Saudi Journal of Medical and Pharmaceutical Sciences **ISSN 2413-4929 (Print)**
Scholars Middle East Publishers **ISSN 2413-4910 (Online)**
Dubai, United Arab Emirates
Website: http://scholarsmepub.com/

Assessment of Health-Related Quality of Life, Anxiety and Depression in Patients with Rheumatoid Arthritis

Dr. Peruri Pavan Kumar*, Dr. V. Verendra, Dr. A. Revanth Kumar Reddy
Clinical Pharmacist, Queens NRI Hospital Vishakhapatnam, Andhra Pradesh, India

Original Research Article

***Corresponding author**
Dr. Peruri Pavan Kumar

Article History
Received: 05.10.2018
Accepted: 17.10.2018
Published: 30.10.2018

DOI:
10.21276/sjmps.2018.4.10.16

Abstract: In an attempt our study was to assess health-related quality of life, anxiety & depression among patients with Rheumatoid arthritis. In this study demonstrates that the Rheumatoid arthritis patients evaluated were more likely to have lower Quality of Life, and high prevalence rates of depression and anxiety, the factors leading to an increased risk of depression among Rheumatoid arthritis patients included being female and older. As depression is the one of the major factor for medication non adherence ,So it could be better if Rheumatoid arthritis patients should be regularly assessed and should be monitored for accompanying anxiety and depression during follow-up, to achieve better therapeutic outcome, and to improve patient Quality of Life. We are taking Out of 50 patients, both men and women. It is a six months observational prospective cohort study conducted at King George Hospital, we have to assess the health-related quality of life in patients with RA along with Anxiety and depression in these who are patients suffering with Rheumatoid arthritis. In the data was collected from the direct patient-reported survey, and we are analysed the data by using the Microsoft excel spread sheet along with, Hamilton Rating Scale for Depression HAM-D, Hamilton Anxiety Rating Scale (HAM-A) and we are taken informed consent forms and with proper compliance and age greater than 18 years those who are positively diagnosed with rheumatoid arthritis.

Keywords: Rheumatoid arthritis, Case study, six months, 50 Patient, Quality Of Life, Anxiety & Depression, Hamilton Rating Scale for Depression.

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease of unknown cause. The hallmark feature of this condition is persistent symmetric polyarthritis (synovitis) that affects the hands and feet, though any joint lined by a synovial membrane may be involved. Extra articular involvement, including rheumatoid nodules, vasculitis, eye inflammation, neurologic dysfunction, cardiopulmonary disease, lymphadenopathy, and splenomegaly, can be manifestations of the disease [1].

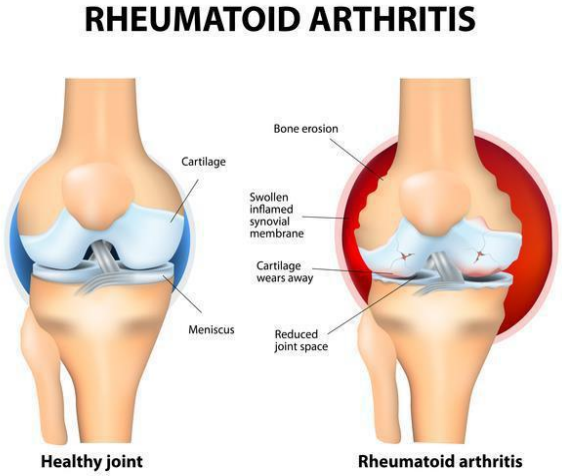

Fig-1.1: Joint impact in Rheumatoid Arthritis

Rheumatoid Arthritis History

Arthritis and diseases of the joints have been plaguing mankind since ancient times. In around 1500 BC the Ebers Papyrus described a condition that is similar to rheumatoid arthritis. This is probably the first reference to this disease. There is evidence of rheumatoid arthritis in the Egyptian mummies as found in several studies. G. Elliot in his studies found that rheumatoid arthritis was a prevalent disease among Egyptians. In the Indian literature, Charaka Samhita (written in around 300 – 200 BC) also described a condition that describes pain, joint swelling and loss of joint mobility and function. Hippocrates described arthritis in general in 400 BC. He however did not describe specific types of arthritis. Galen between 129 and 216 AD introduced the term rheumatism. Paracelsus (1493-1511) suggested that substances that could not be passed in urine got stored and collected in the body especially in the joints and this caused arthritis. Ayurveda in ancient Indian medicine also considered arthritis as one of the vata. Practitioners attributed rheumatic disorders to humorous (rheuma).Thomas Sydenham first described a disabling form of chronic arthritis that was described later by Beauvais in 1880. Brodie went on to show the progressive nature of this disease and found how rheumatoid arthritis affected the tendon sheaths and sacs of synovium in the joints. He found how there was synovial inflammation or synovitis and cartilage damage associated with rheumatoid arthritis [2].

