

Original Research Article

To study anxiety and depression in patients with rheumatoid arthritis: a cross sectional study**Madhu Balla¹, Vijay Kumar², Manpreet Kour³**¹*Resident, Department of Pathology, Government Medical College, Jammu, Jammu and Kashmir, India*²*Resident, Department of Internal Medicine, Government Medical College, Jammu, Jammu and Kashmir, India*³*Resident, Department of Ophthalmology, Government Medical College, Jammu, Jammu and Kashmir, India***Received: 03-10-2021 / Revised: 08-12-2021 / Accepted: 26-12-2021****Abstract**

Background: Rheumatoid arthritis (RA) is a chronic inflammatory disease characterized by proliferative synovitis causing swelling, morning stiffness and deformity of multiple joints. The causes of RA are still unknown although progress has been made into clarifying the pathophysiology and etiology of the disease. From the patients' perspective, even from the early phases of disease, RA is a potentially debilitating disease causing persistent pain, depression or other psychosocial distress, poor physical function, reduced quality of life (QoL) and increased medical and social costs. **Aim of Study:** To determine the prevalence of depressive and anxiety symptoms in patients with rheumatoid arthritis and to identify the sociodemographic and clinical variables associated with depressive symptoms in these patients. **Methods:** A cross sectional study was conducted on 112 patients with RA and 93 age and sex matched controls. Sociodemographic and clinical data were collected and the Hospital Anxiety and Depression Scale and the Disability Index of the Health Assessment Questionnaire were applied. **Results:** A total of 112 patients and 93 age and sex matched control subjects were included in the study. The mean age of the study population was recorded as 46.88 years and that of control population was recorded as 39.51 years (16 years to 95 years) consisting of 83.04% (n=93) females and 16.96% (n=19) males in study population. The control population comprised of 35.48% (n=33) females and 64.52% (n=60) males. The prevalence of anxiety was 59.82% (n=67) of the study population and that of depression was 47.32% (n=53) of the study population. No evidence of anxiety and depression was found in control population. Rheumatoid arthritis patients with depressive symptoms had lower education and higher disease activity and functional disability. **Conclusion:** Patients with RA and co-morbid depression have worse health outcomes. RA cases should be monitored for accompanying depression during follow-up. The identification and treatment of depression in RA paramount to the overall management of RA.

Keywords: Anxiety, Depression, rheumatoid arthritis.

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Introduction

Rheumatoid arthritis (RA) is a chronic inflammatory disease characterized by proliferative synovitis causing swelling, morning stiffness and deformity of multiple joints. The causes of RA are still unknown although progress has been made into clarifying the pathophysiology and etiology of the disease. Pain, fatigue and disability, which may be considered as stress factors[1] are common challenges that may subsequently lead to psychological distress[2]. Depression commonly co-occurs with RA, in the range of 13–20% and above based on clinical assessments[3]. Continuous pain, functional disability, tiredness, incapacity to work, economic limitations, and side effects of therapeutic drugs, which RA may bring about, can end up reducing these patients' quality of life[4,5]. Commonly associated with these biopsychosocial problems, psychiatric symptoms - especially depressive and anxiety ones - are relatively frequent in RA patients. Several studies have identified depressive symptoms as an important aspect in RA. The prevalence of depressive symptoms in RA has been reported to vary between 6% and 65%, according to the screening methods used and to the samples studied[6-11]. Depression in RA is associated with higher levels of disease activity, pain, fatigue,

