

To Evaluate Adherence to Therapy in Rheumatoid Arthritis Patients: A Cross Sectional Study**Vimmi Bhardwaj¹, Anjleen Kaur², Amandeep Singh Bakshi³, Jasbir Singh⁴**¹Senior Resident, Department of Pharmacology, Government Medical College, Patiala, Punjab, India²Associate Professor, Department of Pharmacology, Government Medical College, Patiala, Punjab, India³Professor, Department of Orthopedic, Rajindra Hospital and Government Medical College, Patiala, Punjab, India⁴Professor & Head, Department of Pharmacology, Government Medical College, Patiala, Punjab, India

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Conflict of interest: Nil

Abstract

Background: Rheumatoid arthritis (RA) is a chronic inflammatory disease that affect patients' social, emotional, and physical well-being. In most Western countries, the prevalence of RA is approximately 0.5– 1%, affecting more females than males, the prevalence of RA in India is approximately 0.75% and increasing trend has been noticed.

Aims and Objectives: This observational cross-sectional study was designed to study the adherence to therapy in Rheumatoid arthritis patients in Indian adult population in orthopaedic outpatient department in a tertiary care teaching hospital.

Materials and Methods: This study was conducted over the span of 1 year, where 100 patients were enrolled in study following the inclusion and exclusion criteria after taking informed consent. Adherence to therapy was assessed by Morisky Green and Levine scale. This is a validated scale designed to estimate the risk of medication non adherence.

Results: In our study, evaluation of adherence to therapy was done on the basis of patient's response to 4-item Morisky Green and Levine scale. Among 100 patients, 44% forgot to take their medicine, 28% were careless at times about taking their medicine, 33% respondents sometimes stopped taking medicine when feeling better, and 23% respondents sometimes stopped taking medicine when feeling worse. Our study results showed that majority of the patients had moderate adherence to prescribed therapy i.e., 47%, followed by low adherence in 31% patients and high adherence in 22% patients. The difference in low, medium and high adherence groups in comparison to, age and education was statistically significant ($p < 0.05$) and in comparison, to gender and occupation was statistically not significant ($p > 0.05$).

Conclusions: In High adherence group – most of the patients were in the age range of 61-75 years, females, with secondary education status, with no present family history of RA, with RA factor positive.

Keywords: Disease Modifying Anti-Rheumatic Drugs, Rheumatoid Arthritis, Adherence.

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Introduction

Rheumatoid arthritis (RA) is a chronic inflammatory disease that affect patients' social, emotional, and physical well-being. Etiology of RA is unknown [1]. The principal pathology is inflammation within synovial joints, causing pain, swelling and stiffness and progressing to erosion and eventually joint destruction. RA is a systemic autoimmune inflammatory disorder and may cause extraarticular manifestations affecting blood vessels, bone marrow, GI tract, skin, lungs and eyes [2]. The etiology of RA could be due to genetic and non-genetic factors such as hormonal, environmental, and infectious factors [3].

In most Western countries, the prevalence of RA is approximately 0.5– 1%, affecting more females than males with an average age of onset of 50 years. Estimates of the incidence range from 24 to 48 cases per 100,000 depending on country, time period and age of the population [4]. Community studies point to a prevalence of 0.5% to 1% in adult population worldwide. About 0.75 % of adult Indian population is affected by the disease. The incidence of RA increases between 25 and 55 years of age, after which it plateaus until the age of 75 and then decreases.

The prevalence of chronic diseases in modern industrialized nations is increasing and among these intractable conditions RA stands out as a major cause of multiple medical problems. The affected individuals experience significant morbidity including loss of function, joint destruction and permanent deformity with higher mortality than in general population. Hence long term efficacy and tolerability of available therapies should be assessed [5].

Medication adherence is defined by the World Health Organization as “the degree to which the person’s behavior corresponds with the agreed recommendations from a health care provider”. Adherence to therapies is a primary determinant of treatment success. Failure to adherence is a serious problem which not only affects the patient but also the health care system. Medication non adherence in patients leads to substantial worsening of disease, death and increased health care costs. A variety of factors are likely to affect adherence.

Barriers to adherence could be addressed as patient, provider and health system factors, with interactions among them. Identifying specific barriers for each patient and adopting suitable techniques to overcome them will be necessary to improve medication adherence. Health care professionals such as physicians, pharmacists and nurses have significant role in their daily practice to improve patient medication adherence [6].

Materials and Methods

This study was conducted over the span of 1 year in outdoor patient Department of orthopedics, Rajindra hospital attached to Government Medical College, Patiala. Where 100 patients were enrolled in study

following the inclusion and exclusion criteria after taking informed consent.

Inclusion Criteria

1. Adults of either gender Male or Female
2. Age >18 year with rheumatoid arthritis.
3. Patients are receiving any monotherapy or combination.
4. Patient with or without co-morbidities.

