Original Article

Rheumatology Patients and Type D Personality Profile

Filiz Ozel, PhD
Assistant Professor of Nursing, Kastamonu University Faculty of Health Science, Department of Nursing, Kastamonu, Turkey

Ayse Ozkaraman, PhD
Assistant Professor of Nursing, Eskisehir Osmangazi University Faculty of Health Science, Department of Nursing, Eskisehir, Turkey

Fisun Senuzun Aykar, PhD
Professor of Nursing, Ege University Faculty of Nursing, Department of Nursing, Izmir, Turkey

Cengiz Korkmaz, Dr
Professor, Medical Faculty Hospital, Eskisehir Osmangazi University, Eskisehir, Turkey

Correspondence: Filiz Ozel, Kastamonu University Faculty of Health Science, Kastamonu, Turkey E-mail: ozelfiliz85@hotmail.com

Abstract

Objectives: This study analyzes the link between rheumatic diseases and distressed or Type D personality.
Methods: This cross-sectional descriptive study was conducted in the rheumatology polyclinics of two university hospitals located in two different cities between January 2016 and January 2017. The research sample included 336 patients. A personal information form and the Type D Personality Scale-DS14 were used to collect data. The data were analyzed using SPSS 20 software.
Results: Of the patients, 62.8% were female, 85.12% were married, and 34.52% had completed primary school. Of them, 65.77% said that they had diffuse connective tissue diseases. It was determined that 27.08% used steroids, NSAIDs and paracetamol in combination, and a majority (69.64%) had not not hospitalized in the last year. The patients' mean score for negative emotions was 9.14±5.6, and their mean score for social inhibition was 9.98±5.67. No significant difference was found between the Type D personality of the rheumatic disease groups [(negative emotions: p=0.871). (social inhibition: p=0.224)]. No statistical difference was found between the groups in terms of their scores for negative emotions and social inhibition (p>0.05).
Conclusion: Although psychological disorders that involve anxiety and depression affect the onset, progress and cure of rheumatic diseases, this study found no significant link between the Type D personality and rheumatic diseases.
Keywords: Rheumatic diseases, Type D personality, stress

Introduction

'Distress' is associated with fatigue, anxiety, and depression in people with long-term stress and the inability to develop stress-management skills. Type D individuals frequently experience negative emotions and are socially inhibited (Ruddy, Haris, Sledge,&Sergent, 2001; Rapoff&Barlett, 2007). In cardiovascular research, Denollet and his coworkers offered Type D (distressed) personality as an explanation of the observed association between the depressive symptoms and a variety of cardiovascular outcomes (Ruddy, Haris, Sledge,&Sergent, 2001; Rapoff&Barlett, 2007; WHO, 2006). Recently, the link between Type D personality and chronic diseases such as diabetes mellitus and kidney disease, and their management has been asserted (AIHW,2012; Denollet *et al.*,1996; Denollet *et al.*, 2009). It was reported that stressful personalities, who are unable to develop stress-management skills, exhibit social inhibition, which affects the occurrence of diseases that also have adverse effects, particularly on disease management

(Alçelik *et al.*, 2012; Nefs *et al.*, 2015; Steca *et al.*, 2016; Li *et al.*, 2016). Cao et al. stated that Type D patients were younger and had a shorter time of living with health failure than their non-Type D counterparts. Moreover, they found that Type D patients were less likely to reduce salt intake as a self-care management behavior (Morys, Kaczowka,&Jezewska, 2016).