work disability, health service use but lower treatment compliance[3] and increased suicide risk and mortality[12,13]. Anxiety symptoms and disorders have been less studied separately, because they are a very frequent dimension of depression, making it difficult to separate anxiety symptoms from depressive ones [14]. Some studies have found a prevalence of almost 40% of anxiety symptoms in RA[15]. Other investigations have addressed the sociodemographic and clinical characteristics of RA in relation to the presence of depressive symptoms. These symptoms have been commonly associated with low levels of physical activity, low education and income, unemployment, functional disability, morning stiffness, joint pain, fatigue, duration of illness, permanent joint deformities, active inflammation, and high dependence on health services[7,16-18]. Regular mood assessment by rheumatology clinical staff may serve to improve awareness and early identification of depression[5] and thus timely identification and treatment of depression in RA are critical to overall clinical management[19]. The aim of study was to find out the prevalence of anxiety and depressive symptoms in rheumatoid arthritis patients and to compare the prevalence of depressive and anxiety symptoms in RA patients with control subjects. Minimal work has been done in the sphere of depression and anxiety in rheumatoid arthritis in our setup. The findings of the study done will help the healthcare providers especially in the primary care setup to understand the impact of disease on the patients' lives and offer an insight into the need for early treatment and interventions.

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Study Design: A prospective observational and cross-sectional one point analysis study, which was conducted from Nov. 2015 to Oct. 2016 after taking permission from institutional ethics committee . The study group comprised of patients attending Medicine OPD at tertiary care hospital Jammu.

Material and methods

This study comprised of 112 patients attending Medicine OPD in tertiary care hospital, Jammu and 93 age and sex matched control subjects. Patients diagnosed with rheumatoid arthritis according to 2010-ACR-EULAR classification criteria for RA aged 16 years and above were included in the study and compared to age and sex matched controls.

Exclusion Criteria

- Patients who needed hospital admission
- Critically ill patients
- Pregnant or lactating women
- Fibromyalgia
- Osteoarthritis
- Ankylosing Spondylitis
- Systemic Sclerosis
- Chronic Kidney Disease
- Diabetes Mellitus

Data Collection

- ☐ The demographic profile of all the patients was taken.
- ☐ Detailed history about rheumatoid arthritis was obtained.

- ☐ History about any other coexistence disease was taken.
- ☐ Detailed physical examination of the patients was done.
- ☐ Written informed consent were taken from all the patients

DAS 28 score was calculated from 28 joint count (Proximal interphalangeal joints 10, Metacarpophalangeal joints 10, wrist 2, elbows 2, shoulder 2, knees 2) and ESR[20]

The sociodemographic variables assessed were gender, age, education, occupation and duration of disease.

The anxiety and depression in the patients were studied with the help of HADS (Hospital Anxiety and Depression Scale) questionnaire. It contains seven items screening for anxiety and seven for depression, rated from zero to three. Scores over seven in each subscale are suggestive of anxiety or depressive disorders[22]

Pain was measured by 10 cm visual analogue scale.

HAQ was used to assess the activities of daily living.

Statistical Evaluation

All the data obtained from the patients of the study group was noted down on a Proforma especially designed for this purpose. The data collected was analysed using open stat software.

Results

The current study was carried over a period of 1 year with 112 patients aged 16 yrs and above, diagnosed with Rheumatoid Arthritis according to the 2010 ACR-EULAR criteria for Rheumatoid Arthritis; and 93, age and sex matched control subjects.

The results of the study are tabulated as follows:

Table 1: Age wise Distribution of patients with RA (n=112)

Age Group	No.	%age
16-29	7	6.25
30-44	37	33.04
45-59	50	44.64
60-95	18	16.07

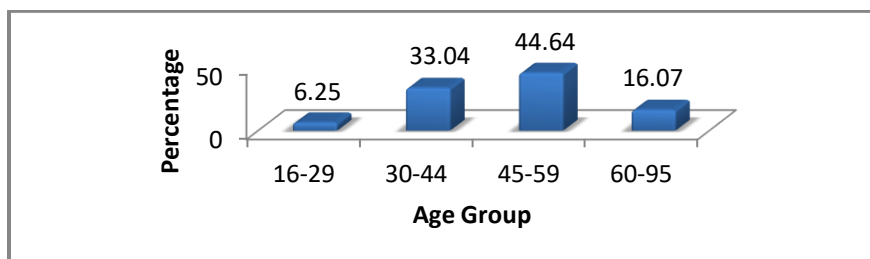


Fig 1: Age wise Distribution

The demographic profile revealed that most 44.64% (n=50) of the patients with RA were in the age group of 45-59 years followed by 33.04% (n=37) in 30-44 years age group followed by 16.07% (n=18)

in 60-95 years age group and 6.25% (n=07) in 16-29 age group. The mean age of the study population was recorded as 46.88 years (SD=11.84) (Table1, Figure 1)

