Fatigue in rheumatoid arthritis patients; association with mood status, Kingdom of Saudi Arabia: a cross-sectional study

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Abstract

Background: Fatigue in rheumatoid arthritis patients is a significant problem that might affect mood status as most studies among RA patients have shown a relationship between fatigue and mood status.

Objectives: This study was done to assess the presence of fatigue and mood disturbances among RA patients in Saudi Arabia and possible association between depression and fatigue in RA.

Methods: A cross sectional study was carried out on rheumatoid arthritis (RA) patients using convenience sampling. The data collected using a self-designed online questionnaire containing multi-dimensional assessment of fatigue using Global Fatigue Index (MAF-GFI) and Beck depression inventory for mood status. It was distributed to all regions of Saudi Arabia through the Rheumatoid Charity Association starting from October 2018 until January 2019. The total number of patients included in the study was 244, after applying inclusion and exclusion criteria.

Results: An 89.8% of the 244 participants were female while 10.2% were male. RA patients had a mean MAF-GFI score of (29.91 ±8.17) and a mean Beck score (17.72 ±10.13). 28.7% of RA patients had mild mood disturbance, and depression was significantly correlated with fatigue in RA patients. Marital status and employment were significantly correlated with fatigue, while gender was not. These demographic data had no significant correlation with depression.

Conclusion: Depression and fatigue show a clear association in RA patients. Depression is prevalent enough to warrant regular screening for warning signs of mood disturbance, particularly when fatigue has been established.

Key words: fatigue, rheumatoid, arthritis, mood, status, Saudi Arabia

Introduction

Rheumatoid Arthritis (RA) is a common autoimmune systemic inflammatory disease affecting approximately 1% of the worldwide population. The interaction of genetic and environmental factors results in a cascade of immune reactions, which ultimately lead to the development of synovitis, joint damage, and structural bone damage [1].

The cause of RA is not known exactly. It is not considered a hereditary disease, yet it does appear to run in families. It is may be due to environmental causes, genetic causes, or a combination of both. However, certain factors seem to have a role in increasing the risk of developing RA or triggering its onset e.g. smoking cigarettes, obesity, bacterial or viral infection [2].

A study conducted in 2015 at Taif city, Saudi Arabia, showed that RA affects around 0.3% of the Saudi population [3]. The majority of studies among RA patients have shown a relationship between fatigue and mood status.

There are studies that have shown that comorbidities and pain are commonly associated with both RA and depression [3,4]. One of these studies has declared that depression may contribute to unemployment and loss of work productivity [5]. Moreover, depression may cause financial problems, due to the high prices of its medications [5]. Also, it has been discovered that patients with RA are suffering both physically and psychologically [6]. More importantly, the prevalence of major depressive disorder in patients with RA is 42% [6].

In addition to that, a study which took place in 2018 has pointed out that depression, lower sleep quality and high disease activity were all associated with the increase of fatigue levels among Egyptian RA patients [7]. Also in 2015, a study has shown that 41-80% of RA patients struggle with significant fatigue [8].

Fatigue in RA is a significant problem which has become a great burden on modern society causing disability, pain, and social, emotional, and economic problems. Depression is suggested to be a contributing factor to fatigue in RA, however, this hypothesis has not been tested yet in Saudi Arabia. Hence, the aim of this study was to investigate the presence of fatigue and mood disturbances among RA patients in Saudi Arabia and to study the possible association between depression and fatigue in RA.

Subjects and methods

Study design: The study was a cross sectional study.
Study setting and time frame: The study was carried out in all regions of Saudi Arabia through the Rheumatoid Charity Association, starting from October 2018 until January 2019. The questionnaire was sent to participants as a link to the online survey.

Sampling methodology: A convenience sampling technique was used according to the availability of the participants in the Association. A sample of 244 patients was included in the study. Patients from both genders who have rheumatoid arthritis and are 18 years old or over were included. Participants who did not give consent for participation were excluded from the study.

Study instrument: All the data required for the study was collected using a self-designed online questionnaire containing multidimensional assessment of fatigue using Global Fatigue Index (MAF-GFI) and Beck depression inventory for mood status.

