life was performed by using Toronto Alexithymia Scale (TAS-20), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), The World Health Organization Quality of Life Scale Abbreviated Version (WHOQoL-BREF), respectively. The scales were evaluated by psychiatrist. The scores of scales were recorded.

Alexithymia was measured by the 20-item, TAS-20. TAS-20 is a Likert-type self-rating scale and consists of 20 items. It measures three factors: difficulty describing feelings (DDF), difficulty in identifying feelings (DIF), and externally-oriented thinking (EOT) in a summative manner, leading to dichotomous scoring: a score of 59 or higher indicates the presence of alexithymia[12]. The validity and reliability of the TAS-20 for the Turkish population were provided by Dereboy et al[13].

Depression was assessed with the BDI. BDI is a self-rating scale that consists of 21 items. All the items were self- rated from 0 to 3 and added up to obtain a total score ranging from 0 to 63, with higher values indicating more severe depressive symptoms. The validity and reliability studies conducted in Turkey indicated cut-off score of 17; therefore a score of 17 and above was diagnosed as depression[14]. BAI was used to determine the levels of anxiety. The inventory consists of 21 items and were self-rated from 0 to 3 and added up to obtain a total score ranging from 0 to 63, with higher values indicating more severe anxiety symptoms. The scores from this inventory were grouped as follows: 0-7 points indicated minimal level of anxiety, 8-15 points indicated mild anxiety, 16-25 points indicated moderate anxiety and 26-63 points indicated severe anxiety[15].

Quality of life was assessed with the WHOQoL-BREF. The Turkish version of the WHOQoL-BREF contains 27 items with scores of 1 to 5 and assesses four areas: physical, psychological, social relationships, and the environment[16].

Statistical analysis

Data analyses were performed by Statistical Package for Social Sciences (SPSS Inc. Released 2007. SPSS for Windows, Version 16.0. Chicago, SPSS Inc.), for Windows. The study groups were compared with chi-square or Fisher's Exact Test with respect to categorical variables. Comparisons for continuous variables were performed using t test. Pearson's correlation test was used for correlation analyses in normally distributed parametric variables. Independent variables associated with the existence of mood or anxiety disorders were determined with linear regression analysis. Two-tailed P<0.05 was accepted as statistically significant.

Results

A hundred and forty-eight patients with RA and 100 healthy subjects were included in the study. The mean of age of the participants was 50.05±12.26 years. There were no differences between patients and control group in terms of age and sociodemographic features (Table 1).

In the RA group, 38.5% (n=57) of the patients had a comorbid medical disease, of which the most prevalent was hypertension (20.9%, n=31). Patient characteristics can be seen in table 1.

According to the BDI score, 41.9% (n=62) of the patients had depressive symptoms. Considering the BAI scores of the patients, 29.7% of patients (n = 44) had mild, 26.4% (n = 39) had moderate and 20.9% (n = 31) had severe anxiety symptoms (Table 2). The BDI and BAI scores were 15.57±7.95 and 17.53±12.64, respectively. No statistically significant relation was seen between depression and sociodemographic features and drugs used in the treatment in patients with RA (p>0.05) (Table 3).

The mean of the total TAS-20 scores was 53.58±9.70. The mean of DIF, DDF and EOT scores were 17.92±5.77,13.94±3.73 and 21.63±3.63, respectively (Table 4). There was no statistically significant relation between alexithymia and sociodemographic features, comorbid medical disease and DAS-28 in patients with RA (p>0.05). Alexithymia was seen more frequently in patients taking rituximab for the treatment of RA (p=0.009). While there was no statistically significant relation between alexithymia and depressive symptoms (p = 0.720), the relation in the presence of anxiety was statistically significant (p=0.035) (Table 4-5)