Rheumatic diseases are chronic illnesses characterized by progressive joint involvement often causing pain, stiffness and significant deformities (Anlin *et al.*, 2016; Ghigga *et al.*, 2017). Psychological states such as stress, fear, hopelessness, anxiety, and depression can trigger the occurrence and progression of these diseases and their outcomes (Sturgeon, Finan, &Zautra, 2016; Brahem *et al.*,2017; Gencay-Can&Can, 2012; Cao *et al.*, 2016; Müller, Kallikorm,&Pölluste, 2012; Wong&Mulherin, 2007; Rezaei *et al.*, 2014; Soossova, Macejova, Zamboriova,&Dimunova, 2017). The number of studies examining the relationship between rheumatology diseases and Type D personality is limited. In two studies conducted with fibromyalgia patients, no significant relationship was determined between Type D personality and the disease; however, it was determined that cautious, nervous, passive, negativistic, insecure, and pessimistic individuals avoid expressing their feelings for fear of negative outcomes; they complain of fatigue due to energy loss and a lack of subjective health assessment (Hassett&Clauw, 2010; Watad *et al.*,2017). In another study, patients with fibromyalgia reported significantly higher scores for anxiety and depression than rheumatoid arthritis patients (Waheed *et al.*, 2006). This study analyzes the link between rheumatic diseases and distressed or Type D personality.

Methods

This study was planned as a descriptive study to evaluate the relationship between rheumatology diseases and Type D personality. This cross-sectional descriptive study was conducted in the rheumatology polyclinics of two university hospitals located in two different cities between March 2012 and June 2012. The research universe consisted of individuals with rheumatic diseases during that period; sample selection was not performed, and 336 conscious individuals, who were able to communicate and volunteered to participate in this research, were included in the study sample.

A personal information form and the Type D Personality Scale-DS14 were used to collect data. Personal information form consisted of 15 questions about the characteristics of rheumatology patients and the disease. Type D Personality Scale-DS14 was developed by Denollet in 2005 to assess Type D personality (Ruddy, Haris, Sledge,&Sergent, 2001; Rapoff&Barlett, 2007; WHO, 2006). A Turkish validity and reliability study on this scale was conducted by Alçelik et al. in 2012 (Denollet *et al.*, 1996). It contains 14 items with a 5-point Likert Type scale (0-4 points) ranging from "false" to "true" and has two subscales. The first seven items consist of negative affectivity (0-28 points) and the second seven items consist of social inhibition (0-28 points). A cutoff of 10 on both scales is used to classify subjects as Type D (Negative affectivity≥10 and Social inhibition≥10) (Denollet *et al.*, 1996). Data were collected by face to face interviews and analyzed using SPSS 20 software. Shapiro Wilk's test was used to assess the normality of distribution due to the low number of units. As the data were not normally distributed, the Kruskal-Wallis H test was used to investigate differences between groups. A 0.05 significance level was used to decide if a result was statistically significant.

Ethics committee approval was received for this study from Turkey. Written informed consent was obtained from patients who participated in this study. Prior to data collection, all patients were informed of the name, purpose and conductors of the study and they were asked to sign the form acknowledging that they read and understood the research.

Results

The research sample included 336 patients. Of the patients, 62.8% were female, 85.12% were married, and 34.52% had completed primary school. Moreover, it was determined that 99.1% of the patients had social security, and only 31.5% worked in an income-generating job (Table 1).

Of the patients, 65.77% said that they had diffuse connective tissue diseases, 27.08% used steroids, NSAIDs and paracetamol in combination, and a majority (69.64%) had not been hospitalized in the last year (Table 2).

Table 3 presents subscale scores of type D personality in the patients. The patients' mean score for negative affectivity was 9.14±5.6, and their mean score for social inhibition was 9.98±5.67 (Table 3).

No significant difference was found between the Type D personality of the rheumatic disease groups [(Negative affectivity; p=0.871) (Social inhibition; p=0.224)] (Table 4). No statistical difference was found between the groups regarding their scores for negative affectivity and social inhibition (p>0.05). The scores of negative affectivity and social inhibition in osteoarthritis group were higher than other disease groups but were not statistically significant (Table 4).