Table 2: Age wise Distribution of control population (n=93)

Age Group	No.	%age
16-29	25	26.88
30-44	37	39.78
45-59	19	20.44
60-95	12	12.90

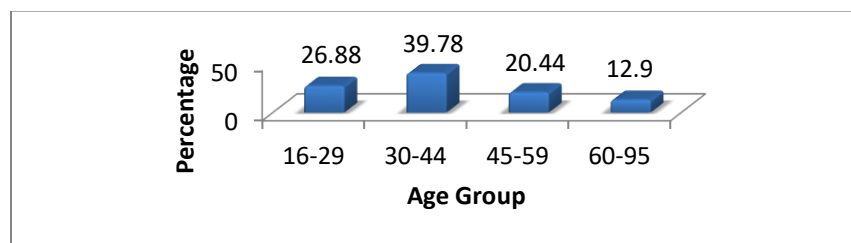


Fig 2: Age wise Distribution

The demographic profile revealed that maximum number 39.78% (n=37) of the controls were in the age group of 30-44 years, followed by 26.88% (n=25) in 16-29 years age group followed by 20.44% (n=19) in 45-59 years age group and 12.90% (n=12) in 60-95 age

group. The mean age of the control population was recorded as 39.51 years (SD=13.29) (Table 2, Figure 2).

The statistical difference between the patient and the control population was significant (p= 0.0007)

Table 3: Sex wise Distribution of patients with RA (n=112)

Case	No.	%age
Female	93	83.04
Male	19	16.96

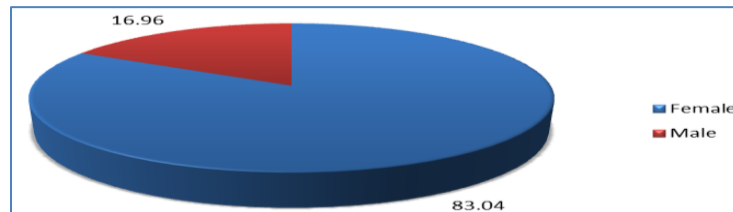


Fig 3: Sex wise Distribution of patients with RA

As evident from the table above (Table 3), there was a female predominance as 83.04% (n=93) of the patients were females in comparison to 16.96% (n=19) males; with a female to male ratio of 4.9 (Table: 3, Figure 3).

Table 4: Sex wise Distribution of control population (n=93)

Case	No.	%age
Female	33	35.48
Male	60	64.52

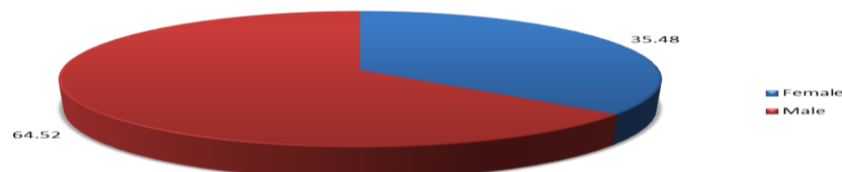


Fig 4: Sex wise Distribution of control population

The control population comprised of 35.48% (n=33) females and 64.52% (n=60) males. (Table: 4, Figure 4)

Table 5: Distribution of cases of RA on the basis of their Occupation (n=112)

Case	No.	%age
Household	96	85.7
Salaried	15	13.39
Business Holder	1	0.89
Student	0	0
Others	0	0