Etiology

The etiology of rheumatoid arthritis is unknown but is most likely multifactorial, involving endogenous and exogenous factors. Genetic predisposition most likely interacts With endocrinology, gastrointestinal, infectious, atmospheric, environmental, and other etiologic factors. The autoimmune nature of RA is documented by the presence of immune cell reactivity and the production of antibodies to endogenous elements such as immunoglobulin, collagen, and cellular components. The etiologic role of genetic predisposition in RA is supported by the increased incidence of RA in certain families and monozygotic twins (30% concordance), but genetics accounts for only 50% of the risk, according to current knowledge. An immunogenic etiology is suggested by the association of RA with genetically determined immunologic factors, including specific major histocompatibility complex (MHC) antigens and subtypes, the homozygous C-kappa genotype [constant region of immunoglobulin G (IgG)], T-lymphocyte receptor chains, defects in T-cell proliferation, Corticotropin-releasing hormone genetic locus, tumour necrosis factor (TNF) receptor alleles, interferon-γ alleles, and complement C4 allotypes [3].

Epidemiology

Rheumatoid arthritis is estimated to have a prevalence of 1% to 2% and does not have any racial predilections. It can occur at any age, with increasing prevalence up to the seventh decade of life. The disease is three times more common in women. In people ages 15 to 45 years, women predominate by a ratio of 6:1; the sex ratio is approximately equal among patients in the first decade of life and in those older than age 60 years. Arthritis affects 15% people i.e. over 180 million people in India. This prevalence is higher than many well-known diseases such as diabetes. Epidemiologic data suggest that a genetic predisposition and exposure to unknown environmental factors may be necessary for expression of the disease. The major histocompatibility complex molecules, located on T lymphocytes, appear to have an important role in most patients with rheumatoid arthritis. These molecules can be characterized using human lymphocyte antigen (HLA) typing [4]. Rheumatoid arthritis is six times more common among dizygotic twins and non-twin children of parents with rheumatoid factor-positive, erosive rheumatoid arthritis when compared with children whose parents do not have the disease. If one of a pair of monozygotic twins is affected, the other twin has a 30 times greater risk of developing the disease [5].

Pathophysiology

Chronic inflammation of the synovial tissue lining the joint capsule results in the proliferation of this tissue. The inflamed, proliferating synovial characteristic of rheumatoid arthritis is called pannus. This pannus invades the cartilage and eventually the bone surface, producing erosions of bone and cartilage and leading to destruction of the joint. The factors that initiate the inflammatory process are unknown. The immune system is a complex network of checks and balances designed to discriminate self from non-self (foreign) tissues. It helps rid the body of infectious agents, tumour cells, and products associated with the breakdown of cells. In rheumatoid arthritis, this system no longer can differentiate self from non-self-tissues and attacks the synovial tissue and other connective tissues. The immune system has both humoral and cell-mediated functions. The humoral component is necessary for the formation of antibodies. These antibodies are produced by plasma cells, which are derived from B lymphocytes. Most patients with rheumatoid arthritis form antibodies called rheumatoid factors. Rheumatoid factors have not been identified as pathogenic, nor does the quantity of these circulating antibodies always correlate with disease activity. Seropositive patients tend to have a more aggressive course of their illness than do seronegative patients. Immunoglobulin can activate the complement system. The complement system amplifies the immune response by encouraging chemo taxis, phagocytises, and the release of lymphokines by mononuclear cells, which are then presented to T lymphocytes. The processed antigen is recognized by major histo compatibility complex proteins on the lymphocyte, which activates it to stimulate the production of T and B cells [6]. The pro inflammatory cytokines [7] tumour necrosis factor

(TNF) [8], interleukin (IL)-1 and IL-6 are key substances in the initiation and continuance of rheumatoid inflammation. Lymphocytes may be either B cells (derived from bone marrow) or T cells (derived from thymus tissue). T cells may be either CD4+ (T-helper) or CD8+ (Cytotoxic or killer) T cells [9]. There are two subtypes of T-helper cells, TH1, which promote inflammation by producing interferon-γ, tumour necrosis factor, and interleukin-2, and TH2, which produce the anti-inflammatory cytokines IL-4, IL-5 and IL-10. CD8+ killer T-cells have a regulatory effect on the immune process by suppressing activity of CD4+ cells through release of anti-inflammatory cytokines and promoting apoptosis (cell death). Activated T cells produce cytotoxins, which are directly toxic to tissues, and cytokines, which stimulate further activation of inflammatory processes and attract cells to areas of inflammation. Macrophages are stimulated to release prostaglandins and cytotoxins. Although it has been suggested that T cells play a key role in the pathogenesis of rheumatoid arthritis, B cells clearly have an equally important role. Evidence for this importance may be found in the effectiveness of B-cell depletion using rituximab in controlling rheumatoid inflammation. Activated B cells [10] produce plasma cells, which form antibodies. These antibodies in combination with complement result in the accumulation of polymorph nuclear leukocytes, which release cytotoxins, oxygen free radicals, and hydroxyl radicals that promote cellular damage to synovium and bone. B cells also produce cytokines that may alter the function of other immune cells, and they also have the ability to process antigens and act as antigen-presenting cells, which interact with T cells to activate the immune process [11]. In the synovial membrane, CD4+ T cells are abundant and communicate with macrophages, osteoclast, fibroblasts and chondrocytes either through direct cell–cell interactions using cell surface receptors or through pro-inflammatory cytokines such as TNF-α, IL-1, and IL-6. These cells produce metalloproteinases and other cyto-toxic substances, which lead to the erosion of bone and cartilage [12]. Vasoactive substances also play a role in the inflammatory process. Histamine, kinins, and prostaglandins are released at the site of inflammation. These substances increase both blood flow to the site of inflammation and the permeability of blood vessels. These substances cause the edema, warmth, erythema, and pain associated with joint inflammation and makes it easier for granulocytes to pass from blood vessels to the site of inflammation [13]. The end results of the chronic inflammatory changes are variable. Loss of cartilage may result in a loss of the joint space. The formation of chronic granulation or scar tissue can lead to loss of joint motion or bony fusion (called ankylosis) [14]. Laxity of tendon structures can result in a loss of support to the affected joint, leading to instability or subluxation. Tendon contractures also may occur, leading to chronic deformity [15].