		Rheumatoid arthritis		Control		P value
		Mean ± Std		Mean ± Std		
Age		52.56±11.98		51.05±9.01		0.285***
		n	%	n	%	
Gender	Male	32	21.6	24	24	0.757*
	Female	116	78.4	76	76	
Education	Primary school	118	79.7	77	77	0.179*
	High school	15	10.1	17	17	
	University	15	10.1	6	6	
Marital status	Single	12	8.1	4	1	0.292*
	Married	136	91.9	96	96	
Job	No	103	69.6	58	58	0.061*
	Yes	45	30.4	42	42	
Inhabitation	Rural	90	60.8	61	61	0.976*
	Urban	58	39.2	39	39	
Smoking	No	139	93.9	97	97	0.212**
	Yes	9	6.1	3	3	
Alcohol	No	147	99.3	100	100	1.000**
	Yes	1	0.7	0	0	
Diabetes Mellitus	No	138	93.2	94	94	0.812*
	Yes	10	6.8	6	6	
Hypertension	No	117	79.1	91	91	**0.012***
	Yes	31	20.9	9	9	
Dyslipidemia	No	138	93.2	96	96	0.356*
	Yes	10	6.8	4	4	
Hypothyroidism	No	136	91.9	100	100	**0.002****
	Yes	12	8.1	0	0	
Other Chronic diseases	No	129		100	100	**0.000***
	Yes	12.8		0	0	

Table 1: Sociodemographic and clinical features of participants.

Pearson Chi square, **Fischer's exact test, * t test, Std: Standard deviation*

The scores in all domains of WHOQoL-BREF in patients with RA were statistically significantly poorer than the control group (p<0.005). When the WHOQoL-BREF scores were compared for RA patients with and without alexithymia, the scores in the psychological and environmental domains were lower for the RA patients with alexithymia; however, no statistically significant difference was noted for the physical (p=0.056) and social relationship (p=0.149) domains between the two groups. The RA patients who also had depressive symptoms had significantly poorer scores in all domains of QoL (p<0.05).

	Rheumatoid arthritis	Control	P value*
	Mean ± Std	Mean ± Std	
Sedimentation	22.23±13.70	8.99±2.74	0.008
CRP	7.04±23.69	0.67±1.14	0
DAS-28	3.29±1.41		
BDI	15.57±7.95	9.15±4.23	0
BAI	17.53±12.62	8.82±4.58	0
DIE	17.92±5.77	12.03±3.97	0
DDE	13.94±3.73	9.97±2.96	0
EOT	21.63±3.63	17.44±4.57	0
Total TAS	53.58±9.70	39.67±10.09	0
Physical health	50.15±19.02	76.19±24.31	0
Psychological health	59.96±17.96	75.19±24.42	0
Social relationship	60.22±22.41	79.09±19.20	0
Environment	63.34±17.39	83.01±15.97	0

Table 2: TAS-20, BDI, BAI and WHOQoL-BREF scores in RA and Control Group.
** t test, TAS-20: Toronto Alexithymia Scale, BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory, WHOQoL-BREF: The World Health Organization Quality of Life Scale Abbreviated Version, DIE: Difficulty in identifying feelings, DDE: Difficulty describing feelings, EOT: Externally-oriented thinking, Std: Standard deviation*

Considering the anxiety scores, the relationship between all subgroups of WHOQoL-BREF and minimal and mild anxiety levels ($p>0.05$) did not reach statistical significance; however, there was a statistically significant relation between moderate to severe anxiety level and QoL scores ($p<0.05$).

In the correlation analyses, a negative correlation was found between total TAS-20 scores and all subgroups of WHOQoL-BREF and BAI scores. A positive correlation was found between BDI scores and BAI and DAS28 scores. A negative correlation was found between BDI and all domains of WHOQoL-BREF scores. The BDI scores showed no correlation with sedimentation or CRP values (Table 6).

The variables found significantly different between the groups when compared with the $\chi 2$ test or t test were analyzed by linear regression analysis to determine independent factors for alexithymia scores. The regression analysis indicated that the scores in the psychological and environmental domains of WHOQoL-BREF were independent factors for alexithymia scores.