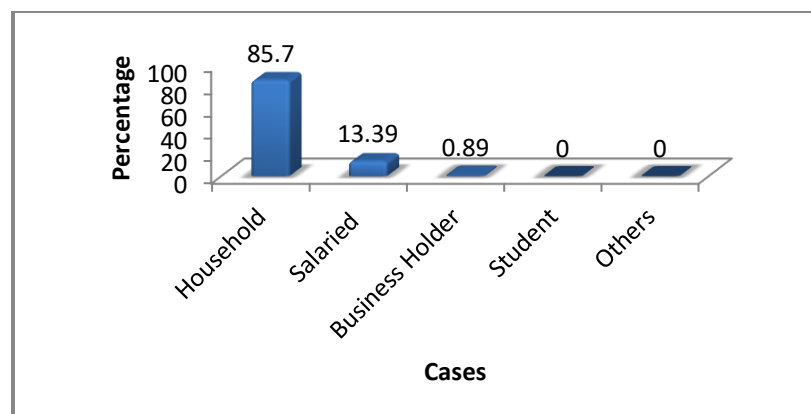


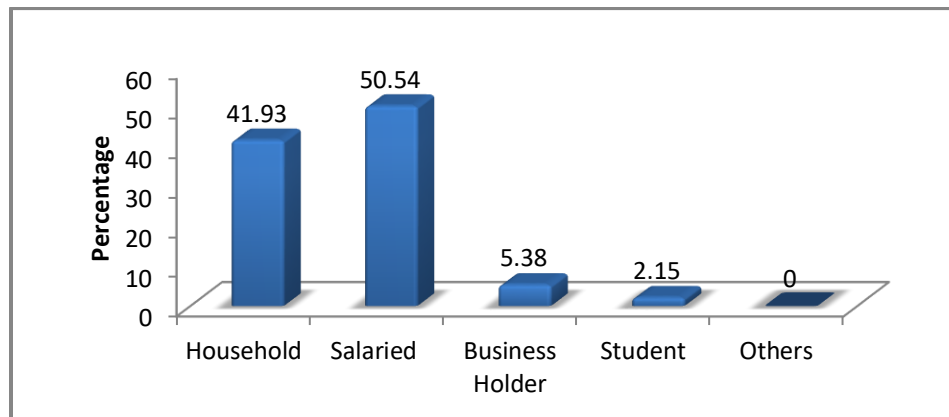
Fig 5: Distribution of cases of RA on the basis of their Occupation (n=112)

On the basis of occupation our study showed that most of the patients were engaged in household work, comprising 85.72% (n=96) of the

patients; followed by those who were salaried 13.39% (n=15), and business-holders 0.89% (n=1) (Table 5, Figure 5)

Table 6: Distribution of Control population on the basis of their Occupation (n=93)

Case	No.	%age
Household	39	41.93
Salaried	47	50.54
Business Holder	5	5.38
Student	2	2.15
Others	0	0

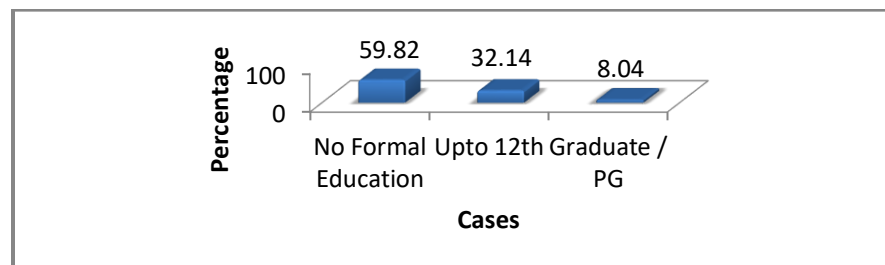
**Fig 6: Distribution of Control population on the basis of their Occupation (n=93)**

On the basis of occupation our study showed that most of the control subjects held salaried jobs comprising 50.54% (n=47) of the population, followed by those engaged in household work

comprising 41.93% (n=39) of the population, followed by business holder 5.38% (n=5), followed by students 2.15% (n=2) (Table 6, Figure 6)

Table 7: Distribution of patients with RA on the basis of their Literacy (n=112)

Case	No.	%age
No Formal Education	67	59.82
Upto 12 th	36	32.14
Graduate / PG	9	8.04

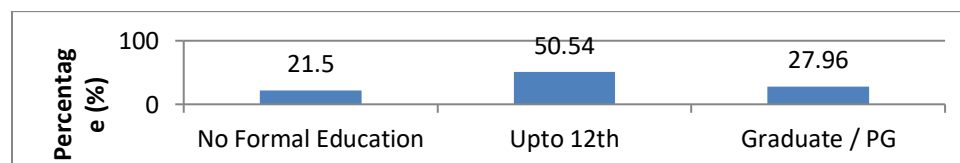
**Fig 7: Distribution of patients with RA on the basis of their Literacy (n=112)**

Our study showed that out of 112 patients enrolled for the study, 67 (59.82%) had not received any formal education, 36 (32.14%) had

received school education and 9(8.04%) were graduated/ post-graduates (Table 7, Figure 7).

