

Assessing Diagnosis, Demographics, and Medication Compliance in Elderly Patients with Rheumatic Disease

● Nuran Öz, ● Mehmet Tuncay Duruöz

Marmara University Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Division of Rheumatology, İstanbul, Türkiye

ABSTRACT

Introduction: This study aimed to evaluate the diagnostic distribution, demographic characteristics, and medication adherence of elderly patients with rheumatic diseases (RD) and to contribute to improving adherence rates and patient outcomes in this demographic group by examining the factors affecting treatment adherence.

Methods: This cross-sectional observational study included 108 patients aged >65 years diagnosed with RD. Data on demographic characteristics, disease characteristics, comorbidities, and medication use were collected. Medication adherence was assessed using the Morisky Medication Adherence Scale-8 and the Hospital Anxiety and Depression Scale (HADS) to assess anxiety and depression levels.

Results: The median age of the participants was 70.5 years, with 69.4% female predominance. The most common diagnoses were rheumatoid arthritis (41.67%), gout (14.81%), and polymyalgia rheumatica (11.11%). Good adherence was associated with higher social support [odds ratio (OR): 4.99, 95% confidence interval (CI): 1.45-17.11], lower medication count (OR: 0.78, 95% CI: 0.63-0.95), and lower HADS scores (OR: 0.93, 95% CI: 0.87-0.98). Forgetfulness was the leading cause of non-adherence, as reported by 40.7% of patients.

Conclusion: This study highlights that social support, polypharmacy, and mental health significantly affect medication adherence in elderly patients with RD. Medication adherence remains an important factor in the effective management of RD, and demographic factors, such as comorbidities and socioeconomic status, play influential roles.

Keywords: Elderly rheumatic disease, medication compliance, the Morisky Medication Adherence Scale, the Hospital Anxiety and Depression Scale

Introduction

Rheumatic disorders are an important health problem in the elderly population. Among musculoskeletal problems, degenerative joint diseases, osteoporosis, and soft tissue rheumatism are common in the geriatric population in general, whereas rheumatic diseases (RD) include rheumatoid arthritis (RA), polymyalgia rheumatica (PMR), and crystalline arthropathies. It is also well known that the highest incidence of several types of inflammatory RD, including PMR, giant cell arteritis, and remitting seronegative symmetric synovitis with pitting edema, is highest in the elderly (1,2). RD significantly affects the quality of life and functional capacity of this population. The unique physiological and psychosocial aspects of aging should be considered when managing these conditions. Effective management requires a multifaceted treatment approach including pharmacological interventions, physical therapy, and lifestyle modification (3).

The increasing incidence of chronic diseases with aging is a natural consequence of the dramatic increase in medication use (4). Treatment adherence in geriatric patients presents unique challenges due to factors such as cognitive decline with polypharmacy, physical limitations, and socioeconomic constraints. Understanding and improving adherence in this context is vital for improving therapeutic outcomes and enhancing patient well-being (2,5).

In this article, we aim to evaluate the demographic data, diagnostic distribution, and treatment adherence of geriatric rheumatological patients, as well as to identify factors influencing treatment adherence and provide actionable recommendations to improve adherence.

Methods

Between October 2019 and December 2022, patients over the age of 65 with a diagnosis of RD treated in the rheumatology outpatient clinic



Address for Correspondence: Nuran Öz MD, Marmara University Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Division of Rheumatology, İstanbul, Türkiye
E-mail: drnuranoz@gmail.com ORCID ID: orcid.org/0000-0002-1002-962X

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of our hospital were consecutively included in this cross-sectional-observational study without any exclusion criteria. Informed consent was obtained from patients who agreed to participate in the study and who were assured that they would be fully informed about the evaluation methods and the aims of the study. Physical examinations were performed to determine the clinical characteristics of the patients, and patient files were retrospectively analyzed for the results of the tests. The following information was recorded: age, gender, rheumatological disease, educational status, socioeconomic status, smoking, comorbidities, all medications used, disease onset date, all medications used, and duration of use. To assess treatment compliance, the Morisky Medication Adherence Scale (MMAS-8) and the Hospital Anxiety and Depression Scale (HADS) was utilized to assess anxiety and depression.