Table 1. Distribution of Patients according to Socioeconomic Status

Characteristics		**n**	**%**
Gender	Female	211	62.8
	Male	125	37.2
Marital status	Single	50	14.88
	Married	286	85.12
Educational status	Illiterate	27	8.04
	Literate	28	8.33
	Primary school	116	34.52
	Secondary school	47	13.99
	High school	91	27.08
	University	27	8.04
Employment status	Yes	106	31.55
	No	230	68.45
Profession	Public servant	27	8.04
	Worker	54	16.07
	Retired	62	18.45
	Self-employed	16	4.76
	Housewife	164	48.81
	Other	13	3.87
Social security	None	3	0.89
	SSI	330	98.21
	Private insurance	1	0.3
	Green card	2	0.6
Income status	Income is less than expenses	71	21.13
	Income is equal to expenses	254	75.6
	Income is more than expenses	11	3.27
Total		336	100

Table 2. Distribution of Patients according to Disease-related Characteristics

Characteristics		n	%
Rheumatic disease categories	Connective-tissue diseases	221	65.77
	Rheumatoid arthritis with spondylitis	70	20.83
	Osteoarthritis	25	7.44
	Metabolic and endocrine disorders with rheumatic diseases	20	5.95
Rheumatic diseases	Rheumatoid arthritis	151	44.94
	Ankylosing spondylitis	55	16.37
	Systemic Lupus Erythematosus	18	5.36
	Behçet's syndrome	21	6.25
	Osteoarthritis	20	5.95
	Osteoporosis	2	0.6
	Fibromyalgia Syndrome	3	0.89
	Familial Mediterranean Fever	3	0.89
	Still	5	1.49
	Scleroderma	9	2.68
	Sjogren's syndrome	9	2.68
	Raynaud's disease	5	1.49
	Psoriatic arthritis	15	4.46
Current medications used	Antihypertensive drugs	5	1.49
	Anti-diabetic medications	4	1.19
	NSAID (Nonsteroidal Anti-Inflammatory Drugs)	31	9.23
	Zoledronic acid	2	0.6
	Anti-hypertensive. Anti-diabetic. Antiasthmatic	3	0.89
	Colchicine	6	1.79
	Hydroxychloroquine	45	13.39
	Steroid. immunomodulator	17	5.06
	Anticoagulant	17	5.06
	Antimalarial. immunomodulator	29	8.63
	Do not use drugs	39	11.61
	Antihypertensive. Anticoagulant Antimalarial.	2	0.6
	Anti-tnf	31	9.23
	Colchicine. uricolysis	14	4.17
	Steroid. NSAID. paracetamol	91	27.08
Hospitalization in the last one year	Yes	102	30.36
	No	234	69.64
Depressive personality	Yes	58	17.26
	No	278	82.74
Applied to doctor or health institution for depression	Yes	28	8.33
	No	308	91.67
Depression treatment	Yes	26	7.74
	No	310	92.26
Total		336	100

Table 3. Distribution of Subscale Scores of Type D Personality Scale

	n	Mean	Median	Min	Max	SD
Negative affectivity	336	9.14	8	0	25	5.6
Social inhibition	336	9.98	9	0	25	5.67

Table 4. Kruskal-Wallis H test results for the Differences among Disease Groups according to Type D Personality Scale Scores

Sub-scales of Type D personality scale	Rheumatic disease groups	n	Mean	Median	Min	Max	sd	Kruskal Wallis H Test		
								Ranking avg.	H	p
Negative affectivity	Connective-tissue diseases	221	9.07	8	0	25	5.61	166.19	0.71	0.871
	Rheumatoid arthritis with spondylitis	70	9.29	9	0	21	5.24	173.12		
	Osteoarthritis	25	9.64	10	0	21	6.24	180.22		
	Metabolic and endocrine disorders with rheumatic diseases	20	8.85	8	0	20	6.25	163.2		
	Total	336	9.14	8	0	25	5.6			
Social inhibition	Connective-tissue diseases	221	10.27	9	0	25	5.63	173.93	4.369	0.224
	Rheumatoid arthritis with spondylitis	70	8.96	8	1	25	5.41	150.42		
	Osteoarthritis	25	11.08	9	3	22	6.21	184.32		
	Metabolic and endocrine disorders with rheumatic diseases	20	8.95	8	0	19	6.03	152.03		
	Total	336	9.98	9	0	25	5.67			