Psychosocial Aspects

Anxiety and depression are commonly seen in patients with RA, appear to be associated with disease activity, and may affect patients' perceptions of their arthritis activity.61 Depression is associated with loss of valued activities. Social stress and lack of social support are important features in the development of anxiety and depression in patients with RA. Therapy for depression in these patients, with few additional benefits noted with the addition of cognitive-behavioural therapy [16]. Falls or fear of falling are more common among patients with RA with more severe disease and other of co morbid conditions. Social problems also occur commonly in patients with RA [17].

As noted earlier, more severe disease at onset and follow-up may be noted in those patients from poor socioeconomic settings. However, those with lower socioeconomic status use fewer health resources than do those with higher socioeconomic status. RA can also influence patients' socioeconomic status or future by limiting their ability to work fully, thereby diminishing income [18].

Treatment

Non-Pharmacologic Therapy

Rest, occupational therapy, physical therapy, use of assistive devices, weight reduction, and surgery are the most useful types of non-pharmacologic therapy used in patients with rheumatoid arthritis. Rest is an essential component of a non-pharmacologic treatment plan. It relieves stress on inflamed joints and prevents further joint destruction. Rest also aids in alleviation of pain. Too much rest and immobility, however, may lead to decreased range of motion and, ultimately, muscle atrophy and contractures Occupational and physical therapy can provide the patient with skills and exercises necessary to increase or maintain mobility. These disciplines also may provide patients with supportive and adaptive devices such as canes, walkers, and splints. Other non-pharmacologic therapeutic options include weight loss and surgery. Weight reduction helps to alleviate inflamed joint stress. This should be instituted and monitored with close supervision of a healthcare professional. Tenosynovectomy, tendon repair, and joint replacements are surgical options for patients with rheumatoid arthritis. Such management is reserved for patients with severe disease [19].

Pharmacologic Therapy

Medication-based therapies comprise several classes of agents, including non-steroidal anti-inflammatory drugs (NSAIDs), no biologic and biologic disease-modifying anti rheumatic drugs (DMARDs), tofacitinib and corticosteroids. The management of rheumatoid arthritis (RA) rests primarily on the use of disease-modifying antirheumatic drugs (DMARDs). These agents are commonly characterised by their

capacity to reduce or reverse signs and symptoms, disability, impairment of quality of life, inability to work, and progression of joint damage and thus to interfere with the entire disease process. Traditional/conventional DMARDs includes methotrexate, hydroxychloroquine, sulfasalazine, and leflunomide. It does not include Gold salts, azathioprine, D-penicillamine, cyclosporine, and cyclophosphamide. Although these drugs can be effective and they may be of value in certain clinical settings, they are used less frequently today because of toxicity, lack of long-term benefit, or both.

Biologic DMARDs are classified as TNFi biologics (adalimumab, certolizumab pegol, etanercept, golimumab and infliximab) and Non-TNF biologics, the T cell costimulation inhibitor (abatacept), the anti-B cell agent, (rituximab), and the interleukin (IL)-6 receptor (IL-6R)-blocking monoclonal antibody (tocilizumab) as well as the IL-1 inhibitor (anakinra).Tofacitinib, a new drug specifically designed to target janus kinases (JAKs), can neither be categorized as a classical DMARD due to their highly specific mode of action, nor do they belong to biologics, due to their synthetic structure.A disease-modifying anti-rheumatic drug (DMARD) should be started within the first 3 months of symptom onset Early introduction of DMARDs results in a more favourable outcome. NSAIDs and/or corticosteroids may be used for symptomatic relief if needed. They provide relatively rapid improvement in symptoms compared with DMARDs, which may take weeks to months before benefit is seen; however, NSAIDs have no impact on disease progression and the long-term complication risk of corticosteroids make them less desirable.The order in which the first-line agents are used is not clearly defined, although methotrexate is often chosen because long-term data suggests superior outcomes with methotrexate than with other DMARDs and all over cost than biologic agents. The biologics have proven effective for patients who fail treatment with other DMARDs. In general, the biologics appear to be among the most effective and rapidly acting DMARDs, with some effects seen in days.