		Patients with depressive symptoms		Patients without depressive symptoms		P value
		n	%	n	%	
Gender	Female	50	80.6	66	76.7	0.687**
	Male	12	19.4	20	23.3	
Education	Primary	49	79	69	80.2	0.531*
	High	8	12.9	7	8.1	
	University	5	8.1	10	11.6	
Job	No	44	71	59	68.6	0.857**
	Yes	18	29	27	31.4	
Marital status	Single	3	4.8	9	10.5	0.216*
	Married	59	95.2	77	89.5	
Earnings	No	16	25.8	27	31.4	0.307*
	<750 TL	10	16.1	13	15.1	
	750-1500TL	20	32.3	34	39.5	
	>1500 TL	16	25.8	12	14	
Inhabitation	Rural	38	61.3	52	60.5	0.919*
	Urban	24	38.7	34	39.5	
Smoking		3	4.8	6	7	0.591*
Alcohol		1	1.6	0	0	0,237*
Medical diseases		23	37.1	34	39.5	0.764*
Diabetes Mellitus		6	9.7	4	4.7	0.229*
Hypertension		17	27.4	14	16.3	0.100*
Dyslipidemia		4	6.5	6	7	1.000**
Hypothyroid		3	4.8	9	10.5	0.216*
Other Chronic Diseases		9	14.5	10	11.6	0.604**
Family history		9	14.5	14	16.3	0.770*
Sulfasalazine		38	61.3	52	60.5	0.919*
NSAI		32	51.6	37	43	0.301*
Methotrexate		45	72.6	50	58.1	0.083**
Etanercept		6	9.7	6	7	0.687**
Adalimumab		2	3.2	1	1.2	0.572**
Leflunomide		15	24.2	17	19.8	0.549**
Hydroxychloroquine		29	46.8	39	45.3	0.869**
Rituximab		1	1.6	1	3.5	0.299**
Abatacept		1	1.6	6	7	0.239**
Infliximab		4	6.5	7	7	1.000**
Methylprednisolone		40	64.5	47	54.7	0.229*

Table 3:Sociodemographic and clinical features of patients with or without depressive symptoms.
**PearsonChi- Square ** Fischer'sExact Test*

	Alexithymia (+)	Alexithymia (-)	P value*
	Mean ± Std	Mean ± Std	
Age	51.65±10.84	52.97±12.49	0.537
Sedimentation	19.52±8.28	23.46±15.43	0.663
CRP	5.77±13.59	7.62±27.08	0.604
DAS-28	2.72±1.34	3.59±1.38	0.062
BDI	15.19±7.16	15.74±8.31	0.699
BAI	20.69±13.39	16.10±12.08	**0.041**
Physical health	45.71±21.44	52.15±17.56	0.056
Psychological health	53.08±18.96	63.06±16.67	0.002
Social relationship	56.26±24.71	62.01±21.18	0.149
Environment	58.84±18.80	65.37±16.41	0.014

Table 4: TAS-20, BDI, BAI and WHOQoL-BREF scores in patients with/without Alexithymia.
** t test, TAS-20: Toronto Alexithymia Scale, BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory, WHOQoL-BREF: The World Health Organization Quality of Life Scale Abbreviated Version, Std: Standard deviation*

Discussion

The prevalence of alexithymia was 31.1% in patients with RA, which was found to be higher than the control group. All domains of TAS-20 and total scores were higher in the RA group when compared to the control group. Alexithymia is generally more commonly seen in painful rheumatic conditions as rheumatoid arthritis (RA) and fibromyalgia[5]. Barbosa et al[17] reported high TAS-20 scores in patients with Systemic Lupus Erythematosus (SLE). The TAS-20 scores seen in the patients with RA in the current study was higher than the values reported in community based studies. Kokkonen et al[18] reported that the prevalence of alexithymia was 9% for males and 5% for females in a community-based study in young adults. The prevalence of alexithymia was 13% in another community based study in Finland[19]. Alexithymia was seen more frequently in RA patients, and the association between alexithymia and physical illness may stem from different levels of physical, behavioral and cognitive changes[20].