Discussion

The number of studies examining the relationship of Type D personality and the causes of diseases and disease-management has been increasing in recent years. Poor habits of stressed and distressed people such as smoking (Azad, Gondal, &Abbas, 2008; Larsson, Lööf,&Nordin, 2016), changes in their eating behaviors (Hakulinen et al., 2015; Lawrence&Williams, 2015) can cause unhealthy behaviors or chronic diseases (Rosenbaum&White,2015;Hearon,Quatromoni,Mascoop,&Joop, 2014; Kayser&Dalmau,2011). Moreover, studies suggested that stress has negative effects on immune system functions and increases the prevalence of autoimmune diseases (Alçelik *et al.*, 2012; Maschauer, Fairley,&Riha, 2017) while it makes adaptation to the disease and its treatment more difficult, therefore negatively affects the disease-management (Morys,Kaczowka,&Jezewska, 2016;Rosenbaum&White,2015; Conti *et al.*,2016; Jolly, 2012). However, the literature review indicated that studies examining the relationship between rheumatology diseases and personality traits were limited, whereas stress, anxiety and depression were frequently examined. This study analyzed the link between rheumatic diseases and distressed or Type D personality people, and no significant result was obtained.

In our study, the number of patients within the rheumatic disease groups was not similar, but no difference was found according to Type D

personality profile among the rheumatic disease groups. Our study corroborated previous studies to show that the number of patients with connective-tissue diseases (including rheumatoid arthritis (RA) was higher than another group of patients (Jolly, 2012). Previous studies suggested that RA patients exhibit depression and distress as a reaction to pain (Brahem *et al*., 2017; Cao *et al*,2016). It was found that the psychological distress of RA patients and their personality traits increased their incapabilities (Bode *et al*.,2010). In another study, it was asserted that patients with polyarthritis had high rates of depression and anxiety, which varied with the duration of the disease, and patients with better mental health were more successful in disease management within one-year follow-ups (Goodacre&Candy, 2011). Bai et al. suggested that self-sacrificing patients who were dissatisfied with their physical appearances, and exhibited anxious and maladaptive behaviors had low health-related quality of life (Bode *et al*.,2010).

In a meta-analysis, it was found that the prevalence of depression in systemic lupus erythematosus (SLE) patients ranged widely from 2% to 91.7% and the prevalence of anxiety ranged between 4% and 85% in individual studies (Sangha, 2000). Behçet's syndrome (BS) is another diffuse connective-tissue disease. In one study, it was found that the duration of this illness affected the severity of the psychiatric symptoms in a group of patients; BS patients had higher levels of anxiety than psoriasis patients (Arends, Bode, Taal,&Laar, 2016). Moreover, in another study, stress was found to effectively increase the severity of the disease (Taner *et al.*, 2007). In our study, the mean score of social inhibition in the patients with diffuse connective-tissue diseases (such as RA, SLE, and BS) was found over 10, which may be associated with the avoidance of these patients in expressing their feelings and thoughts with the fear of disapproval or rejection by others. Particularly, RA, SLE, and BS diseases cause alterations in patients' physical appearances, which negatively affect their sexual life, satisfaction with self-appearance, and self-confidence (Karlıdağ *et al.*, 2003; Erkol, Demirci, Doğru,&Şahin, 2016; Zhang *et al.*, 2017; Middendorp *et al.*, 2016). This is also directly related to the study results, which were unsurprisingly observed in these diseases causing alterations in patients' physical appearances.