Combination therapy with two or more DMARDs may be effective when single-DMARD treatment is unsuccessful. Combination regimens may include traditional drugs (MTX+SSZ, MTX+HCQ, SSZ+HCQ, or combinations with LEF) or adding a biologic to a traditional drug. The goal of using DMARD combinations is to increase efficacy without increasing adverse effects through the use of drugs with different mechanisms of action. Corticosteroids can be used in various ways. They are valuable in controlling symptoms before the onset of action of DMARDs. A burst of corticosteroids can be used in acute flares. Continuous low doses may be adjuncts when DMARDs do not provide adequate disease control. Corticosteroids may be injected into joints and soft tissues to control local inflammation. Corticosteroids seldom should be used as mono-therapy. There are data to suggest they have disease-modifying activity however, it is preferable to avoid chronic use when possible to avoid long-term complications. NSAIDs and DMARDs have steroid-Sparing Properties That Permit Reductions of Corticosteroid Doses [20].

Table-1.3: Recommendations in Patients with Disease Activity

Disease Activity **Recommendations**	
Early RA (<6 months)	Administer **DMARD monotherapy** in patient with low-high disease activity
	If disease activity remains moderate /high despite DMARD monotherapy use combination DMARDs OR a TNFi OR a non

- Combination DMARDs
- Add an anti-TNF biologic
- Non-TNF biologic
- Tofacitinib

Established RA (≥6 month)

If disease activity remains moderate or high despite use of a single anti-TNF biologic: Switch to a non-TNF biologic with or without MTX over another anti-TNFi or Tofacitinib.

If disease activity remains moderate or high despite use of one anti-TNF biologic and one non-TNF biologic: Use another non-TNF biologic with or without MTX over Tofacitinib If still uncontrolled use Tofacitinib.

Psychological and Social Morbidities

People with RA tend to experience more stress, anxiety, and depression than other people in the general population.

Anxiety

Anxiety typically happens in response to circumstances in life, such as living in a war zone or living with the uncertainty, and stress of having a chronic disease like RA. Different stressors, like financial uncertainty and worry about the future can trigger or worsen anxiety [21]. The Hamilton Anxiety Rating Scale is a clinician-rated evaluation whose purpose is to analyze the severity of anxiety. The scale is intended for adults, adolescents, and children and should take approximately ten to fifteen minutes to administer. The scale is a public document. Since it is

in the public domain, it is widely available for administration. The Hamilton Anxiety Rating Scale is composed of fourteen items. Below are the verbatim criteria and their brief definitions as presented in the Hamilton Anxiety Rating Scale? [22].

- Anxious mood: Worries, anticipation of the worst, fearful anticipation, irritability.
- Tension: Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax.
- Fears: Of dark, of strangers, of being left alone, of animals, of traffic, of crowds.
- Insomnia: Difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors.
- Intellectual: Difficulty in concentration, poor memory.
- Depressed mood: Loss of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing.
- Somatic (muscular): Pains and aches, twitching, stiffness, myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone.
- Somatic (sensory): Tinnitus, blurring of vision, hot and cold flushes, feelings of weakness, pricking sensation.
- Cardiovascular symptoms: Tachycardia, palpitations, pain in chest, throbbing of vessels, fainting feelings, missing beat.
- Respiratory symptoms: Pressure or constriction in chest, choking feelings, sighing, dyspnoea.
- Gastrointestinal symptoms: Difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, looseness of bowels, loss of weight, constipation.
- Genitourinary symptoms: Frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, loss of libido, impotence.
- Autonomic symptoms: Dry mouth, flushing, pallor, tendency to sweat, giddiness, tension headache, rising of hair.
- Behaviour at interview: Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing, etc" [23].

Depression

Depression is common in people with RA, especially those with active disease who experience RA-related disability. Since depression is a dangerous condition that can increase your risk for doing harm to yourself, it is important to be aware of the signs of depression so that it can be diagnosed and treated as quickly as possible. Diagnosing depression can be difficult. If you notice the symptoms of depression in yourself or a friend or family member, alert your doctor and ask for an evaluation [24].

Hamilton Depression Rating Scale (HAM-D)

The Hamilton Depression Rating Scale (HAM-D) has proven useful for many years as a way of determining a patient's level of depression before, during, and after treatment. It should be administered by a clinician experienced in working with psychiatric patients. Although the HAM-D form lists 21 items, the scoring is based on the first 17. It generally takes 15-20 minutes to complete the interview and score the results. Eight items are scored on a 5-point scale, ranging from 0 = not present to 4 = severe. Nine are scored from 0-2. Since its development in 1960 by Dr. Max. Hamilton of the University of Leeds, England, the scale has been widely used in clinical practice and become a standard in pharmaceutical trials. It could also mean you are less likely to seek help for your condition. According to the National Alliance on Mental Illness, someone who has depression and a chronic illness may be less likely to adhere to treatment, and more likely to smoke, drink alcohol, eat poorly and neglect physical activity. All of these behaviours can lead to poorer outcomes [25].

Quality Of Life

QOL may be defined as a collective term that encompasses multiple components of a person's social and medical status. QOL is the way a person feels and how he/she functions in day to day activities. The definition of QOL may vary from one drug therapy to another and from one patient population to another. It may refer to a variety of physical and psychological factors.