MAF-GFI is used to assess the fatigue in RA patients, and contains 16 questions that evaluate the effect of fatigue on the patient's daily activities; the score ranged from 0 which means no fatigue to 50 which indicates severe fatigue.
Beck depression inventory is a tool to evaluate the mood of the patients during the past two weeks. It contains 21 questions, and the score ranges from 0 to 63; the score from 1-10 is considered normal, 11-16 is considered mild mood disturbance, 17-20 is considered borderline clinical depression, 21-30 is considered moderate depression, 31-40 is considered severe depression, and over 40 is considered extreme depression.

Ethical considerations
The study was approved by the Ethical Committee of Taif University. Online consents were applied and taken by all patients before participating in the study.

Data analysis: Data entry and analysis was done using SPSS version 20. Qualitative data were expressed as numbers and percentages. Quantitative data were expressed as mean and standard deviation (Mean ± SD), where Mann-Whitney and Kruskal Wallis Tests were applied for non-parametric variables. Correlation analysis using the Spearman's test was done, and a p-value of <0.05 was considered as statistically significant.

Results

In this study, we aimed to investigate the presence of fatigue and mood disturbances among RA patients and to study the possible association between depression and fatigue among RA patients.

Table 1 shows that 89.8% of the 244 participants were female, while 10.2% were male. Age ranged from 16-77 (Mean 34.56 ± SD 10.41). Regarding marital status, the majority (55.3%) were married. As for employment, 13.5% were students, 35.2% were employed and 51.2% were unemployed.

Table 2 shows that the mean Beck score among participants was 17.72(± SD 10.131) (indicative of borderline clinical depression) with a maximum score of 53 and a minimum score of zero. In the inventory, higher scores suggest more advanced levels of depression. The mean score of the MAF is 29.91(± SD 8.176), with a maximum score of 43.73 and a minimum score of 6.36. A higher score indicates more severe fatigue and worse effects on activities of daily living.

Figure 1 shows that:
1) Most Rheumatoid Arthritis patients had mild mood disturbance (28.7%) while extreme depression was observed in only 2%.

2) Among the participants, 34.8% had depression (moderate, severe and extreme) and an additional 11.5% had borderline clinical depression.

Table 3 shows a significant correlation was found between depression and fatigue in RA patients (r= 0.355, P=<0.000).

Table 4 shows that a non-significant relationship was found between gender and fatigue (p= 0.744). A significant relationship was found between marital status and fatigue (p= 0.014), and a significant relationship was found between employment and fatigue (p= 0.018). A non-significant relationship was found between gender and depression (p= 0.44), between marital status and depression (p= 0.294), and between employment and depression (p= 0.528).

Table 1: Distribution of the study participants according to their demographic data

Gender	No.	%
Male	25	10.2
Female	219	89.8
Marital status	**No.**	**%**
Single	109	44.7
Married	135	55.3
Employment	**No.**	**%**
Student	33	13.5
Employment	86	35.2
Unemployment	125	51.2

Table 2: Mean of Beck/MAF Score

Variable	Beck Depression Inventory Score (a) (Mean ± SD)	Multidimensional Assessment of Fatigue Scale (b) (Mean ± SD)
Mean	(17.7213 ± SD 10.131)	(29.9132 ± 8.176)
Minimum	0.00	6.36
Maximum	53.00	43.73