It was stated that Type D personality is an independent variable that determines disease activity in Ankylosing Spondylitis (AS) patients (Erkol, Demirci, Doğru,&Şahin, 2016) while in our study Type D personality profile was not observed in rheumatoid arthritis patients with AS.

Stress and depression are affecting factors in the occurrence and progression of fibromyalgia syndrome (FMS) (Hassett&Clauw, 2010; Watad *et al.*, 2017), and previous studies asserted that the relationship between this disease and Type D personality is statistically significant (Middendorp *et al.*, 2016).

Although psychological disorders that involve anxiety and depression affect the onset, progress, and cure of rheumatic diseases, this study found no significant link between the Type D personality and rheumatic diseases.

Limitations

As this was a cross-sectional study, the number of patients within the rheumatic disease groups was not similar. Therefore, for future studies, wide population studies are recommended with similar patient numbers for each disease group. Another limitation of this study was that the study results were based on the self-reports of patients.

References

Ablin, J.N., Zohar, A.H., Zaraya-Blum, R., &Buskila, D.(2016). Distinctive personality profiles of fibromyalgia and chronic fatigue syndrome patients. *PeerJ*, 13, 1-14.

Alçelik, A., Yıldırım,O., Canan, F., Eroğlu, M., Aktaş, G., & Şavlı, H. (2012). Preliminary Psychometric Evaluation of the Type D Personality Construct in Turkish Hemodialysis Patients. *Journal of Mood Disorders*,2(1),1-5.

Arends, R.Y., Bode, C., Taal, E., Laar,& M.A.F.J. (2016). The longitudinal relation between patterns of goal management and psychological health in people with arthritis: The need for adaptive flexibility. *British Journal of Health Psychology*, 21, 469-489.

Australian Institue of Health and Welfare (2012). Health behaviours and their role in the prevention of chronic disease. Cat no: PHE 157. Canberra. Australian. Chapter 1;p.1-14.

Azad, N., Gonda,l M.,& Abbas, N. (2008). Frequency of depression and anxiety in patients attending a rheumatology clinic. *J Coll Physicians Surg Pak.*, 18(9), 569-573.

Bode, C., Heij, A., Taal, E., Laar,& M.A.F. (2010). Body-self unity and self esteem in patients with

rheumatic diseases. *Psychology, Health&Medicine,* 15(6), 672-84.

Brahem, M., Maraoui, M., Hachfi, H., Hammouda, S.B., Haddada, I., Jguirim, M., &Younes, M. (2017). Mood disorders (anxiety and depresssion) in rheumatoid arthritis. *Annals of the Rheumatic Disease*, 76(2), 1169.

Cao, X., Wang, X.H., Wong, E.M.L., Chow, C.K.,& Chair, S.Y.(2016). Type D personality negatively associated with self-care in Chinese heart failure patients. *Journal of Geriatric Cardiology*, 13, 401-407.

Conti, C., Carrozzino, D., Patierno, C., Vitacolonna, E.,& Fulcheri, M. (2016). The clinical link between type D personality and diabetes. *Frontiers in Psychiatry*, 7, 113.

Denollet, J., Sys, S.U., Stroobant, N., Rombouts, H., Gillebert, T.C., &Brutsaert, D.L.(1996). Personality as Indepedent Predictor of Long-Term Mortality In Patients With Coronary Heart Disease. *Lancet*, 347, 417-421.

Denollet, J., de Jonge, P., Kuyper, A., Schene, A.H., van Melle, J.P., Ormel, J., &Honig, A. (2009). Depression and Type D Personality Represent Different Forms Of Distress In The Myocardial Infarction and Depression – Intervention Trial (MIND-IT). *Psychological Medicine*, 39, 749- 756.

Erkol, İ.E., Demirci, K., Doğru, A.,& Şahin, M. (2016). Ankylosing spondylitis patients with type D personality have worse clinical status. *Mod Rheumatol*., 26(1), 138-145.