Health Related Quality Of Life

While quality of life focuses on all aspects of life, HRQOL only focuses on a patient's non-clinical information such as functional status, wellbeing, perception of health, return to work from an illness and other health outcomes that are directly impacted by health status. Standardized questionnaires are used to capture HRQOL data in a variety of research settings. Data are obtained by either by telephone interview, self-interview, observation or mail in survey.

Sf-36

It is the most frequently used general health status instrument. There are 8 dimensions that include physical functions, social functions, emotional role, physical role, bodily pain, mental health, general health and vitality.

Scoring

The SF-36 consists of eight scaled scores, which are the weighted sums of the questions in their section. Each scale is directly transformed into a 0-100 scale on the assumption that each question carries equal weight. The lower the score the more disability. The higher the score the less disability i.e., a score of 100 in each domain is equivalent to no disability. The maximum possible total QOL score is 800.To calculate the scores it is necessary to purchase special software.

Pricing depends on the number of scores that the researcher needs to calculate.

Aim & Objectives of the Study

The aim of our study was to assess health-related quality of life, anxiety & depression among patients with RA

The key objectives of the study include

- To assess health-related quality of life in patients with RA.
- To assess the anxiety in patients with RA.
- To assess the depression in patients RA.

MATERIALS AND METHODS

Study design

It is an observational prospective cohort study planned to assess the health-related quality of life, anxiety & depression among patients with RA.

Study period

The present study was carried out for a period of six months from JAN-2016

Study Site

King George Hospital, Visakhapatnam, Orthopaedics Department.

Source of Data

SF-36 Scale, The Short Form (36) Health Survey is a 36-item, patient-reported survey of patient.

The Hamilton Rating Scale for Depression HAM-D, Hamilton Anxiety Rating Scale. DAS-28 Disease Activity Score-28 for disease severity, VAS for pain.

Sample Size

In the present study the total sample size was 50 subjects suffering with rheumatoid Arthritis is selected, 35 age and sex matched controls are taken for comparing quality
Of life

Inclusion Criteria

Subjects who have given informed consent and with proper compliance

- patients who are diagnosed with rheumatoid arthritis (RA active)
- Male or female of age greater than 18 years

Exclusion Criteria

- Patients not diagnosed with RA
- Pregnant patients with RA
- Children diagnosed with RA
- Patients who suffer past or current history of chronic inflammatory diseases (e.g. gout, reactive arthritis, or psoriatic arthritis), other autoimmune rheumatic diseases (e.g. systemic lupus erythematosus, mixed connective tissue disease, scleroderma, or polymyositis), neuropsychiatric disorders (e.g. fibromyalgia)
- Patients who are not willing to participate

Method of Collection of Data

All the patients satisfying the inclusion criteria were selected. After thoroughly explaining the study methodology, informed consent was obtained from the subjects. All the requires data was collected by using

- (SF-36)
- (HAM-A, HAM-D)
- (DAS-28)

All the relevant data like information on demographic factors, psychological factors, health care and social factors.

Statistical Analysis

All the data of recruited subjects were recorded in a Microsoft excel spread sheet. Assessment of anxiety levels, depression levels & disease activity in RA patients SF-36 among RA and controls is compared with Independent Samples T-Test using SPSS software by IBM with a level of significance p-value<0.05 A using one way ANOVA, we found a statistical difference for depression between the three forms of disease and that depression rate was correlated with the severity of the disease.

RESULTS

Demographic Details of the Patient

Out of 50 patients, 18(36%) were men and 32(64%) were women. The mean age of patients is 33.3yrs and the mean duration of disease is 31.4 months.

Table-5.1: Patients Demographic Details

S.NO	Characteristic	Total number of patients
1	SEX	
	Male	18(36%)
	Female	32(64%)
	Male	
2	Age group in (years)	
	15-25	26(52%)
	25-50	24(48%)
3	Marital status	
	Married	31(62%)
	Un-Married	19(38%)
4	Literacy	
	Literates	20(40%)
	Illiterates	30(60%)
5	Alcohol	
	Yes	13(26%)
	No	37(74%)
6	Smoker	
	Yes	6(12%)
	No	44(78%)

Disease Activities in 50 Patients with RA

Using DAS-28, out of 50 patients with RA, 15 (30%) were found to have a mild form of rheumatoid arthritis, 21(42%) with moderate and 14(28%) with severe form of disease.