Considering the relationship between alexithymia and sociodemographic features in the current study, there was no significant difference between the patients and the control subjects. A study conducted on patients with RA, fibromyalgia and general hospital patients indicated no significant difference between alexithymia, gender and sociocultural status.

		Alexithymia (+)		Alexithymia (-)		P value
		n	%	n	%	
Gender	Female	36	78.3	80	78.4	0.981*
	Male	10	21.7	22	21.6	
Education	Primary	37	80.4	81	79.4	0.916*
	High	4	8.7	11	10.8	
	University	5	10.9	10	9.8	
Occupation	No	30	65.2	73	71.6	0.437*
	Yes	16	34.8	29	28.4	
Marital status	Single	2	4.3	10	9.8	0.343**
	Married	44	95.7	92	90.2	
Earnings	No	7	15.2	36	35.3	0.049*
	<750 TL	11	23.9	12	11.8	
	750-1500TL	19	41.3	35	34.3	
	>1500 TL	9	19.6	19	18.6	
Inhabitation	Rural	29	63	61	59.8	0.709*
	Urban	17	37	41	40.2	
Smoking		3	6	6	5.9	1.000**
Alcohol		0	0	1	1	1.000**
Medical diseases		19	41.3	38	37.3	0.716**
Diabetes Mellitus		4	8.7	6	5.9	0.502**
Hypertension		10	21.7	21	20.6	0.873*
Dyslipidemia		3	6.5	7	6.9	1.000**
Hypothyroid		3	6.5	9	8.8	0.635*
Other Chronic		9	19.6	10	9.8	0.100*
Family history of		7	15.2	16	15.7	0.942*
Sulfasalazine		25	54.3	65	63.7	0.279*
NSAI		24	52.2	45	44.1	0.363*
Methotrexate		30	65.2	65	63.7	0.861*
Etanercept		4	8.7	8	7.8	0.860*
Adalimumab		0	0	3	2.9	0.552**
Leflunomide		9	19.6	23	22.5	0.683*
Hydroxychloroquine		16	34.8	52	51	0.067*
Rituximab		4	8.7	0	0	0.003*
Abatacept		3	6.5	4	3.9	0.677**
Infliximab		5	10.9	5	4.9	0.286**
Methylprednisolone		24	52.2	63	61.8	0.273*

Table 5: Sociodemographic Features of Patients with/without Alexithymia.
**PearsonChi- Square ** Fischer'sExact Test*

In contrast, the prevalence of alexithymia was found to be higher in patients with low socioeconomic status[5].

	Age	Das28	CRP	Sedimentation	BDI	BAI	DIE	DDE	EOT	Total TAS	Physical health	Psychological health	Social relation-ship	Environment
Das28	,174		,042*	,001**	,017*	,159	,206	,877	,036	,119	,009*	,357	,969	,864
BDI	,786	,017	,938	,202		,000**	,330	,631	,734	,406	,000**	,000**	,000**	,003*
BAI	,877	,159	,369	,373	,000**		,001**	,038	,929	,007*	,000**	,000**	,000**	,000**
Total TAS	,643	,119	,149	,284	,406	,007*	,000**	,000**	,000**		,003*	,000**	,049*	,000**
Physical health	,141	,009	,196	,448	,000**	,000**	,000**	,022*	,851	,003*		,000**	,000**	,000**
Psychological health	,850	,357	,236	,441	,000**	,000**	,000**	,000**	,290	,000**	,000**		,000**	,000**
Social relation-ship	,630	,969	,033	,825	,000**	,000**	,178	,118	,190	,049*	,000**	,000**		,000**
Environment	,449	,864	,022	,809	,003*	,000**	,004*	,000**	,293	,000**	,000**	,000**	,000**	

Table 6: Correlation Analyze.