Gencay-Can, A.,& Can. SS.(2012). Temperament and character profile of patients with fibromyalgia. *Rheumatol Int.*, 32, 3957-3961.

Ghiggia, A., Torta, R., Di Tella, M., Romeo, A., Colonna, F., Geminiani, G.C., Fusaro, E., Batticciotto, A.,& Castelli, L. (2017). Psychosomatic syndromes in fibromyalgia. *Clin Exp Rheumatol*., 105(3), 106-111.

Goodacre, L.J.,& Candy, F.J. (2011). If I didn't have RA I wouldn't give them house room2: The relationship between RA, footwear and clothing choices. *Rheumatology*, 50, 513-17.

Hakulinen, C., Hintsanen, M., Munafo, M.R., Virtanen, M., Kivimaki, M., Batty, G.D.& Jokela, M. (2015). Personality and smoking: individual-participant meta-analysis of nine cohort studies. *Addiction*, 110(11), 1844-1852.

Hassett, A.L., &Clauw, D.J. (2010). The role of stres in rheumatic diseases. *Arthritis Research&Therapy*, 12(3), 123.

Hearon, B.A., Quatromoni, P.A., Mascoop, J.L.,& Otto, M.W. (2014). The role of anxiety sensitivity in daily physical activity and eating behaviour. *Eating Behaviors*, 15(2), 255-258.

Jolly, M. (2012). Body Image Issues in Rheumatology. In: Body İmage (Eds: Cash F.T.. Smolak L.) The Guilford Press. New York. Second Edition. Chapter 40, 350-5.

Jolly, M., Pickard, AS., Mikolaitis, R.A., Corneio, J., Sequeira, W., Cash, T.F.,& Block, J.A. (2012). Body images in patients with systemic lupus erythematosus. *Int J Behav Med*., 19(2), 157-164.

Karlıdağ, R., Ünal, S., Evereklioğlu, C., Sipahi, B., Er, H.,& Yologlu, S.(2003). Stressful life events. anxiety. depression and coping mechanisms in patients with Behçet's disease. *JEADV*, 17, 670-675.

Kayser, M.S.,& Dalmau, J.(2011). The emerging link between autoimmune disorders and neuropsychiatric disease. *J Neuropsychiatric Disease*., 23(1), 90-97.

Larsson, K., Lööf, L., & Nordin, K. (2016). Stress, coping and support needs of patients with ulcerative colitis or Crohn's disease: A qualitative descriptive study. *Journal of Clinical Nursing*. 26, 648-657.

Lawrence, D.,& Williams, J.M. (2015). Trends in smoking rates by levels of psychological distress-time series analysis of US National Health interview survey data 1997-2014. *Nicotine Tob Res*.,18(6), 1463-1470.

Li, X., Zhang, S., Xu, H., Tang, X., Zhou, H., Yuan, J., Wang, X., Qu, Z., Wang F., Zhu, H., Guo, S., Tian, D., &Zhang, W. (2016). Type D personality predicts poor medication adherence in Chinese patients with type 2 diaebetes mellitus: A six-month follow-up study. *Plos One*, 19,1-16.

Maschauer, E.L., Fairley, D.M.,& Riha, R.L.(2017). Does personality play a role in continues positive airway pressure compliance?. *Breathe*, 13(1), 33-45.

Middendorp, H., Kool, M.B., Beugen, S., Denollet, J., Lumley, M.A.,& Geenen, R.(2016). Prevelance and relevance of Type D personality in fibromyalgia. *Gen Hosp Psychiatry*. 39, 66-72.

Morys, J.M., Kaczowka, A.,& Jezewska, M. (2016). Assessment of selected psychological factors in patients with inflammatory bowel disease. *Prz Gastroenteral*, 11(1), 47-53.

Müller, R., Kallikorm, R., Pölluste, K., &Lember, M. (2012). Compliance with treatment of rheumatoid arthritis. *Rheumatol Int.*,32,3131-3135.