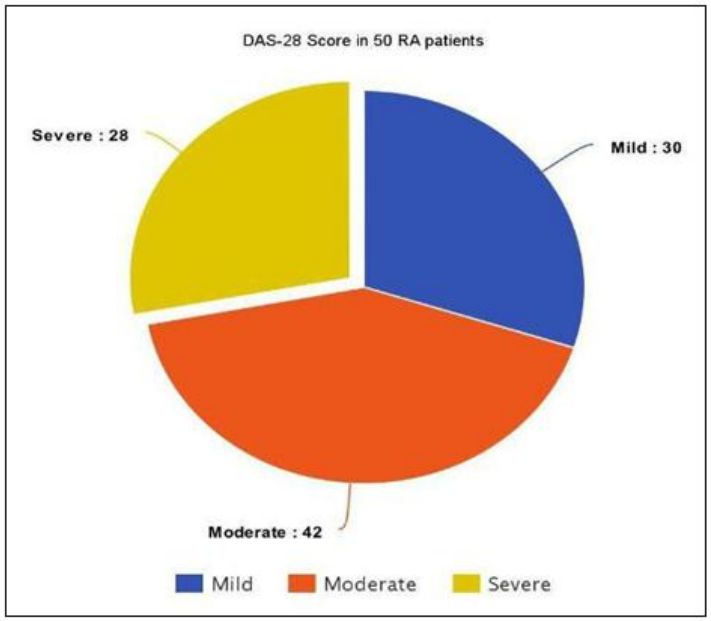

Fig-5.1: DAS-28 in 50 RA Patients Shown In %

Assessing the Quality Of Life in RA Patients

The mean Total SF-36 for controls is 63.12 ± 21.06 and for patients is 44 20.84. Students t-test was used to compare the difference and we found a statistically significant difference (P<0.05) between controls and patients for Quality of Life.

Table-5.3: Assessing the Quality Of Life in RA Patients

Table 5.2 Assessing the Quality of Life in RA patients				
S.No	Characteristic	Sample size	SF-36	Level of
			Mean ± S.D	significance(P)
1.	Control	35	63.12 ± 21.06	
2.	Patient	50	44 ± 20.84	0.01

Prevalence of Depression in 50 Ra Patients

The Prevalence rates for depression and anxiety in RA patients is calculated using HAM-D and HAM-A scales.19 (38%) patients were found to have some degree of depression. Mild, Moderate and Severe depression were present in 10(20%), 6(12%), 3(6%) patients respectively.

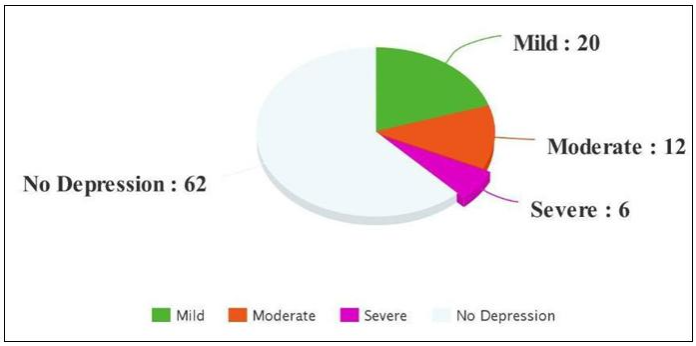

Fig-5.2: Prevalence of Depression in 50 RA Patients

Using student's t-test, we found a statistical difference for depression between males and females and a statistical difference between the two age groups.

Effect of Socio Demographic Factors on Depression

Table-5.4: Effect of Socio demographic factors on Depression

S. No	Characteristic	Sample size	Depression		Level of
		N=	(Mean ± S.D)		significance(P)
1.	Gender				0.0382
	(i) male	18	6.944	± 3.316	
	(ii) female	32	9.687	± 4.848	
2.	Age				0.033
	(i)18-25	26	7.576	± 4.001	
	(ii)25-50	24	9.916	± 4.817	

Also using one way ANOVA, we found a statistical difference for depression between the three forms of disease and that depression rate was correlated with the severity of the disease.

Effect of Disease Activity on Depression in RA Patients

Table-5.5: Effect of Disease Activity on Depression in RA Patients

S.No	Disease activity	Sample size	Depression	Level of
		n=	(Mean ± S.D)	significance(P)
1.	Mild (<3.2)	15	7.133 ± 2.231	
				0.021
2.	Moderate (3.2-5.1)	21	8.00 ± 4.135	
3.	High (>5.1)	14	11.428 ± 5.814	

Prevalence of Anxiety in 50 RA Patients

Likewise, 11 (22%) patients were found to have some degree of anxiety. Mild, moderate and Severe anxiety were present in 3(6%), 5(10%), 3(6%) patients respectively.

DISCUSSION

Rheumatoid Arthritis is a chronic inflammatory disease of unknown aetiology, with an unpredictable course and prognosis. Thus, it is not surprising that many patients with RA experience anxiety and helplessness [26]. The intensity of the disease varies and the individual has to learn to live with pain and disabilities to a greater or lesser extent as part of his or her life. It is therefore important to measure health status as well as other non-medical aspects of life such as social and emotional functioning [27].

In the present study we found that HRQoL scores significantly decreased in patients compared to controls and they were decreased in all domains of SF 36. Also we found that the depression and anxiety were observed to be directly correlated with the severity of the disease. 4 out of 15 mild RA patients, 7 out of 21 moderate RA patients, 8 out of 14 severe RA patients

were having depression. Similarly 3 out of 15 mild RA patients, 3 out of 25 moderate RA patients, 5 out of 14 severe RA patients were having anxiety. All these findings were found to be consistent with the results of prior studies conducted relating to one or all of the parameters.