MMAS-8, an eight-item scale developed from a previously validated four-item scale, is a structured self-report measure of medication-taking behavior (6,7). This study was designed to facilitate the recognition of barriers and behaviors associated with adherence to medications requiring chronic use, such as RD. The scale provides information about patient behaviors related to medication adherence that may be involuntary, such as forgetfulness, or voluntary, such as not taking medication due to side effects. The first seven questions are dichotomized and the last question 8 is a 5-point Likert Scale. Question 8 is a 5-point Likert Scale that assesses the frequency with which patients forget their medication, ranging from zero to one in 0.25-point increments (never: 1, sometimes: 0.75, sometimes: 0.5, usually: 0.25, and always: 0). The total score is the sum of all MMAS-8 items and ranges from 0 to 8, with 8 reflecting high adherence, 7-6 reflecting moderate adherence, and <6 reflecting low adherence. Turkish validity and reliability were assessed (8).

The HADS is a self-reported scale consisting of 14 questions measuring anxiety and depression. All questions were scored from 0 (no impairment) to 3 (severe impairment) and 0-7 points are considered normal, 8-10 points are considered borderline, and 11 and above were considered abnormal (9).

Before the study was conducted, ethics committee approval was obtained from Marmara University Faculty of Medicine Research Ethics Committee (approval number: 09.2019.1079, date: 06.12.2019). The study was conducted in accordance with the Declaration of Helsinki.

Statistical Analysis

The SPSS 26 package program was used to analyze the data. Shapiro-Wilk test was used to determine whether the data were normally distributed. While numbers and percentages were used for categorical variables, median [25% (Q1) - 75% (Q3) quartiles] was used for continuous variables. For the comparison of categorical variables, the chi-square test was used, and for the comparison of continuous variables, Mann-Whitney U test was used. To determine independent predictors of good adherence, potential variables identified in univariate analyses were included in multivariate logistic regression (LR) analysis. Odds ratios (OR) and 95% confidence intervals (CI) were calculated. Statistical significance was taken as $p < 0.05$.

Results

A total of 108 elderly patients diagnosed with rheumatologic diseases and taking medication were included in the study. The median age of the patients was 70.5 years (67.0-75.7) and 69.4% (n=75) were female. The distribution of rheumatologic disease diagnoses is shown in Figure 1 and the 3 most common diseases were RA (41.67%), gout (14.81%), and polymyalgia rheumatica (11.11%). Demographic characteristics,