Nefs, G., Speight, J., Pouwer, F., Pop, V., Bot, M.,& Denollet, J. (2015). Type D personality. suboptimal health behaviors and emotional distress in adults with diabetes: Results from Diabetes MILES-The Netherlands. *Diabetes Research and Clinical Practice*, 108, 94-105.

Ruddy, S., Haris, E.D., Sledge, C.B.,&Sergent, J.S. (2001). Kelley's Textbook of Rheumatology, 6th ed., W.B. Saunders Company.

Rapoff, M.A.,& Barttlett S.J.(2007). Çocuk ve Erişkinlerde Uyunç. In:Dinç A. Editors. Romatizmal Hastalıklarda Klinik Tedavi. 3.baskı.

Romotoloji Araştırma ve Eğitim Derneği, 279-284.

Rezaei, F., Doost, H.T.N., Molavi, H., Abedi, M.R.,& Karimifar, M. (2014). Depression and pain in patients with rheumatoid arthritis: Mediating role of illnes perception. *The Egyptian Rheumatologist*, 36(2), 57-64.

Rosenbaum, D.L.,& White, K.S. (2015). The relation of anxiety. depression. and stres to binge eating behavior. *Journal of Health Psychology*, 20(6), 887-898.

Sangha O.(2000). Epidemiology of rheumatic diseases. Rheumatology (Oxford), 39.

Soosova, M.S., Macejova, Z., Zamboriova, M.,& Dimunova, L.(2017). Anxiety and depression in Slovak patients with rheumatoid arthritis. *Journal of Mental Health*, 26(1), 21-27.

Steca, P., Addario, M.D., Magrin, M.E., Miglioretti, M., Monzani, D., Pancani, L., Sarini, M., Scrignaro, M., Vecchio, L., Fattirolli, F., Giannattasio, C., Cesana, F., Riccobono, P.,& Greco A. (2016). A type A and Type D combined personality typology in essential hypertension and acute coronary syndrome patients: Associations with demographic. psychological. clinical and lifestyle indicators. *Plos One*, 2, 1-28.

Sturgeon, J.A., Finan, P.H., &Zautra, A.J.(2016). Affective disturbance in rheumatoid arthritis: Psychological and disease-related pathways. *Nature Reviews Rheumatology*, 12, 532-542.

Taner, E., Coşar, B., Burhanoğlu, S., Çalıkoğlu, E., Önder, M.,& Arıkan, Z. (2007). Depression and anxiety in patients with Behçet's disease compared with that in patients with psoriasis. *Int J Dermatol*., 46(11), 1118-1124.

Waheed, A., Hameed, K., Khan, A.M., Syed, J.A.,& Mirza, A.I.(2006). The burden of anxiety and depression among patients with chronic rheumatologic disorders at a tertiary care hospital clinic in Karachi. *Pakistan. J Pak Med Assoc*., 56(5), 243-247.

Watad, A., Braggazzi, N.L., Adawi, M., Aljadeff, G., Amital, H., Comaneshter, D., Cohen, A.D.,& Amital, D. (2017). Anxiety disorder among rheumatoid arthritis patients: Insıghts from real-life data. *Journal of Affective Disorders*, 213, 30-34.

Wong, M., &Mulherin, D. (2007). The influence of medication beliefs and other psychosocial factors on early discontinuation of disease-modifying anti-rheumatic drugs. *Musculoskeletal Care*, 5(3), 148-150.

World Health Organization (2006). Chronic diseases and their common risk factors. Available from http://www.who.int/chp/chronic_disease_report/media/Factsheet1.pdf.

Zhang, L., Fu, T., Yin, R., Zhangi, Q.,& Shen, B.(2017). Prevelance of depression and anxiety systemic lupus erythematosus: A systematic review nd meta-analysis. *BMC Psychiatry*, 17,70:1-14.