Short communication

Reumatologia 2025; 63, 5: 358–363
DOI: https://doi.org/10.5114/reum/208307

Adherence to treatment and associated factors in rheumatoid arthritis in Kurdish patients: a cross-sectional study

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Abstract

Non-adherence to medicine results in poor disease control and increased morbidity. We determined the prevalence of treatment adherence and its associated factors in Kurdish patients with rheumatoid arthritis (RA) in Kurdistan Region. Disease severity was classified as mild (20%), moderate (46%), and severe (35%). Of the patients, 53% had other chronic diseases. Fifty-four percent always took their medications, 27% most of the time, and 17% sometimes. The study found that 38% experienced some side effects and found managing the medication schedule easy (52%) or very easy (34%). The patients reported that 30% missed a dose of medication, with the frequency of missed doses being rare (60%), occasional (16%), or frequent (24%). Sixty percent had regular access to medications. The barriers were the cost (78%) and availability of medications (27%), and side effects were reported to be significant barriers to adherence (26%). This study showed that the RA patients had high adherence to the treatment, with a high satisfaction rate.

Key words: adherence, disease severity, satisfaction, rheumatoid arthritis.

Introduction

Rheumatoid arthritis (RA) is a chronic systemic autoimmune disease characterized by prolonged synovitis, systemic inflammation, and the formation of autoantibodies. Joint degeneration, disability, reduced quality of life, cardiovascular diseases, and other comorbidities are all consequences of uncontrolled active RA [1]. According to current guidelines, as soon as RA is diagnosed, treatment with disease-modifying antirheumatic medications (DMARDs) should begin [2].

According to de Klerk and van der Heijde [3], adherence is the process by which patients take their medications as directed, which includes starting the medication, following the prescribed regimen, and stopping the medication [4]. Noncompliance is related to poor response to or failure of therapy, worsening or return of the condition, and wasteful treatment adjustments [5]. In the management of chronic illnesses such as RA, noncompliance with pharmacologic therapy is a crucial concern. Drug adherence is considered to be crucial for effective treatment. Non-adherence is a major problem for patients with chronic rheumatic diseases such as RA [6]. Medication adherence refers to the extent to which patients follow medical professionals' recommendations regarding the frequency, dose, and timing of drug administration [7].

Noncompliance with medication results in poor disease control, increased morbidity, and repeated hospitalization, all of which raise the use of health resources [8, 9]. Enhanced comprehension of the effects of treatment adherence on RA patients and the discovery of potential adherence predictors will enable the creation of adherence-promoting tactics.

Research on adherence to treatment in patients with RA is rare in Kurdistan Region, Iraq, and the Middle East. One study conducted in Egypt reported that 65.1% of patients were highly adherent to their treatment, followed by 26.0% with middle-level adherence [10], and 40.9% in Iran [11]. The purpose of this study was to determine the prevalence of medication adherence and its related factors in patients with RA at the Specialized Center

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Submitted: 14.02.2025; **Accepted:** 16.07.2025

of Rheumatic Diseases and Medical Rehabilitation in Duhok City.

Material and methods

Study design

A cross-sectional study design was employed in 91 patients with RA at the Specialized Rheumatology Center in Duhok City in Kurdistan Region. Patients who attended the mentioned rheumatology center and were diagnosed with RA by a rheumatologist were included in this study. In this regard, we tried to reach the RA patients by phone.

Inclusion and exclusion criteria

This study included adult patients aged 18 years and above who had been diagnosed with RA. Patients were included regardless of their gender, socioeconomic status, or disease duration. Patients who could not be contacted due to missing or incorrect contact information were excluded from the study. In addition, patients with cognitive impairments that hinder their ability to understand or participate were not included. 17 patients were excluded for various reasons: did not answer (n = 4), incomplete information (n = 5), did not have time (n = 2), were not taking any medication (n = 2), incomplete responses (n = 2), did not complete interview (n = 1), and experiencing depression (n = 1).

Setting

The Specialized Center of Rheumatic Diseases and Medical Rehabilitation in Duhok City is a standalone tertiary center for diagnostic and treatment services for patients with rheumatic illnesses and rehabilitation services. There are no private medical centers for the treatment of rheumatic diseases in the Duhok region. Therefore, we are confident that our sample is as representative as possible of patients from this area.

Data collection and measures

To collect the general and medical characteristics of the RA patients in this region, we created a Google Form. Then we called the patients one by one, based on the available medical records of the center. We obtained some medical and general information from the medical records, and the remaining information was obtained through phone calls. The information was entered into the Google Form and later was downloaded as an Excel file. The following information was included in the predesigned questionnaire: demographics, medical history, medication use, perceptions of treatment and side effects, and access to treatment. The disease severity of the patients was determined by a doctor and recorded in the medical records as the Disease Activity Score in 28 joints score [12].