Exclusion Criteria

1. Children & Pregnant women.
2. Patients having age less than 18 yrs or more than 75yrs.
3. Patients currently enrolled in another investigational study.
4. Patients who not willing to participate in the study.

All the Rheumatoid arthritis patients attending the orthopedic outdoor department screened according to inclusion and exclusion criteria patient who were eligible for study were enrolled after explaining the aims of study. Written informed consent was obtained from each patient. Prior approval of Institutional Ethics Committee, Hospital Superintendent and from the Head of orthopedic department was obtained. Adherence to therapy was assessed by Morisky Green and Levine scale. This is a validated scale designed to estimate the risk of medication non adherence. Scores are based on patient responses to four yes or no questions. Scoring of scale as yes =0 and no =1. Score 0 is lowest level of medication adherence, 1-2 is moderate and 3-4 is high level of medication adherence. Statistical analysis was performed using IBM SPSS software version 22.

Table 1: Showing Demographic profile

Parameters	Number of Prescriptions	Percentage
Female	77	77%
Male	23	23%
Positive Family History	25	25%
Positive RA Factor	80	80%
Raised Anti-CCP	87	87%
Occupation		
Farmer	9	9%
Housewife	63	63%
Private Job	27	27%
Student	1	1%
Education Level		
Illiterate	20	20%
Primary	33	33%
Secondary	33	33%
University	14	14%
Co-Morbidities		
DM2	8	8%
GERD	9	9%
HTN	8	8%
OA	13	13%

Results

Total of 100 prescriptions was analyzed. 77 (77%) were females and 23 (23%) were males. The ratio affecting female: male was 3.34:1. Most commonly presenting age group was 31-45 years 46 (46%). (Table 1) shows, 77 (77%) were females and 23 (23%) were males. Family history and RA factor was positive in 25 (25%) and 80 (80%) patients

respectively. Anti-ccp was raised in 87 (87%) patients. Occupation wise distribution 63 (63%) housewives, 27 (27%) private job, 9 (9%) farmers and 1 (1%) were student. Education wise distribution (33%) had secondary education status followed by primary education (33%), illiterate (20%) and Uni. (14%). The comorbid conditions were OA 13 (13%) type-2 diabetes mellitus 8 (8%), hypertension 8 (8%), GERD (9%).

Table 2: Summary of adherence to treatment on patient's responses to Morisky Green and Levine scale

Question	Yes	No
Response Score Coding	Number (%)	Number (%)
1. Do you ever forget to take your medicine?	44 (44%)	56 (56%)
2. Are you careless at time about taking your medicine?	28 (28%)	72 (72%)
3. When you feel better, do you sometimes stop taking your medicine?	33 (33%)	67 (67%)
4. Sometimes if you feel worse when you take the medicine, do you stop taking it?	23 (23%)	77 (77%)
Distribution of Scores	Total (N=100)	Percentage
0	31	31%
1	12	12%
2	35	35%
3	12	12%
4	10	10%
0 (Low)	31	31%
1-2 (Moderate)	47	47%
3-4 (High)	22	22%

(Table 2) In this study summary of adherence to therapy on patient's responses to Morisky Green and Levine scale showed that Among 100 patients, 44% forgot to take their medicine, 28% were careless at times about taking their medicine, 33% respondents sometimes stopped taking medicine when feeling better, and 23% respondents sometimes stopped taking medicine when feeling

worse. Scoring of scale as 'yes' = 0 and 'no' = 1. Score 0 is the low level of medication adherence, 1-2 is moderate and 3-4 is the high level of medication adherence [7]. Our study results showed that majority of the patients had moderate adherence to prescribed therapy i.e., 47%, followed by low adherence in 31% patients and high adherence in 22% patients.

Table 3: Comparison of age with adherence to therapy among study population

Age Group (Years)	Number of Patients(N)	Adherence			X ²	p value
		Low	Medium	High		
31-45 Years	46	11 (23.91%)	27 (58.70%)	8 (17.39%)	90.793	0.012
46-60 Years	39	17 (43.59%)	14 (35.90%)	8 (20.51%)		
61-75 Years	15	3 (20%)	6 (40%)	6 (40%)		
Total	100	31 (31%)	47 (47%)	22 (22%)		
Mean±SD	49.30±10.19	49.94±9.59	48.13±10.40	50.91±10.69		
Median	46.50	51.00	45.00	51.00		
Range	31-75	33-75	31-73	33-69		

(Table 3) In this study, in low adherence group there were more patients present between range of 46-60 years of age i.e., 43.59%. More patients were present in medium adherence group between range of 31-45 years of age i.e., 58.70%. In high

adherence group more patients were present between range of 61-75 years of age i.e., 40%. The difference in low, medium and high adherence groups in comparison to age was statistically significant (p=0.012).