Table 8: Distribution of control population on the basis of Literacy(n=93)

Case	No.	%age
No Formal Education	20	21.50
Upto 12 th	47	50.54
Graduate / PG	26	27.96

**Fig 8: Distribution of control population on the basis of Literacy(n=93)**

Out of 93 people enrolled in the control population, 20(21.50%) had not received any formal education, 47 (50.54%) had received school

education and 26 (27.96%) were graduates/ post-graduates (Table 8, Figure 8)

Table 9: Distribution of patients of RA on the basis of Duration of Symptoms (n=112)

	No.	%age
< 1 Years	13	11.61
1-5 Years	63	56.25
6-10 Years	20	17.86
> 10 Years	16	14.28

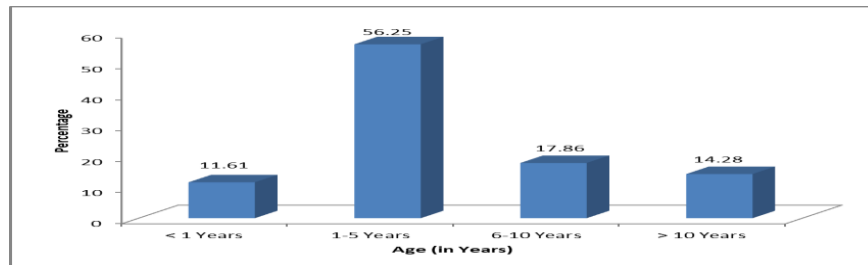


Fig 9: Distribution of patients of RA on the basis of Duration of Symptoms (n=112)

On the basis of duration of symptoms, patients were classified into those having pain <1 year which included 13 (11.61%) patients, those with symptom duration between 1-5 years included 63

(56.25%) patients, those with symptom duration between 6-10 years included 20 (17.86%) patients and with symptom duration of more than 10 years included 16(14.28%) patient. (Table 9, Figure 9)

Table 10: Distribution of the patients on the basis of Anxiety Score (n=112)

Score	No.	%age
0-7	45	40.18
8-14	62	55.36
15-21	5	4.46

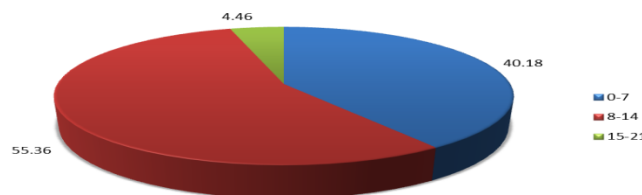


Fig 9: Distribution of the patients on the basis of Anxiety Score (n=112)

The study revealed that 59.82% (n=67) of the study population had anxiety (HADS Score >7), while 40.18% (n=45) did not have any

evidence of anxiety. The mean score for anxiety in the study population was 08.35 (SD=3.49). (Table 10, Figure 10)