Statistical analyses

The demographic and medical features of the patients are reported as mean (standard deviation, SD) or number (%) as applicable. Adherence of the patients to the treatment is presented as the number and percentage. The associations of adherence to the treatment with the patients' characteristics were examined using the Pearson χ^2 test. The predictors of adherence to the treatment were determined using binomial logistic regression. The significance level was set at $p < 0.05$. The statistical calculations were performed using JMP Pro 17.1.0. (JMP, Version 14.30. SAS Institute Inc., Cary, NC, 1989–2023).

Bioethical standards

Ethical approval of this study was obtained from the health ethics committee of the Kurdistan Board for Medical Specializations and Duhok Directorate General of Health, registered on 30 October 2024 under no. 30102024-9-29. The patients were free to decline participation in the study and had the right not to answer any questions.

Results

The mean age of the RA patients (n = 91) was 49.70 [standard deviation (SD): 11.09], aged between 20 and 82 years. The patients were in different age groups, but mostly between 40 and 69 years (79%), and 79% were female. The patients had different educational levels. They were mostly married (91%) and unemployed (73%). The patients had different monthly incomes. Most of the patients had been diagnosed with RA for more than 10 years (42%), followed by 2–5 years (32%). The patients had different disease severity, including mild (20%), moderate (46%), and severe (35%), and more than half (53%) had other chronic diseases, such as hypertension and diabetes (Table I). The study showed that RA patients who were satisfied with the treatment were more likely to adhere to the treatment (full adherence: 84% in very satisfied patients, 0.0% in unsure, 50% in satisfied patients; p = 0.0003). Adherence to the treatment in patients with RA was not associated with other medical or general factors (not shown in the tables).

The study showed that most of the patients always took their medications (54%), followed by those who took them most of the time (27%), and sometimes (17%).

Table I. General and medical characteristics of the patients with RA

General and medical characteristics (n = 92)	Statistics	
	n	(%)
Age [years]		
Range: 20–82	Mean: 49.70	SD: 11.09
Standard error of mean: 1.16		
Age group [years]		
< 40	17	18
40–54	45	49
55–69	28	30
≥ 70	2	2
Sex		
Male	19	21
Female	73	79
Educational level		
No formal education	41	45
Primary education	28	30
Secondary education	13	14
Higher education	10	11
Marital status		
Single	4	4
Married	84	91
Widowed	3	3
Divorced	1	1
Employment status		
Employed	23	25
Retired	2	2
Unemployed	67	73
Monthly income		
Less than IQD 300,000	20	22
IQD 300,000–600,000	28	30
More than IQD 600,000	44	48
Years since RA diagnosis		
< 2	5	5
2–5	29	32
6–10	19	21
> 10	39	42
Severity of RA symptoms		
Mild	18	20
Moderate	42	46
Severe	32	35
Presence of other chronic diseases		
No	43	47
Yes	49	53

SD – standard deviation.

Table II. Medication use and adherence in patients with RA

Medication use and adherence (n = 92)	Statistics	
	n	(%)
Taking medication as prescribed by a doctor		
Rarely	1	1
Sometimes	16	17
Most of the time	25	27
Always	50	54
Experiencing side effects from your medications		
No	57	62
Yes	35	38
Ease of managing medication schedule	Mean: 4.17	SD: 0.72
Easy	48	52
Very easy	31	34
Neutral	11	12
Difficult	2	2
Missing a dose of medication		
No	28	30
Yes	64	70
If yes, how often do you miss your medication?		
Rarely (less than once a month)	37	60
Occasionally (once a month)	10	16
Frequently (more than once a month)	15	24
Number of medications used 2–7 drugs		
2–3 drugs	25	27
4–6 drugs*	67	73

**Only one patient was receiving 7 drugs; this patient was included in the 4–6 drugs group.*

SD – standard deviation.

Only one patient took their medications rarely (1%). The study found that 38% of the patients experienced some kind of side effects, mostly epigastric pain (51%), hypertension (6%), oral lesions (6%), and some other rare side effects. The patients had different management levels of medication schedules. Most of the patients found that managing the medication schedule is easy (52%) or very easy (34%). Only 2 patients found it difficult to manage their medication schedule. The patients reported that 30% missed a dose of medication, including rarely (60%), occasionally (16%), or frequently (24%) (Table II).

Most of the patients had regular access to prescribed medications (60%). Different factors were reported to have impacts on access to medications, including the

Table III. Access to treatment in patients with RA

Access to treatment (*N* = 92)	*n*	(%)
Regular access to prescribed medications		
No	37	40
Yes	55	60
Factors making it difficult to access medications		
Cost of medication	72	78
Availability of medication at the pharmacy	25	27
Distance to pharmacy/ health center	13	14
Transportation issues	5	5
Other	16	17
Visiting rheumatologist		
Every 2–3 months	53	58
Every 6 months	3	3
Every month	28	30
Only when necessary	8	9
Satisfaction with quality of care	Mean: 4.05	SD: 0.65
Dissatisfied	3	3
Unsure	8	9
Satisfied	62	67
Very satisfied	19	21
Rating overall understanding of the treatment plan	Mean: 4.21	SD: 0.62
Neutral	10	11
Good	53	58
Very good	29	31
Current treatment is effective in controlling RA symptoms		
No	14	15
Yes	78	85
Side effects are a significant barrier to continuing treatment		
No	68	74
Yes	24	26
Interested in receiving additional support to improve adherence		
No	56	61
Yes	36	39