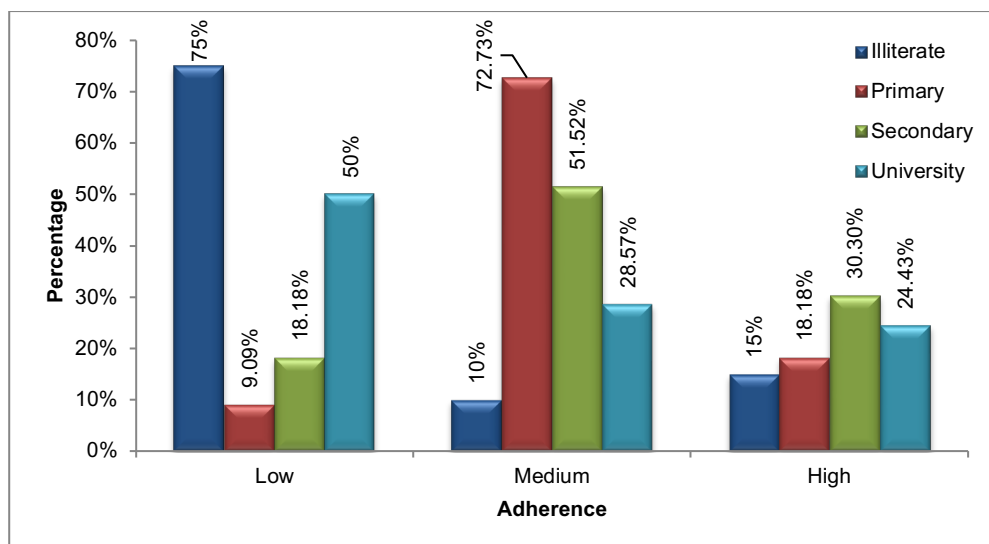


Figure 1: Comparison of education status with adherence to therapy among study population

(Figure 1) In our study, most of the patients were illiterate in low adherence group i.e., 75%.

Most of the patients had primary education status in medium adherence group i.e., 72.73%, and most of

the patients had secondary education status in high adherence group i.e., 30.30%. The difference in low, medium and high adherence groups in comparison to education status was statistically highly significant ($p=0.001$).

Table 4: Comparison of occupation with adherence to therapy among study population

Occupation	Number of Patients(N)	Adherence			X ²	p value
		Low	Medium	High		
Farmer	9	2 (22.22%)	4 (44.44%)	3 (33.33%)	2.389	0.881
Housewives	63	21 (33.33%)	28 (44.44%)	14 (22.22%)		
Private Job	27	8 (29.63%)	14 (51.85%)	5 (18.52%)		
Student	1	0 (0%)	1 (100%)	0 (0%)		
Total	100	31 (31%)	47 (47%)	22 (22%)		

(Table 4) In present study, most of the patients were housewives in low adherence groups i.e. 33.33%, 100% in medium adherence groups were student and 33.33% were farmer in high adherence group. The difference in low, medium and high adherence groups in comparison to occupation was statistically not significant ($p=0.881$).

Discussion

Rheumatoid arthritis is a chronic, systemic, inflammatory autoimmune disorder causing symmetrical polyarthritis of large and small joints, typically presenting between the ages of 30 and 50 years [2].

Adherence to therapy based on patient's responses to Morisky Green Levine scale: In present study, a total of 100 patients with rheumatoid arthritis were enrolled. The assessment of patient's response to 4-item Morisky Green Levine scale showed that the patients i.e., 22% had high adherence to prescribed therapy followed by moderate adherence in 47% patients and low adherence in 31% patients, respectively.

A study conducted by Bakry HM et al. in which medication adherence was measured using the

Morisky–Green– Levine medication adherence scale; showed high adherence among 26.4%, moderate adherence in 15.1% patients, and low adherence in 58.5% patients, respectively which is comparable with our study results [8].

Comparison of Gender with adherence to therapy: In present study, it was observed that more females were present in low adherence group i.e., 33% and more males were present in medium i.e. 60.87% and high adherence group 23.38% were also female. It can be implied that there was no influence of gender on drug use compliance. These results are in line with research conducted by Suh (2018), where there is no significant relationship between patient compliance with gender. A study conducted by Suh YS et al. also showed that there were more females in low adherence group i.e., 42.39% and more males were in medium and high adherence groups i.e., 39.81% and 23.14%, respectively [9].

Conclusion

In conclusion, non-adherence to DMARDs was associated with patients' beliefs about DMARDs, their illness representations and views about

medicines in general together with their satisfaction with the type and amount of information they had received about DMARDs. Our data suggest that in High adherence group – most of the patients were in the age range of 61-75 years, females, with secondary education status, with no present family history of RA, with RA factor positive.

The difference in low, medium and high adherence groups in comparison to, age and education was statistically significant ($p < 0.05$). In factors related to low adherence to therapy, most common factor was forgetfulness (44%) followed by stopped taking medication on feeling better (33%), carelessness (28%) and stopped taking medication on feeling worse (23%).

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