



ORIGINAL ARTICLE

Depression in rheumatic and musculoskeletal diseases; Tip of the iceberg and the most neglected part of management; A cross-sectional study.

Syed Hassan Mustafa¹, Saqib Adnan², Taimur Khan³, Waqar Hayat⁴, Talha Durrani⁵, Farah Iqbal⁶

Article Citation: Mustafa SH, Adnan S, Khan T, Hayat W, Durrani T, Iqbal F. Depression in rheumatic and musculoskeletal diseases; Tip of the iceberg and the most neglected part of management; A cross-sectional study. Professional Med J 2023; 30(01):14-18.
<https://doi.org/10.29309/TPMJ/2023.30.01.7214>

ABSTRACT... Objective: To investigate the frequency of Depression in Patients with Rheumatic and Musculoskeletal diseases with particular emphasis on gender and compliance to treatment. **Study Design:** Descriptive, Cross-sectional study. **Setting:** Department of Rheumatology at Lady Reading Hospital, Peshawar. **Period:** August 2020 to February 2021. **Material & Methods:** A total of 189 patients were assessed with their detailed history, examination, and lab data collected. Depressive symptomatology was evaluated using DSM – 4 criteria . SPSS 26 was utilised for data analysis, and a p-value of <0.05 was considered statistically significant. **Results:** 131 (69.3%) were female and 58 (31.7%) were male patients. Seropositive Rheumatoid Arthritis ranked the highest concerning the diagnosis with 128 cases (68.25%). Methotrexate was the most commonly used drug with 134 (70.9%) patients receiving it. A total of 169 (89.4%) patients had Depressive disorder, with females outnumbering males, a finding reaching statistical significance (p=0.04). **Conclusion:** Undiagnosed Depression is common in patients affected by Rheumatic and Musculoskeletal diseases, especially among the female population. Routine screening for depressive symptoms with subsequent referral to the mental health service may serve detection of this comorbidity and improve patient outcomes.

Key words: Depression, Rheumatoid Arthritis, Rheumatology.

INTRODUCTION

Rheumatic and musculoskeletal diseases (RMDs) are chronic autoimmune disorders that are common worldwide. These disorders can affect any organ of the body but primarily involve the musculoskeletal system, affecting locomotion. Due to this reason these disorders are associated with huge morbidity and mortality.^{1,2}

RMDs generally include more than a hundred disorders, broadly divided into inflammatory and non-inflammatory disorders. They are prevalent globally, affecting more than 20% of the general population in Europe and more than 25% of the indigenous population in the United states.^{3,4}

Though the non-inflammatory RMDs, including osteoarthritis, are more common, it is the inflammatory RMDs that carry significant morbidity

and mortality. Some of these inflammatory RMDs include inflammatory Arthritis like Rheumatoid Arthritis and seronegative arthropathies. Other RMDs like connective tissue diseases are less common and include conditions such as Sjögren's syndrome, systemic lupus erythematosus (SLE) , systemic sclerosis and myositis.⁵⁻⁹

Since most of the RMDs can affect any of the body's organ systems, they possess high morbidity and mortality. For instance, about 40% of the people with Rheumatoid Arthritis are disabled within ten years of their disease onset.¹⁰ Similarly, without treatment, the 5-year survival of lupus nephritis, one of SLE manifestations, is zero.¹¹

It is due to this considerable mortality and morbidity that many RMDs patients suffer from Depression. For example, in Rheumatoid Arthritis,

1. MBBS, FCPS Med, FCPS (Rheum), Consultant Physician, Ayub Teaching Hospital Abbottabad.
2. MBBS, FCPS Med, FCPS (Rheum), Assistant Professor and HOD Division of Rheumatology, Lady Reading Hospital Peshawar.
3. MBBS, MRCP (Psych), Consultant Psychiatrist, University Hospital Wishaw Lanarkshire UK.
4. MBBS, FCPS (Med), Assistant Professor Emergency Medicine, Lady Reading Hospital Peshawar.
5. MBBS, Postgraduate Trainee Medicine Medicine, Khyber Teaching Hospital Peshawar.
6. MBBS, Postgraduate Trainee Dermatology, Lady Reading Hospital Peshawar.

Correspondence Address:
Dr. Saqib Adnan
Division of Rheumatology,
Lady Reading Hospital Peshawar.
saqibadnan07@gmail.com

Article received on: 23/07/2022
Accepted for publication: 19/09/2022

41.6% of patients are depressed.¹² Undiagnosed and untreated depression comorbidly present with rheumatological conditions may worsen clinical outcomes. It is therefore, crucial that physicians have awareness regarding the prevalence of depression in RMDs so that relevant therapy can be initiated timely. This study, thus, aimed to determine the frequency of Depression in the RMDs patients visiting the department of rheumatology, Lady Reading Hospital, Peshawar, a tertiary care hospital and referral centre.