Table 11: Distribution of control population Anxiety Score

Score	No.	%age
0-7	93	100
8-14	0	0
15-21	0	0

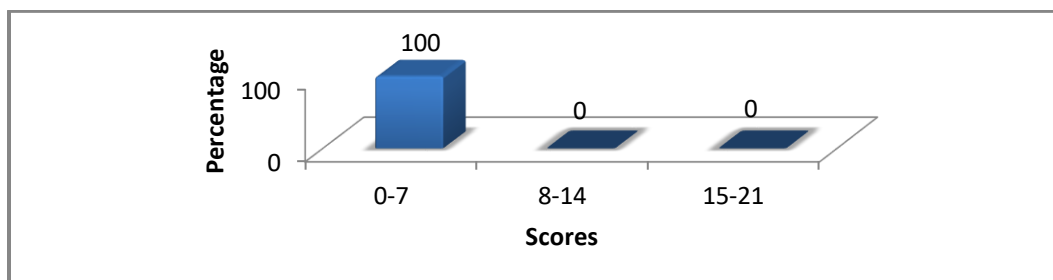


Fig 11: Distribution of control population Anxiety Score

The study revealed that 100% (n=93) of the study population had anxiety (HADS Score <7), while none of the control population show

any evidence of anxiety. The mean score for anxiety in the control population was 0.71 (SD=1.07). (Table 11, Figure 11)

Table 12: Distribution of the patients on the basis of Depression Score (n=112)

Score	No.	%age
0-7	59	52.68
8-14	50	44.64
15-21	3	2.68

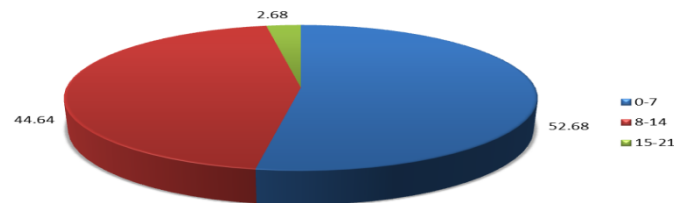


Fig 12: Distribution of the patients on the basis of Depression Score (n=112)

The study revealed that 47.32% (n=53) of the study population suffered from depression (HADS Score >7), while 52.68% (n=59) did not have any evidence of depression. The mean score for

depression in the study population was 7.49 (SD=3.90). (Table 12, Figure 12)

Table 13: Distribution of control population on the basis of Depression Score (n=93)

Score	No.	%age
0-7	93	100
8-14	0	0
15-21	0	0

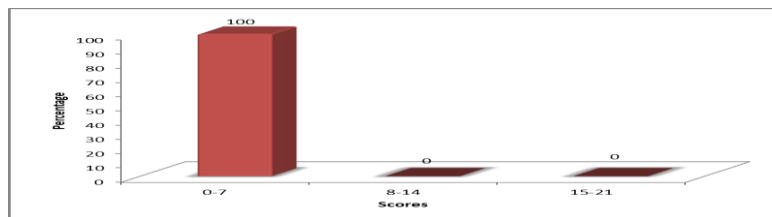


Fig 13: Distribution of control population on the basis of Depression Score (n=93)

The study revealed that 100% (n=93) of the control population had depression (HADS Score <7), while none of the control population showed any evidence of depression. The mean score for depression in the control population was 0.23 (SD=0.63). (Table 13, Figure 13)

T-tests were applied to compare the two populations the results of which are described below:

Anxiety: Patients (Mean = 8.40, SD=3.65) and Controls (Mean = 0.71, SD=1.07), with difference between means=7.69
 $t(92) = 19.877$, $p < 0.0001$, CI(95) 6.92, 8.46.

Group	N	Mean	SD	t	df	P	95%CI
Patients	112	8.40	3.65	-	-	-	-
Controls	93	0.71	1.07	-	-	-	-
Total	205	4.55	2.36	19.877	92	<0.0001	6.92,8.46

Depression: Patients (Mean = 7.45, SD=4.09) and Controls (Mean = 0.23, SD=0.63), with difference between means=6.82
 $t(92) = 17.064$, $p < 0.0001$, CI(95) 6.38,8.07.

Group	N	Mean	SD	t	df	P	95%CI
Patients	112	7.45	4.09	-	-	-	-
Controls	93	0.23	0.63	-	-	-	-
Total	205	3.84	2.36	17.064	92	<0.0001	6.38,8.07

Thus it was concluded that there was significant difference between the patients and the control population with respect to both anxiety and depression; with both anxiety and depression being significantly higher in the patient population.

Anxiety: ($p < 0.0001$). $t = 19.877$ with 95% CI 6.92, 8.46.