Table 3: Spearman correlation between n depression and fatigue

Test	Value of (r)	p-value
Spearman test	0.355	0.000

Figure 1. Distribution of levels of depression among RA patients

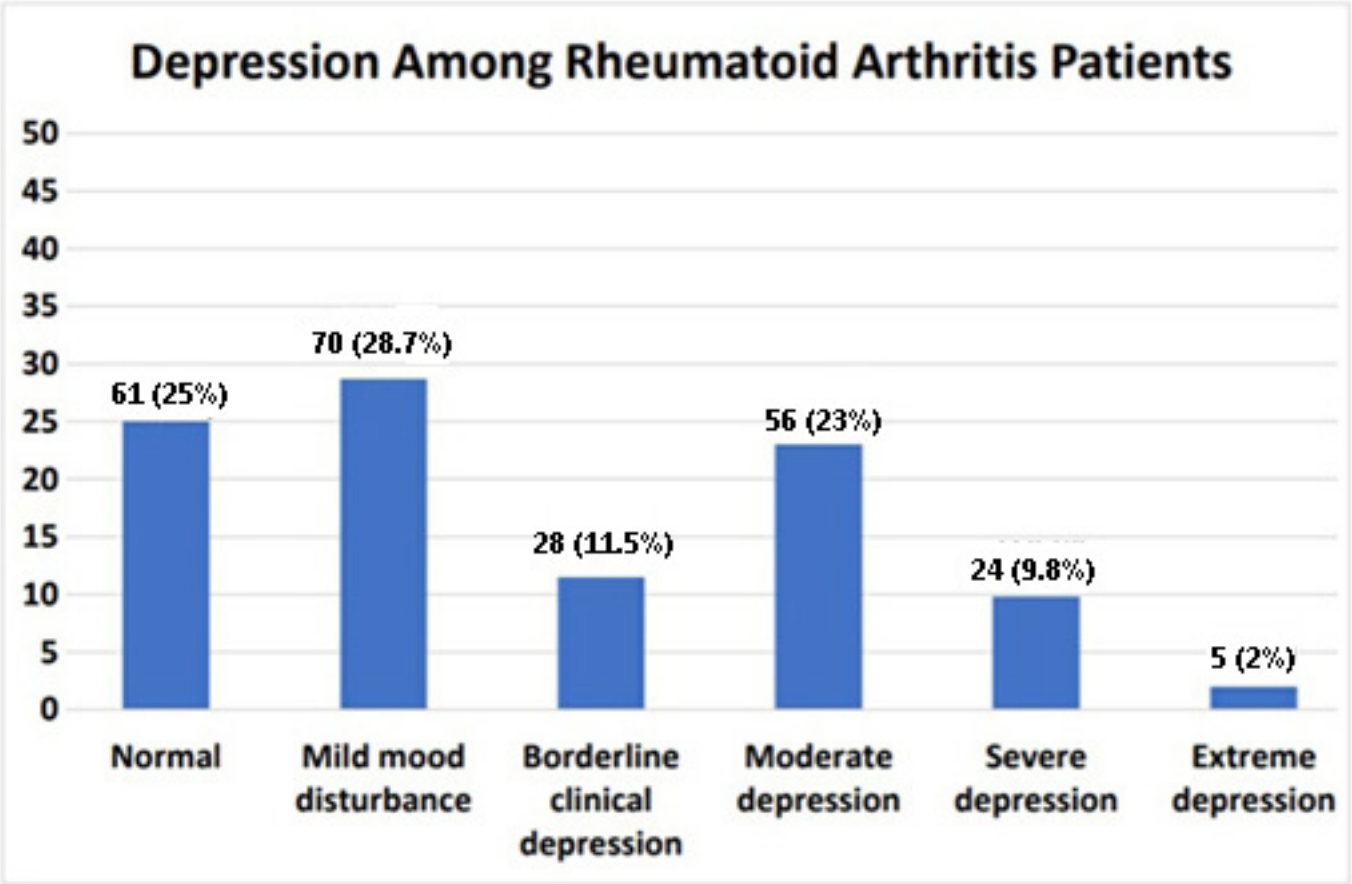

Table 4: Relationship between demographic data and fatigue / Depression

Fatigue (a)					
		Mean ±SD	Value		p-value
Gender	Male	31.03 ±5.68	Mann-Whitney u	2628.5	0.744
	Female	29.78 ±8.41			
Marital Status	Single	28.55 ±8.46	Mann-Whitney u	6015	0.014
	Married	32 ±7.8			
Employment	Student	26.95 ±8.25	Kruskal-Wallis test	7.986	0.018
	Employed	31.54 ±7.69			
	Unemployed	29.57 ±8.28			
Depression (b)					
		Mean± SD	Value		p-value
Gender	Male	19 ±10.07	Mann-Whitney u	2481.5	0.444
	Female	17.57 ±10.15			
Marital Status	Single	18.6 ±10.79	Mann-Whitney u	6783	0.294
	Married	17 ±9.54			
Employment	Student	19.54 ±10.65	Kruskal-Wallis test	1.276	0.528
	Employed	17.40 ±10.13			
	Unemployed	17-45 ±10.23			

Discussion

In this study, the mean Beck score among participants was 17.72 ±10.131 which is higher than the mean Beck score in two previous studies conducted in Egypt and Turkey, where the Beck score was 12.8±7.3 and 12.22 ± 6.30, respectively [4,9].