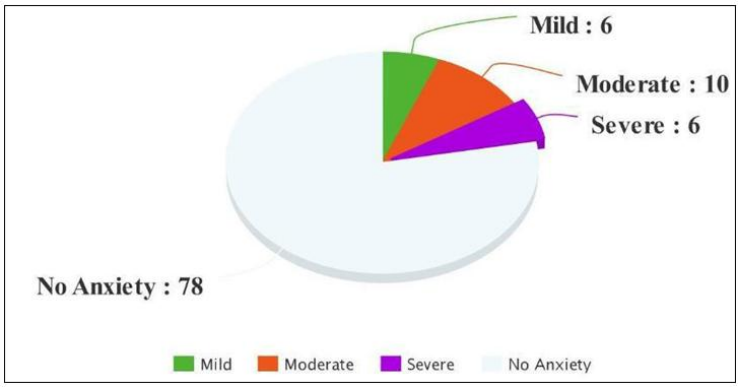

Fig-5.3: Prevalence of Anxiety in 50 RA Patients Shown In %

Meta-analyses using 31 studies, including 22,335 patients by Faith Matcham *et al.*, found that pooled mean HRQoL score for the SF-36 physical component summary was 34.1 and mental

Component summary was 45.6. Overall Patients with RA have a substantially reduced HRQoL in comparison to both other physical illnesses and in comparison to normative datasets from UK and USA populations. In a systematic review and meta-analysis of a total of 72 studies, including 13,189 patients on 'The prevalence of depression in rheumatoid arthritis' by Faith Matcham *et al*, the rates were found to be between 14.8% and 48% using the HAM-D. In this study increased depression prevalence in RA is significantly associated with low mean age. In contrast, in our study, patients with older age (25-50 years) were found to have higher rates (54%) compared with young people (18-25 years, 30%) In a study assessing health-related quality of life, anxiety and depression in rheumatoid arthritis by Esam Mohammed Abu Al- Fadl *et al.*, there was statistically significant difference between total SF36 score, anxiety and depression scores of HAM-A scale between patients and controls. There was significant correlation between both anxiety and depression scores with the bodily pain and DAS28 scores [25]. In a study of 'Depression in Rheumatoid Arthritis and its relation to disease activity' conducted by Muhammad Yaser Imran *et al*, out of 102 patients 71.5% of Rheumatoid Arthritis patients were found to have some degree of depression and this was directly related to the severity of disease. Moderate and severe depression were present in 23 (22.5%) and 19(18.6%) patients respectively. In a seven-year, population-based cohort study by Miao- Chiu Lin *et al*, the incidence of depression was 1.74-fold greater in the RA cohort than in the non-RA cohort. Multivariate analysis showed that RA subjects who were female, were older, had a significantly greater risk of depression compared with those without these conditions. This is in consistent with our findings where depression was found to be higher in females (47%) compared with males (22%). In a 2006 study including 82 participants diagnosed with RA by Ahmet Isik *et al*., 41.5% (n=34) was found to have depression, 13.4% (n=11) anxiety, and 15.9% (n=13) mixed anxiety-depressive disorder. Patients with persistent depression/anxiety had reduced odds of attaining RA remission at 2 years. Specifically, depression in patients with RA is an independent risk factor for cardiovascular disease46 and myocardial infarction47 suicidal ideation48,49 and death45,50-51 even after controlling for RA disease duration, disease activity, disability and pain. Also, patients with RA and associated depression have increased health service utilization53 and are less likely to be adherent with their medications54, 55. Regular mood assessment by rheumatology clinical staff may serve to improve awareness and early identification of depression and anxiety, and thus timely identification and treatment of depression in RA are critical to overall clinical management 56, 57. The following limitations merit consideration when considering the findings of this study. First, we did not account for other confounding factors such as the use of tobacco and alcohol, physical activity, body mass index, social networks, religious beliefs and educational level.

CONCLUSIONS

This study demonstrates that the RA patients evaluated were more likely to have lower Quality of Life, and high prevalence rates of depression and anxiety. The factors leading to an increased risk of depression among RA patients included being female and older. As depression is the one of the major factor for medication non adherence ,So it could be better if RA patients should be regularly assessed and should be monitored for accompanying anxiety and depression during follow-up, to achieve better therapeutic outcome, and to improve patient Quality of Life.

ACKNOWLEDGEMENT

The authors specially thank Dr.P.Ashoak Kumar Professor of Orthopaedics, AMC King George Hospital Vishakhapatnam for providing an opportunity to carry out the research work.