MATERIAL & METHODS

This descriptive cross-sectional study was conducted at the Rheumatology Division of Lady Reading Hospital, Peshawar, Pakistan from August 2020 to February 2021. Non-probability consecutive sampling technique was used. The sample size was calculated as 189 using 41.5% prevalence of depression in patients with rheumatoid arthritis¹³, 95% confidence interval and margin of error of 7% with the help of WHO software for sample size determination. Our inclusion criteria included

1. All patients aged between 16 and 70,
2. Both Genders
3. All patients with established Rheumatic/musculoskeletal diseases

Exclusion criteria included

1. All patients with inflammatory rheumatic diseases who over-used steroids
2. Patients with already diagnosed psychiatric illness
3. Patients who were severely unwell
4. Patients who were on antidepressant and antiepileptic medications for any reason
5. Patients who had other long-standing disease like diabetes mellitus, chronic kidney disease due to causes other than RMDs, congestive cardiac failure and chronic liver diseases

These conditions usually act as confounders and could have introduced bias in the study results if included in the study.

The following operational definitions were used

1. Inflammatory Rheumatic and musculoskeletal diseases. This included all the following conditions diagnosed by a Rheumatologist:

- Seropositive Rheumatoid Arthritis (SPRA)
 - Seronegative Inflammatory Arthritis (SNIA)
 - Systemic Lupus Erythematosus
 - Systemic Sclerosis
 - Ankylosing spondylitis
 - Mixed connective tissue disease
 - Polymyositis
 - Dermatomyositis
2. Depression: Depression in a patient was diagnosed based on the DSM-4 criteria.

After getting approval from the hospital ethical and research committee (50/LRH/MTI), patients meeting the inclusion criteria were enrolled in the study, and relevant data were collected. Informed written consent was provided by the patients for inclusion in the study. All patients were worked up with detailed history, clinical examination, and other relevant information were recorded in a pre-designed proforma.

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 17. Mean \pm standard deviation was calculated for continuous variables like the age of the patients. Frequency and percentages were calculated for qualitative variables like gender and depression status. Depression status was stratified among age and gender to see effect modifier. Post-stratification chi-square test was applied, keeping p-value less than 0.05 as significant. Results were presented in the form of tables and charts.

RESULTS

This study was conducted at the Rheumatology Division, Lady Reading Hospital, Peshawar where a total of 189 patients were included.

Of the study participants, 58 (30.7%) were males and 131 (69.3%) were females. Age of the patients ranged from 16 to 70 years with mean + SD as 38.79+ 14.6.

With regards to the diagnosis, 129 patients (68.25%) had seropositive rheumatoid arthritis. Ankylosing spondylitis and seronegative inflammatory arthritis accounted for 15 (7.9%) and 13 (6.8%) cases, respectively. 11 (5.8%) patients had been diagnosed with SLE and 7 (3.7%) with

scleroderma.

As regards depression, 169 (89.4%) patients were found to have this mental disorder. Detailed results are shown in the tables below.

Variables	N = 189
Age (Mean + SD)	38.79+ 14.6
Males	58 (30.7%)
Females	131 (69.3%)
Diagnosis	
Seropositive Rheumatoid Arthritis	129 (68.25%)
Ankylosing Spondylitis	15 (7.9%)
Seronegative Inflammatory Arthritis	13 (6.8%)
Systemic Lupus Erythromatosis	11 (5.8%)
Scleroderma	7 (3.7%)
Others	14 (7.4%)
Medications used	
Methotrexate	134 (70.9%)
Hydroxychloroquin	81 (42.9%)
Sulfasalazine	37 (19.6%)
Leflunomide	18 (9.5%)
Azathioprine	9 (4.8%)
Mycophenolate	5 (2.6%)

Table-I. Baseline characteristics of patients

Diagnosis	Depression			Total
	Present	%	Absent	
SPRA	120	95%	9	129
Ankylosing spondylitis	12	80%	3	15
SNIA	12	92.3%	1	13
SLE	8	80%	2	10
Scleroderma	6	85.7%	1	7
Others	10	71.4%	4	5
Total	169	89.4%	20	189

Table-II. Stratification of depression by different RMDs

Variables		Depression		Total	P-Value
		Present	Absent		
Gender	Male	48	10	58	0.04*
	Female	121	10	131	
Compliance	Poor	78	6	84	0.169
	Good	91	14	105	

Table-III. Stratification by gender and its effect on the drug compliance

DISCUSSION

RMDs are disabling disorders with 1% prevalence worldwide. Most of them are associated with significant morbidity, which may possibly explain

why depression is common in these patients. At the literature review stage we had noted the lack of research focusing on depression in all types of RMDs, hence our study is unique in that sense. After conducting our research, we found a high prevalence of depression among patients with RMDs i.e., 89.4%.