The mean MAF score was 29.91±8.176, which is less than the MAF score of a study that was conducted in the US, which was 55.80 ±29.41 [10]. It is almost equal to the mean MAF score of the study conducted in Turkey [9], and higher than the MAF score of participants in the study conducted in Egypt, which was 27.2±8.9 [4].

In another study in Morocco, the MAF score was 30.21 ± 11.32 and the study linked fatigue to the duration of RA, the degree of functional impairment, the activity of disease, the intensity of joint pain, and the rate of anti-cyclic citrullinated protein (CCP) antibodies [11]. Also, there is a study that used a different score which is the visual analogue score to assess fatigue in RA patients, which found that more than 80% of participants had clinically relevant fatigue [12].

A cohort study done for 1 year used subscale Checklist Individual Strength-fatigue assessed fatigue at the beginning and at the end of the study and they found that 50% of RA patients experienced severe fatigue both at baseline and at the end of the study [13].

Many studies have related fatigue in RA patients with pain and showed that patients who received methotrexate experienced less pain [12,14,15,16,17]. Another study related fatigue in RA patients to inflammation (erythrocyte sedimentation rate) [18]. At the same time, a study conducted in 2010 showed that fatigue is related to pain and not inflammation [19].

The present study revealed a significant relationship between fatigue and depression; high MAF score was associated with higher depression estimates which is consistent with a meta-analysis study done in 2013 [20].

A meta-analysis concluded that the prevalence of major depressive disorder and depressive symptoms in Rheumatoid Arthritis were 16.8% and 28.8%, respectively [20]. In the present study 34.8% of participants had depression (moderate, severe and extreme) and an additional 11.5% had borderline clinical depression which indicates higher rates in Saudi Arabia.

When investigating age as an influencer on depression we found no significant difference, agreeing with two studies conducted in Turkey in 2007 and 2011 and a study conducted in China in 2010 [6,9,21].

A meta-analysis revealed a significant negative association between depression and the mean age of patients in the study [20]. In the present study the mean age of those with high depression rates was 34.56.

Other demographic data (gender, marital status and employment) have no statistically significant difference [6.9.20.21].

In this study, there was a non-significant relationship between gender and fatigue. The same result was present in one study that was conducted in the United Mexican State 2010, and another one done in Holland in 2010, and another two studies that were conducted in the US 2008 and in 1996 [15,22,23,24]. A significant relationship was found between fatigue and female sex in two previous studies that were conducted in the US in 2010 and in 1998, a study that was conducted in Finland in 2009, a study that was done in Sweden in 2009, and another one done in Norway in 2008 [17,25,26,27].

The present study showed a significant relationship between marital status and fatigue, which is in agreement with a study that was conducted in Poland in 2017. This study found that depression in married subjects was not as severe as in singles [28].

This study also found a significant relationship between employment and fatigue corresponding with a study conducted in Holland in 2005 [29]. However, in the study conducted in Turkey in 2011, there was a non-significant difference with respect to demographic characteristics [9].

Limitations

A limitation of the present study was the depending on electronic questionnaires that RA patients filled out themselves with possible subjectivity, which can affect the accuracy of the data and which is prone to recall bias. This can be corrected using a prospective study design to eliminate this bias.

Conclusion

The study concludes that depression and fatigue show a clear association in RA patients. Depression is prevalent enough to warrant regular screening for warning signs of mood disturbance, particularly when fatigue has been established.

This association needs to be further studied in relation to potential factors that are hypothesized to contribute to mood disturbance and fatigue, and the deterioration of both. Like the level of inflammatory markers like IL-6 and IL-17, the duration of the disease, and the use of biologic medications [30]. The wide variation of the fatigue and depression assessment tools used across different studies, could be overcome in the future, by the determination of the most sensitive and specific assessment tools to unify and standardize the results.

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