SD – standard deviation.

cost of medication (78%), availability of medication at the pharmacy (27%), distance to the pharmacy/health center (14%), transportation issues (5%), and other factors (17%). Fifty-eight percent of the patients visited the rheumatologist every 2–3 months, followed by every month (30%), every 6 months (2%), and when necessary (9%). Most of the patients were satisfied (67%) or very satisfied (21%). The patients had a good or very good understanding of the treatment plan. Most of the patients found that the current treatment was effective in controlling the disease symptoms. The patients reported that the side effects were significant barriers to continuing treatment (26%). We found that 39% were interested in receiving additional support to improve adherence (Table III). Binary logistic regression showed that satisfaction is the only predictor of adherence to treatment in RA patients ($p = 0.00006$) in this study (not shown in the tables).

Discussion

This study showed that most of the patients adhered to the treatment, whether mostly or sometimes. The patients experienced some kinds of side effects. A percentage of the patients missed a dose of medication. The patients had some kinds of barriers to treatment, including the cost of medication, availability of medication at the pharmacy, distance to the pharmacy/health center, transportation issues, and other factors. The study showed that most of the patients were satisfied with the treatment and found the current treatment to be effective. The patients reported that the side effects were significant barriers to continuing treatment.

Some other studies have been conducted in Middle Eastern countries. For example, 65.1% were reported to show high adherence to the treatment in Egypt [10], 40.9% in Iran [11], 30.2% were consistently compliant in Turkey [13], and 56.7% in Jordan [14]. However, different adherence rates have been reported in developed countries, for example, 90.4% in South Korea [15], 79% in Spain [16], and 87–95% in Canada [17].

Various factors have been reported to be associated with non-adherence in RA patients. The World Health Organization classified the factors associated with non-adherence into the following five domains [7]; socioeconomic factors; healthcare system factors; condition-related factors; therapy-related factors; and patient-related factors. In terms of sociodemographic factors, age, gender, education, tobacco use, socioeconomic status, living situation, marital status, and presence of children were not unequivocally related to adherence. We did not find a significant association between treatment adherence and age in this study. Some studies reported that older patients have better adherence, while others have reported that younger patients have better adherence to treatment [8]. However, the association between age and nonadherence or adherence may also be influenced by confounding factors such as multiple comorbidities and complex

medical regimens (which are both often associated with increased age).

A good patient-provider relationship seems to improve adherence [18], whereas poorly developed health services with inadequate or nonexistent reimbursement by health insurance plans negatively affect adherence [19]. Many therapy-related factors could potentially affect adherence; none of these factors (class of medication, drug load, the immediacy of beneficial effects, and side effects) were adequate predictors for non-adherence in RA [3, 20]. Despite this, a review of studies in non-RA patients confirmed that the prescribed number of doses per day and the complexity of the regimen were inversely related to compliance. Simpler, less frequent dosing regimens resulted in better compliance across a variety of therapeutic classes [21]. We did not find a significant association between adherence and the number of medications in this study, possibly because most of the patients received many medications.

Regarding patient-related factors, patients seem to adhere better when the treatment regimen makes sense to them: when the treatment seems effective, when the benefits seem to exceed the risks/costs (whether financial, emotional, or physical), and when they feel they have the ability to succeed at the regimen [18, 22]. We did not find a significant association between adherence to the treatment and feelings of the patients when the treatment seemed effective. Some other factors have been reported to be associated with treatment adherence, such as occurrence of adverse events, while a higher level of education was associated with the risk of non-adherence due to an absence of RA symptoms [15].

Satisfaction with the quality of care was the only predictor of adherence to the treatment in RA patients in our study. Patients' satisfaction with therapy has an impact on medication adherence, treatment continuation, and future treatment choices [23, 24]. Satisfaction is also closely associated with patients' treatment expectations [25].

Strengths and limitations of the study

The strength of the study is that we tried to include as many patients diagnosed with RA as possible. However, some patients were not included in the study due to a lack of information in their medical records.

Recommendations

We recommend that rheumatologists consider the side effects of the treatment in patients with RA. These side effects could have a significant effect on patients' adherence to the treatment, as they reported.

Conclusion

This study showed that the RA patients had high adherence to the treatment, with a high satisfaction rate.

Disclosures

Conflicts of interest: The authors declare no conflicts of interest.

Funding: No external funding.

Ethics approval: The study protocol received approval from the Health Ethics Committee of the Kurdistan Board for Medical Specializations and Duhok Directorate General of Health, registered on 30 October 2024 under no. 30102024-9-29.

Availability of data and material: The data that support the findings of this study are available on request from the corresponding author (G.H.I.).

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