Globally research has mainly been undertaken exploring the prevalence of depression in rheumatoid arthritis. Such studies have reported depression frequency to be ranging from 9.5% to 41.5%.^{12,14} Like elsewhere, interest has been shown in this area of medical research in Pakistan too. A study conducted in Lahore, reported the frequency of depression in rheumatoid arthritis as 71.67%.¹⁵ Our study, shows even a higher frequency of Depression among SPRA patients, i.e., 95%.

Bogdanovic et al.¹⁶ screened patients using Beck Depression Inventory (BDI) and established that 91.3% of patients with systemic lupus erythematosus had depression. Their findings bear similarity to ours in that 80% of the patients with SLE in our study reported depressed mood. Caution needs to be observed while interpreting findings from the study by Bogdanovic et al¹⁶ as BDI is classed as a screening tool as opposed to a structured diagnostic tool for depression. To enhance the robustness of our study, we used the DSM – 4 criteria to diagnose depression.

Our study showed that 80% of the patients with ankylosing spondylitis had a depressed mood. Similar results have been reported by Dhakad et al.¹⁷ in India and Zhang et al.¹⁸ in China. Rostom et al.¹⁹ in 2013 also reported around 55% depression in ankylosing spondylitis in Morocco. One possible reason for the difference may be our smaller sample size.

Bragazzi et al.²⁰ performed a national level survey to investigate the prevalence of Depression in systemic sclerosis patients. Their study established that systemic sclerosis was an independent risk factor for depression, however, no evidence was found favouring an association between scleroderma-related antibodies and

the risk of depression. Our cohort observed a similarly high frequency of Depression among scleroderma patients, i.e. 85.7%.

We observed that females were more likely to be depressed than males at a statistically significant level ($p = 0.04$). One possible reason for this may be that depression is generally more common in females compared to males.

Our study has few limitations. Firstly, our study cohort comprised mostly of SPRA patients, with patients having other types of RMDs fewer in number. Secondly, we did not take into account the disease severity while collecting data. Finally, we did not investigate the individual factors that contributed to depression in these patients.

Regarding the strengths of our study, to the best of our knowledge, this is the first ever study conducted in Pakistan that has determined an association between depression and RMDs. Moreover, we have found a high frequency of depression in RMDs patients, a finding that has been ignored when these patients are managed in the local healthcare settings. Thirdly, we identified that depression was more common in females; this finding reaching statistical significance.

As per the current study, the frequency of depression in RMDs is strikingly high, i.e. 89%. One likely reason for such a high frequency may be that the prevalence of depression in Pakistan is already high, i.e. 45.9%²¹ compared to the developed countries. For instance, the frequency of depression is 19.5% in US²² while in Europe it is estimated as 12.3%.²³ Since RMDs are chronic diseases associated with high morbidity²⁴, they take a toll on the psychological health of the sufferers, hence possibly leading to high prevalence of depression in these medical conditions than in the general population. Based on our findings, we recommend that every RMD patient be screened and if diagnosed with depression, should be offered appropriate treatment by the mental health professionals. We also recommend further research preferably a multicentre study with a large sample size.

CONCLUSION

We concluded that a high proportion of patients presenting to the Rheumatology OPD suffer from depression. Among patients with RMDs, those with rheumatoid arthritis seem to be at highest risk of developing depression. These observations should be taken into account when discussing management plans with patients.






Copyright© 24 Sep, 2022.

REFERENCES

1. Anyfanti P, Triantafyllou A, Panagopoulos P, et al. **Predictors of impaired quality of life in patients with rheumatic diseases.** Clin Rheumatol. 2015 Dec 23;
2. Branco JC, Rodrigues AM, Gouveia N, et al. **Prevalence of rheumatic and musculoskeletal diseases and their impact on health-related quality of life, physical function and mental health in Portugal: Results from EpiReumaPt – a national health survey.** RMD Open. 2016; 2:e000166.
3. Kłak A, Raciborski F, Kowalik PS. **Social implications of rheumatic diseases.** Rheumatology. 2016; 54(2): 73–8.
4. McDougall C, Hurd K, Barnabe C. **Systematic review of rheumatic disease epidemiology in the indigenous populations of Canada, the United States, Australia, and New Zealand.** Semin Arthritis Rheum. 2017 Apr; 46(5):675-86.
5. Scott DL, Wolfe F, Huizinga TW. **Rheumatoid arthritis.** Lancet. 2010; 376:1094–108.
6. Dean LE, Jones GT, Macdonald AG, et al. **Global prevalence of ankylosing spondylitis.** Rheumatology (Oxford) 2014; 53:650–7.
7. Baillet A, Gossec L, Carmona L, et al. **Points to consider for reporting, screening for and preventing selected comorbidities in chronic inflammatory rheumatic diseases in daily practice: A EULAR initiative.** Ann Rheum Dis. 2016; 75:965–73.
8. Grygielska J. **The impact of rheumatoid arthritis on the economic situation of polish households.** Reumatologia. 2013; 51:348–54.
9. Guo Q., Wang Y., Xu D., Nossent J., Pavlos N.J., Xu J. **Rheumatoid arthritis: Pathological mechanisms and modern pharmacologic therapies.** Bone Res. 2018; 6:1–14.