** P< 0.05 **P <0.001 ,Pearson's correlation*

TAS-20: Toronto Alexithymia Scale, BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory, WHOQoL-BREF: The World Health Organization Quality of Life Scale Abbreviated Version, DIE: Difficulty in identifying feelings, DDE: Difficulty describing feelings, EOT: Externally-oriented thinking

These results are consistent with the findings of our study. An association between alexithymia, male gender, older age and low education status in community-based studies has been reported[19]. An additional important finding in our study was the lack of association between depressive symptoms and alexithymia. In the literature, there are many studies that focus solely on the relationship between alexithymia and depression[21, 22]. Hintikka et al[22] reported a high positive correlation between alexithymia and depression. On the other hand, some studies have emphasized the various dimensions of alexithymia may have different relationships with depression. Haviland et al[23] found that the DDF and DIF subgroups of alexithymia were correlated with depression. No relationship between depression and alexithymia was found between another subgroup of alexithymia, EOT[24].

In the current study, no statistically significant relation was found between depressive symptoms and all subgroup scores of alexithymia. We believe that it may have resulted from inherent socio-cultural differences. However, studies investigating the relationship between depression and all domains of alexithymia have also not shown consistent data[25, 26].

In our study, we have found a relationship between alexithymia and anxiety symptoms. Corroborating these findings, previous studies have also demonstrated that patients with anxiety disorders have a high rate of alexithymia[24, 27].

Based on the Beck depression scale, 41.9% (n=62) of the patients with RA had depressive symptoms. The rate of depressive symptoms was higher than the control group. Isik et al[28] reported that the prevalence of depression was 41.5%. This value is similar to the findings of our study.

The prevalence of major depression in patients with RA has been reported to range between 13-30%[29-34]. These values are lower than what we have observed in the current study. The possible reasons could be the use of different methods and the evaluation of solely major depression in some studies. There was no relationship between depression and disease activity score of RA in this study.

Various studies have reported that poor social support, physical disability, disease activity and joints pain may lead to depression comorbid with RA[29, 30, 32, 33]. Interestingly, the lack of a relationship between disease activity and depression has also been reported[34]. No relationship was observed between depression and gender, socioeconomic status, marital status and educational status in patients with RA. Jackson et al[35] reported that gender and socioeconomic status were not a risk factor for depression in RA. A relationship was reported between low socioeconomic status and comorbid psychiatric disorders, depression and mortality[36, 37].

The number of studies on anxiety in RA is limited. In the current study, 69% of the RA patients showed symptoms of mild to severe anxiety. El Miedany et al[38] reported that the incidence of anxiety in RA was 70%. This value is consistent with the finding of our study. Isık et al showed that the prevalence of anxiety was 13.4%[28]. Severe anxiety symptoms were seen in 12.5% of patients with RA in the current study.

Patients with RA had poorer scores in all domains of WHOQoL-BREF in our study. Previously it has been shown that the incidence of RA results in major changes in WHOQoL-BREF scores[39]. In a comparative study by Strand et al. on the QoL of patients with RA and psoriasis using the

Short Form 36 (SF-36) and health related quality of life (HRQL) scales, the QoL scores of patients with RA was reported to be low[40].

Our findings are consistent with the previous studies. The HRQL and SF-36 scales can only evaluate the impact of disease and psychiatric disorders on QoL. HRQL scores were reported to be poorer in patients with comorbid alexithymia as well as the general population with alexithymia[41-44]. Salminen et al[45] showed that there was a relationship between lower SF-36 and alexithymia scores.