REFERANCES

1. Joseph, D. (2008). *Pharmacotherapy: A pathophysiologic approach*. McGraw-Hill Medical.
2. Schiff, M. (1997). Emerging treatments for rheumatoid arthritis. *The American journal of medicine*, *102*(1), 11S-15S.
3. Smith, J. B., & Haynes, M. K. (2002). Rheumatoid arthritis—a molecular understanding. *Annals of internal medicine*, *136*(12), 908-922.
4. Klippel, J. H., Stone, J. H., & White, P. H. (Eds.). (2001). *Primer on the rheumatic diseases*. 12th ed. Atlanta, GA: Arthritis Foundation, 3.
5. Grassi, W., De Angelis, R., Lamanna, G., & Cervini, C. (1998). The clinical features of rheumatoid arthritis. *European journal of radiology*, *27*, S18-S24.
6. Shibue, T., Tsuchiya, N., Komata, T., Matsushita, M., Shiota, M., Ohashi, J., ... & Tokunaga, K. (2000). Tumor necrosis factor α 5′-flanking region, tumor necrosis factor receptor II, and HLA–DRB1 polymorphisms in Japanese patients with rheumatoid arthritis. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, *43*(4), 753-757.
7. Jiang, H., & Chess, L. (2006). Regulation of immune responses by T cells. *New England Journal of Medicine*, *354*(11), 1166-1176.
8. Tsokos, G. C. (2004). B cells, be gone—B-cell depletion in the treatment of rheumatoid arthritis. *New England Journal of Medicine*, *350*(25), 2546-2548.
9. Weinstein, E., Peeva, E., Putterman, C., & Diamond, B. (2004). B-cell biology. *Rheumatic diseases clinics of North America*, *30*(1), 159-174.
10. Choy EH, Panayi GS. Cytokine pathways and joint inflammation in rheumatoid arthritis. N Engl J Med 2001;344(12):907–916.
11. Arend, W. P. (2001). Physiology of cytokine pathways in rheumatoid arthritis. *Arthritis Care & Research*, *45*(1), 101-106.
12. Choy, E. H., & Panayi, G. S. (2001). Cytokine pathways and joint inflammation in rheumatoid arthritis. *New England Journal of Medicine*, *344*(12), 907-916.
13. Firestein, G. S. (2005). Etiology and pathogenesis of rheumatoid arthritis. In: Harris ED, Budd RC, Firestein GS, eds. Textbook of Rheumatology, 7th ed. Philadelphia: Elsevier/Saunders, 996–1042.
14. Meyer, F. A., Yaron, I., & Yaron, M. (1990). Synergistic, additive, and antagonistic effects of interleukin-1β, tumor necrosis factor α, and γ-interferon on prostaglandin E, hyaluronic acid, and collagenase production by cultured synovial fibroblasts. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, *33*(10), 1518-1525.
15. Hard, E. R. (1979). Extra articular manifestations of rheumatoid arthritis. *Semin Arthritis Rheum*, 8:151-176.
16. Parker, J. C., Smarr, K. L., Slaughter, J. R., Johnston, S. K., Priesmeyer, M. L., Hanson, K. D., ... & Komatireddy, G. R. (2003). Management of depression in rheumatoid arthritis: a combined pharmacologic and cognitive-behavioral approach. *Arthritis Care & Research: Official Journal of the American College of Rheumatology*, *49*(6), 766-777.
17. Escalante, A., del Rincón, I., & Mulrow, C. D. (2000). Symptoms of depression and psychological distress among Hispanics with rheumatoid arthritis. *Arthritis Care & Research*, *13*(3), 156-167.
18. Joseph, D. (2008). *Pharmacotherapy: A pathophysiologic approach*. McGraw-Hill Medical.
19. Joseph, D. (2008). *Pharmacotherapy: A pathophysiologic approach*. McGraw-Hill Medical.
20. Singh, J. A., Saag, K. G., Bridges Jr, S. L., Akl, E. A., Bannuru, R. R., Sullivan, M. C., ... & Curtis, J. R. (2016). 2015 American College of Rheumatology guideline for the treatment of rheumatoid arthritis. *Arthritis & rheumatology*, *68*(1), 1-26.
21. Available at: http://www.assessmentpsychology.com/HAM-A-scoring.pdf accessed on 12-10-2016
22. Whalley, D., Mckenna, S. P., De Jong, Z., & Van der Heijde, D. (1997). Quality of life in rheumatoid arthritis. *British journal of rheumatology*, *36*(8), 884-888.
23. Ruta, D. A., Hurst, N. P., Kind, P., Hunter, M., & Stubbings, A. (1998). Measuring health status in British patients with rheumatoid arthritis: reliability, validity and responsiveness of the short form 36-item health survey (SF-36). *British Journal of Rheumatology*, *37*(4), 425-436.
24. Sokoll, K. B., & Helliwell, P. S. (2001). Comparison of disability and quality of life in rheumatoid and psoriatic arthritis. *The Journal of Rheumatology*, *28*(8), 1842-1846.
25. Al-Fadl, E. M. A., Ismail, M. A., Thabit, M., & El-Serogy, Y. (2014). Assessment of health-related quality of life, anxiety and depression in patients with early rheumatoid arthritis. *The Egyptian Rheumatologist*, *36*(2), 51-56.
26. Mattey, D. L., Dawes, P. T., Hassell, A. B., Brownfield, A., & Packham, J. C. (2010). Effect of psychological distress on continuation of anti-tumor necrosis factor therapy in patients with rheumatoid arthritis. *The Journal of rheumatology*, jrheum-100050.
27. Sheehy, C., Murphy, E., & Barry, M. (2006). Depression in rheumatoid arthritis—underscoring the problem.