Depression: ($p < 0.0001$). $t = 17.064$ with 95% CI 6.38, 8.07.

Discussion

RA is a systemic inflammatory disease that affects people both physically and psychologically. Depression and anxiety frequently occur in RA[21]. Concomitant depressive or anxiety disorders in RA patients are associated with significantly poorer health-related quality of life[22]. Depression affects patients with RA beyond the burden of

mental illness itself[23]. The result of the current study showed that maximum number of patients were in the age group 30-59 (77.68%), with a female predominance of 83.04% which is in accordance to previous studies[Symmons *et al*, (2002); Korczowska *et al*, 2014] [24,25]. Our study revealed that most of patients were involved in household work & few were employed outside their home. Patients with RA were almost equally distributed with respect to their education status (59.82% had not received any formal education and 40.18% were educated). Most patients presented between 1-5 years onset of symptoms, while few reported within 1 year. In the patients group 59.82% of the population suffered from anxiety as compared to no patient in the control group and 47.32% of the patient

population suffered from depression as compared to no patient in the control group. The prevalence of anxiety was higher than depression in our study which is similar to the done by **El-Miedany and El-Rasheed [1]** who found that the prevalence of anxiety was higher than depression. The difference in the patient and the control population was significant with respect to both anxiety ($t = 19.877$, $P < 0.0001$) and depression ($t = 17.064$, $P < 0.0001$) with anxiety being more affected than depression in the study group. **Crotty et al [26]** observed that depression increases disease activity in RA cases and treatment of accompanying psychiatric disorder reduces disease activity. **Isik et al [17]**, found that prevalence's of anxiety and depression were higher in the RA group than the control group. Our study confirms that depression deserves more attention in the care of patients with RA. Depression in RA and is a risk factor for poor outcome. Such patients might not be adhering to medical advice [27].

Limitations of the study

- Less number of patient
- Limited number of observations
- Lack of follow up

Scope of the study

- The study underscores the importance of controlling primary symptoms, such as anxiety and depression for improved management
- Early diagnosis and comprehensive management of the patients is important for improved quality of life.
- Healthy and conducive environment and social rehabilitation of patients with RA is the need of hour so that QOL is improved in such patients.