In a study conducted on medical students and nurses by Modestin et al[46], alexithymia was associated with the mental and social subgroup of SF-36. In the current study, Beck depression and anxiety scores were negatively correlated with all domains of WHOQoL-BREF scores. Özcetin et al[47] showed that there was a negative correlation between SF-36 and Beck anxiety scores in patients with RA.

There were some limitations in our study. First, the diagnosis of depression and anxiety disorders were reliant on self-reported scales, and a semi-structured psychiatric interview was not conducted. Secondly, the patient group was relatively small. However, this small sample size was compensated by conducting a multicenter study where patients were recruited from hospitals located in different provinces of Turkey, which also distinguishes this study from other related studies.

Conclusion

Alexithymia, depression and anxiety symptoms were more commonly seen in patients with RA and may negatively impact quality of life. Regardless of the severity of disease, assessment of psychiatric disorders during treatment and follow up may help to improve quality of life and increase patient's compliance to the treatment. Large-scale studies where psychiatric disorders are addressed separately are needed.

References

1) Wilkes E, Meek ES. *Rheumatoid arthritis: review of searches for an infectious cause*. Part II. Infection 1979; 7: *192-7*.
2) Huh NW, Choi CB, Uhm WS, Bae SC. *The prevalence and trend of arthritis in Korea: results from Korea National Health and Nutrition Examination Surveys*. J Korean Rheum Assoc 2008; 15: *11-26*.
3) Lee TJ, Park BH, Son HK, Song R, Shin KC, Lee EB, et al. *Cost of illness and quality of life of patients with rheumatoid arthritis in South Korea*. Value in health : the journal of the International Society for Pharmacoeconomics and Outcomes Research 2012; 15: *S43-9*.
4) Lane RD, Ahern GL, Schwartz GE, Kaszniak AW. *Is alexithymia the emotional equivalent of blindsight?* Biological psychiatry 1997; 42: *834-44*.
5) Steinweg DL, Dallas AP, Rea WS. *Fibromyalgia: unspeakable suffering, a prevalence study of alexithymia*. Psychosomatics 2011; 52: *255-62*.
6) Rimon R. *Depression in Bei chronischer Polyarthritis*. Aktuelle Rheumatologie 1978; 3: *143-7*.
7) Covic T, Tyson G, Spencer D, Howe G. *Depression in rheumatoid arthritis patients: demographic, clinical, and psychological predictors*. Journal of psychosomatic research 2006; 60: *469-76*.
8) Sangha O. *Epidemiology of rheumatic diseases*. Rheumatology 2000; 39 Suppl 2: *3-12*.
9) Wolfe F, Pincus T. *Listening to the patient: a practical guide to self-report questionnaires in clinical care*. Arthritis and rheumatism 1999; 42: *1797-808*.
10) Alishiri GH, Bayat N, Salimzadeh A, Salari A, Hosseini SM, Rahimzadeh S, et al. *Health-related quality of life and disease activity in rheumatoid arthritis. Journal of research in medical sciences*: the official journal of Isfahan University of Medical Sciences 2011; 16: *897-903*.
11) Makinen H, Kautiainen H, Hannonen P, Mottonen T, Korpela M, Leirisalo-Repo M, et al. *Disease activity score 28 as an instrument to measure disease activity in patients with early rheumatoid arthritis*. The Journal of rheumatology 2007; 34: *1987-91*.
12) Gülec H, Yenel A. *20 Maddelik Toronto Aleksitimi Ölçegi Türkçe Uyarlamasinin Kesme Noktalarina Göre Psikometrik Özellikleri*. Klinik Psikiyatri 2010; 13: *108-12*.
13) Dereboy IF. *Aleksitimi öz-bildirim ölçeklerinin psikometrik özellikleri üzerine çalışma (dissertation)*. Ankara. 1990.
14) Hisli N. Beck *Depresyon Envanterinin üniversite öğrencileri için geçerliliği, güvenilirliği*. Psikoloji Dergisi 1989; 7: *3-13*.
15) Ulusoy M, Şahin NH, Erkmen H. *Turkish version of the Beck Anxiety Inventory: Psychometric properties*. J Cogn Psychother 1998; 12: *163-72*.
16) Eser YS, Fidaner H, Fidaner C, al. e. *Yaşam kalitesinin ölçülmesi, WHOQOL-100 ve WHOQOL-Brief*. 3P Dergisi 1999; 7: *5-13*.
17) Barbosa F, Mota C, Alves M, Alcantara C, Rossinol B, Patricio P, et al. *Alexithymia in systemic lupus erythematosus patients*. Annals of the New York Academy of Sciences 2009; 1173: *227-34*.
18) Kokkonen P, Karvonen JT, Veijola J, Laksy K, Jokelainen J, Jarvelin MR, et al. *Prevalence and sociodemographic correlates of alexithymia in a population sample of young adults*. Comprehensive psychiatry 2001; 42: *471-6*.
19) Salminen JK, Saarijarvi S, Aarela E, Toikka T, Kauhanen J. *Prevalence of alexithymia and its association with sociodemographic variables in the general population of Finland*. Journal of psychosomatic research 1999; 46: 75-82.