10. Shah A, St. Clair EW. **Rheumatoid Arthritis**. In: Kasper DL, Fauci AS, Hauser SL, Longo DL, Jameson JL, Loscalzo J, Eds. *Harrison's Principles of Internal Medicine*. 19th ed. New York, NY: McGraw-Hill Education; 2016.
11. Jorge A, Wallace ZS, Zhang Y, Lu N, Costenbader KH, Choi HK. **All-Cause and cause-specific mortality trends of end-stage renal disease due to lupus nephritis from 1995 to 2014**. *Arthritis Rheumatol*. 2019 Mar; 71(3):403-410. doi: 10.1002/art.40729. Epub 2019 Jan 9.
12. Lin MC, Guo HR, Lu MC, Livneh H, Lai NS, Tsai TY. **Increased risk of depression in patients with rheumatoid arthritis: A seven-year population-based cohort study**. *Clinics*. 2015; 70:91-6
13. Gao L, Zhang XC, Li MM, Yuan JQ, Cui XJ, Shi BX. **Psychometric properties of the Chinese version of Arthritis Self-Efficacy Scale-8 (ASES-8) in a Rheumatoid arthritis population**. *Rheumatol Int*. 2017; 37:751-6.
14. Peterson S, Piercy J, Blackburn S, Sullivan E, Karyekar CS, Li N. **The multifaceted impact of anxiety and depression on patients with rheumatoid arthritis**. *BMC Rheumatol*. 2019 Oct 28; 3:43.
15. Imran MY, Saira Khan EA, Ahmad NM, Farman Raja S, Saeed MA, Ijaz Haider I. **Depression in rheumatoid arthritis and its relation to disease activity**. *Pak J Med Sci*. 2015 Mar-Apr; 31(2):393-7.
16. Bogdanovic G, Stojanovich L, Djokovic A, Stanisavljevic N. **Physical activity program is helpful for improving quality of life in patients with systemic lupus erythematosus**. *Tohoku J Exp Med*. 2015; 237(3):193-9.
17. Dhakad U, Singh BP, Das SK, Wakhlu A, Kumar P, Srivastava D, et al. **Sexual dysfunctions and lower urinary tract symptoms in ankylosing spondylitis**. *Int J Rheum Dis*. 2015; 18:866-872.
18. Zhang L, Wu Y, Liu S, Zhu W. **Prevalence of depression in ankylosing spondylitis: A systematic review and meta-analysis**. *Psychiatry Investig*. 2019 Aug; 16(8): 565-74.
19. Hakkou J, Rostom S, Aissaoui N, Berrada KR, Abouqal R, Bahiri R, et al. **Psychological status in Moroccan patients with ankylosing spondylitis and its relationships with disease parameters and quality of life**. *J Clin Rheumatol*. 2011; 17:424-28.
20. Bragazzi N.L., Watad A., Gizunterman A., McGonagle D., Mahagna H., Comaneshter D., Amital H., Cohen A.D., Amital D. **The burden of depression in systemic sclerosis patients: A nationwide population-based study**. *J. Affect. Dis*. 2018; 243:427-31.
21. Muhammad Gadit AA, Mugford G. **Prevalence of depression among households in three capital cities of Pakistan: Need to revise the mental health policy**. *PLoS One*. 2007; 2(2):e209.
22. <https://www.cdc.gov/nchs/products/databriefs/db379.htm>
23. Copeland JR, Beekman AT, Dewey ME, Hooijer C, Jordan A, Lawlor BA, et al. **Depression in Europe. Geographical distribution among older people**. *Br J Psychiatry*. 1999 Apr. 174:312-21.
24. Margaretten M, Julian L, Katz P, Yelin E. **Depression in patients with rheumatoid arthritis: Description, causes and mechanisms**. *Int J Clin Rheumatol*. 2011; 6(6):617-623.

AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Syed Hassan Mustafa	Original idea, Manuscript writing.	
2	Saqib Adnan	Supervision, Manuscript writing.	
3	Taimur Khan	Proof reading, Data collection.	
4	Waqar Hayat	Data collection.	
5	Talha Durrani	Statistical work, Data Processing.	
6	Farah Iqbal	Data collection.	