References

1. El-Miedany YM, El Rasheed AH. Is anxiety a more common disorder than depression in rheumatoid arthritis? *Joint Bone Spine*. 2002; 69:300–6.
2. Gettings L. Psychological well being in rheumatoid arthritis: a review of the literature. *Musculoskeletal Care*. 2010; 8:99–106.
3. Uguz F, Tufekci O. Anti tumor necrosis factor therapy is associated with less frequent mood and anxiety disorders in patients with rheumatoid arthritis. *Psychiatry Clin Neurosci*. 2009; 63:50–5.
4. Pollard L, Choy EH, Scott DL. The consequences of rheumatoid arthritis: quality of life measures in the individual patient. *Clin Exp Rheumatol*. 2005; 23(5 Suppl 39):S43-52.
5. Sheehy C, Murphy E, Barry M. Depression in rheumatoid arthritis underscoring the problem. *Rheumatology*. 2006; 45(11):1325-7.
6. Blalock SJ, DeVellis RF. Rheumatoid arthritis and depression: an overview. *Bull Rheum Dis*. 1992; 41(1):6-8.
7. Katz PP, Yelin EH. Prevalence and correlates of depressive symptoms among persons with rheumatoid arthritis. *J Rheumatol*. 1993; 20(5):790-6.
8. Fifield J, Reisine S, Sheehan TJ, McQuillan J. Gender, paid work, and symptoms of emotional distress in rheumatoid arthritis patients. *Arthritis Rheum*. 1996; 39(3):427-35.
9. Abdel-Nasser AM, Abd El-Azim S, Taal E, EL-Badawy SA, Rasker JJ, Valkeburg HA. Depression and depressive symptoms in rheumatoid arthritis patients: an analysis of their occurrence and determinants. *Br J Rheumatol*. 1998; 37(4):391-7.
10. Söderlin MK, Hakala M, Nieminen P. Anxiety and depression in a community-based rheumatoid arthritis population. *Scand J Rheumatol*. 2000; 29(3):177-83.
11. McQuillan J, Fifield J, Sheehan TJ, Reisine S, Tennen H, Hesselbrock V, Rothfield N. A comparison of self-reports of distress and affective disorder diagnoses in rheumatoid arthritis: a receiver operator characteristic analysis. *Arthritis Rheum*. 2003; 49(3):368-76.
12. Timonen M, Viilo K, Hakko H, Sarkioja T, Ylikulju M, Meyer-Rochow V et al. Suicides in persons suffering from rheumatoid arthritis. *Rheumatology*. 2003; 42:287–91.
13. Ang D, Choi H, Kroenke K, Wolfe F. Comorbid depression is an independent risk factor for mortality in patients with rheumatoid arthritis. *J Rheumatol*. 2005; 32:1013–9.
14. VanDyke MM, Parker JC, Smarr KL, Hewett JE, Johnson GE, Slaughter JR, Walker SE. Anxiety in rheumatoid arthritis. *Arthritis Rheum*. 2004; 51(3):408-12.
15. Bagnato G, De Filippis LG, Caliri A, Bruno A, Gambardella N, Muscatello MR, Cambria R, Zoccali R. Comparison of levels of anxiety and depression in patients with autoimmune and chronic-degenerative rheumatic: preliminary data. *Reumatismo*. 2006; 58(3):206-11.
16. Frank RG, Chaney JM, Clay DL, Shutty MS, Beck NC, Key DR, Elliott TR, Grambling S. Dysphoria: a major symptom factor in persons with disability or chronic illness. *Psychiatric Res*. 1992; 43(3):231-41.
17. Isik A, Koca SS, Ozturk A, Mermi O. Anxiety and depression in patients with rheumatoid arthritis. *Clin Rheumatol*. 2007; 26(6):872-8.
18. Waheed A, Hameed K, Khan AM, Syed JA, Mirza AI. 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*. 2006; 56(5):243-7.
19. Parker JC, Wright GE. The implications for pain and disability in rheumatoid arthritis. *Arthritis Care Res*. 1995; 8:279–83.
20. Preevo ML, van't Hof MA, Kuper HH, van Leeuwen MA, van de Putte LB, Riel PL. Modified disease activity score that include twenty eight joint counts. Development and validation in a prospective longitudinal study of patients with rheumatoid arthritis. *Arthritis Rheum*. 1995; 38(1):44-8.
21. Covic T, Cumming SR, Pallant JF, Manolios N, Emery P, Conaghan PG et al. Depression and anxiety in patients with rheumatoid arthritis: prevalence rates based on a comparison of the depression, anxiety and stress scale (DASS) and the hospital, anxiety and depression scale (HADS). *BMC Psychiatry*. 2012; 24(12):6.
22. Mok CC, Cheung EF. Concurrent psychiatric disorders are associated with significantly poorer quality of life in patients with rheumatoid arthritis. *Scand J Rheumatol*. 2012; 41(4):253–9.
23. Margaretten M, Julian L, Yelin E. Depression in patients with rheumatoid arthritis: description, causes and mechanisms. *Int J Clin Rheumatol*. 2011; 6(6):617–23.
24. Symmons, Scott D, Silman A. The prevalence of rheumatoid arthritis in United Kingdom: new estimates for a new century. *Rheumatology*. 2002; 41(7):793-800.
25. Korczowski I. Rheumatoid arthritis susceptibility genes: An overview. *World j Orthop*. 2014; 5:544-549.
26. Crotty M, McFarlane AC, Brooks PM, Hopper JL, Bieri D, Taylor SJ. The psychosocial and clinical status of younger women with early rheumatoid arthritis: a longitudinal study with frequent measures. *Br J Rheumatol*. 1994; 33(8):754-760.
27. Persson LO, Sahlberg D. Psychological factors in chronic rheumatic diseases-a review. The case of rheumatoid arthritis, current research and some problems. *Scand J Rheumatol*. 1999; 28:137–44.

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