20) Lumley MA, Neely LC, Burger AJ. *The assessment of alexithymia in medical settings: implications for understanding and treating health problems*. Journal of personality assessment 2007; 89: *230-46*.
21) Hendryx MS, Haviland MG, Shaw DG. *Dimensions of alexithymia and their relationships to anxiety and depression*. Journal of personality assessment 1991; 56: *227-37*.
22) Hintikka J, Honkalampi K, Lehtonen J, Viinamaki H. *Are alexithymia and depression distinct or overlapping constructs?: a study in a general population*. Comprehensive psychiatry 2001; 42: 234-9.
23) Haviland MG, Shaw DG, Cummings MA, MacMurray JP. *Alexithymia: subscales and relationship to depression*. Psychotherapy and psychosomatics 1988; 50: *164-70*.
24) Berthoz S, Consoli S, Perez-Diaz F, Jouvent R. *Alexithymia and anxiety: compounded relationships? A psychometric study. European psychiatry*: the journal of the Association of European Psychiatrists 1999; 14: *372-8*.
25) Wise TN, Jani NN, Kass E, Sonnenschein K, Mann LS. *Alexithymia: relationship to severity of medical illness and depression*. Psychotherapy and psychosomatics 1988; 50: *68-71*.
26) Sexton MC, Sunday SR, Hurt S, Halmi KA. *The relationship between alexithymia, depression, and axis II psychopathology in eating disorder inpatients*. The International journal of eating disorders 1998; 23: *277-86*.
27) Arık AC, Soylu E, Şahin AR. *Marmara Depreminden Sonra Gelişen Posttravmatik Stres Bozukluğunda Aleksitimik Özellikler*. Gaziantep Devlet Hastanesi Anadolu Tıp Dergisi (Anatolian Journal of Medicine) 2000; 4: *20*.
28) Isik A, Koca SS, Ozturk A, Mermi O. *Anxiety and depression in patients with rheumatoid arthritis*. Clinical rheumatology 2007; 26: *872-8*.
29) Frank RG, Beck NC, Parker JC, Kashani JH, Elliott TR, Haut AE, et al. *Depression in rheumatoid arthritis*. The Journal of rheumatology 1988; 15: *920-5*.
30) Murphy S, Creed F, Jayson MI. Psychiatric disorder and illness behaviour in rheumatoid arthritis. British journal of rheumatology 1988; 27: 357-63.
31) Ohtsuki T, Inagaki M, Oikawa Y, Saitoh A, Kurosawa M, Muramatsu K, et al. *Multiple barriers against successful care provision for depressed patients in general internal medicine in a Japanese rural hospital: a cross-sectional study*. BMC psychiatry 2010; 10: *30*.
32) Peck JR, Smith TW, Ward JR, Milano R. *Disability and depression in rheumatoid arthritis. A multi-trait, multi-method investigation*. Arthritis and rheumatism 1989; 32: *1100-6*.
33) Kojima M, Kojima T, Suzuki S, Oguchi T, Oba M, Tsuchiya H, et al. *Depression, inflammation, and pain in patients with rheumatoid arthritis*. Arthritis and rheumatism 2009; 61: *1018-24*.
34) Sato E, al. e. *Major depressive disorder in patients with rheumatoid arthritis*. Modern rheumatology / the Japan Rheumatism Association 2013; 23: *237-44*.
35) Jackson-Triche ME, Greer Sullivan J, Wells KB, Rogers W, Camp P, Mazel R. *Depression and health-related quality of life in ethnic minorities seeking care in general medical settings*. Journal of affective disorders 2000; 58: *89-97*.
36) Lorant V, Deliege D, Eaton W, Robert A, Philippot P, Ansseau M. *Socio economic in equalities in depression: a meta-analysis*. American journal of epidemiology 2003; 157: *98-112*.
37) Stringhini S, Sabia S, Shipley M, Brunner E, Nabi H, Kivimaki M, et al. *Association of socioeconomic position with health behaviors and mortality.* JAMA : the journal of the American Medical Association 2010; 303: *1159-66*.
38) el-Miedany YM, el-Rasheed AH. *Is anxiety a more common disorder than depression in rheumatoid arthritis?* Joint, bone, spine: revue du rhumatisme 2002; 69: *300-6*.
39) Kosinski M, Kujawski SC, Martin R, Wanke LA, Buatti MC, Ware JE, Jr., et al. *Health-related quality of life in early rheumatoid arthritis: impact of disease and treatment response*. The American journal of managed care 2002; 8: *231-40*.
40) Strand V, Sharp V, Koenig AS, Park G, Shi Y, Wang B, et al. *Comparison of health-related quality of life in rheumatoid arthritis, psoriatic arthritis and psoriasis and effects of etanercept treatment*. Annals of the rheumatic diseases 2012; 71: *1143-50*.
41) Wise TN, Mann LS, Mitchell JD, Hryvniak M, Hill B. *Secondary alexithymia: an empirical validation*. Comprehensive psychiatry 1990; 31: *284-8*.
42) Verissimo R, Mota-Cardoso R, Taylor G. *Relationships between alexithymia, emotional control, and quality of life in patients with inflammatory bowel disease*. Psychotherapy and psychosomatics 1998; 67: *75-80*.
43) Mattila AK, Saarni SI, Salminen JK, Huhtala H, Sintonen H, Joukamaa M. *Alexithymia and health-related quality of life in a general population*. Psychosomatics 2009; 50: *59-68*.
44) Bilgici A TM, Güz H, Kuru O. *Comparison of the cognitive performance between healthy controls, Rheumatoid Arthritis and Fibromyalgia patients without depression*. J Clin Anal Med 2014; 5: *214-9*.
45. Salminen JK, Saarijärvi S, Toikka T. *Alexithymia and health-related quality of life*. Journal of psychosomatic research 2002; 52: *324*.
46. Modestin J, Furrer R, Malti T. *Study on alexithymia in adult non-patients*. Journal of psychosomatic research 2004; 56: *707-9*.
47. Ozcetin A, Ataoglu S, Kocer E, Yazici S, Yildiz O, Ataoglul A, et al. *Effects of depression and anxiety on quality of life of patients with rheumatoid arthritis, knee osteoarthritis and fibromyalgia syndrome*. The West Indian medical journal 2007; 56: *122-9*.

Acknowledgement
Conflict of interests: the authors declare that there is no conflict of interests regarding the publication of this paper.

Corresponding author
ALI YAVUZ KARAHAN MD
Konya Training and Research Hospital Konya
Department of Physical Medicine and Rehabilitation
(Turkey)