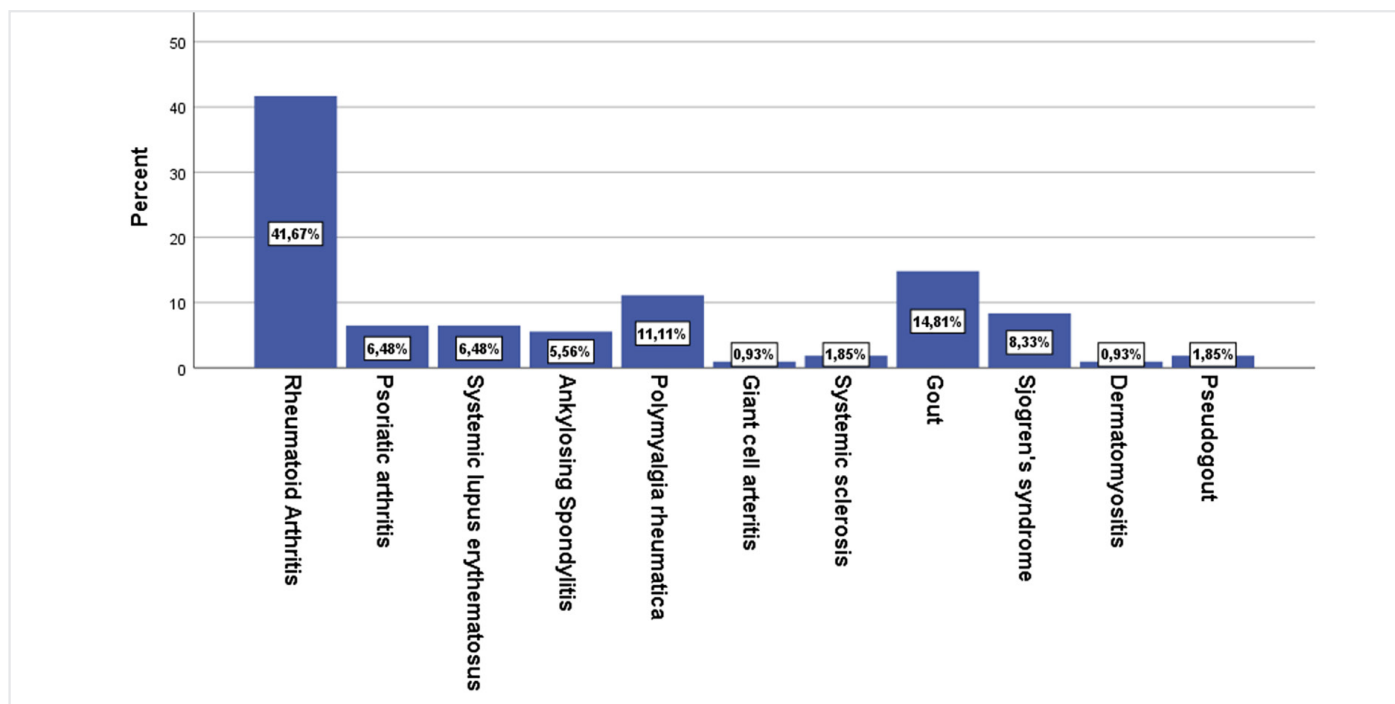


Figure 1. The distribution of rheumatologic disease diagnosis

Table 1. Demographic characteristics, comorbid diseases and medication information of the patients

	No. (n=108)	Percentage/median [25% (Q1)-75% (Q3) quartiles]
Age, years		70.5 (67.0-75.7)
Sex		
Male	33	30.6
Female	75	69.4
Educational level		
Illiterate/primary school	68	63.0
Middle school	13	12.0
High school	9	8.3
University graduate	18	16.7
Marital status		
Married	65	60.2
Single/divorced/widowed	43	39.8
Occupation		
Employed	9	8.3
Unemployed/housewife	51	47.2
Retired	48	44.4
Social support		
Yes	92	85.2
No	16	14.8
Smoker		
Yes	16	14.8
No	92	85.2
Disease duration in months		65 (32.5-124.0)
Treatment duration in months		65 (34.2-124.7)
Number of drugs used		6 (4-8)
Presence of active disease	22	20.4
Comorbid diseases		
Hypertension	83	76.9
Diabetes mellitus	40	37.0
Coronary artery disease	33	30.6
Current medications*		
Corticosteroid	47	43.5
DMARD	85	78.7
Methotrexate	21	19.4
Leflunomide	38	35.2
Hydroxychloroquine	38	35.2
Sulphasalazine	12	11.1
Biologic drugs	6	5.6
Azathioprine	4	3.7
Colchicine	20	18.5
Mycophenolate mofetil	5	4.6
MMAS-8		7 (6-8)
HADS		
Normal	30	27.8

Table 1. Continued

	No. (n=108)	Percentage/median [25% (Q1)-75% (Q3) quartiles]
Borderline	20	18.5
Upnormal	58	53.7
The answers of the patients to the possible reasons for medication non-adherence		
Forgetfulness	44	40.7
Insufficient information	6	5.6
Drug side effects	30	27.8
Doubt about the efficacy of medications	18	16.7
Concern about side effects	27	25.0
Cost of medicines/social support	12	11.1

*More than one medication was allowed. DMARD: Disease-modifying anti-rheumatoid drugs, MMAS-8: Morisky Medication Adherence Scale with 8 items, HADS: Hospital Anxiety and Depression Scale

comorbid diseases, and medication information of the patients are presented in Table 1. The median disease duration was 65 (32.5-124.0) months. The median number of drugs used was 6 (4-8). Patients with active disease were 20.4% (n=22). The median MMAS-8 and HADS scores were 7 (6-8) and 11 (7-16), respectively. The answers of the patients to the questions considered as possible reasons for medication non-adherence are given in the Table 1 and it was found that the most common reason was forgetfulness with 40.7% (n=44). According to the MMAS-8 questionnaire, patients who scored 7 and 8 points were divided into “good adherence” and those who scored 6 or less points were divided into “low adherence” groups. The comparison of the groups is given in Table 2 and social support was significantly higher in the good adherence group, whereas the number of medications used and HADS were significantly lower. The number of drugs used in the low and good adherence groups are given graphically in Figure 2. The variables considered influencing good adherence were included in the binary LR analysis. In the multivariable model, backward: Using the LR method, only social support (OR: 4.99, 95% CI: 1.45-17.11), number of drugs used (OR: 0.78, 95% CI: 0.63-0.95) and HADS (OR: 0.93, 95% CI: 0.87-0.98) were statistically significant and these variables are shown in Table 3.

Discussion

Rheumatological diseases are among the most important health problems faced by the elderly population. The current study focused on the diagnosis, demographic findings, and treatment compliance of rheumatological diseases in geriatric patients admitted to the rheumatology outpatient clinic. In our study, significant relationships were found between good treatment compliance, social support, the number of medications used, and anxiety and depression levels. The findings highlight the many factors affecting the treatment compliance of elderly patients and the need for a multidimensional approach to increase treatment compliance.

The demographic data from this study are consistent with previous research indicating a higher prevalence of RD in older adults, particularly in women. In a large cohort study of elderly patients with inflammatory

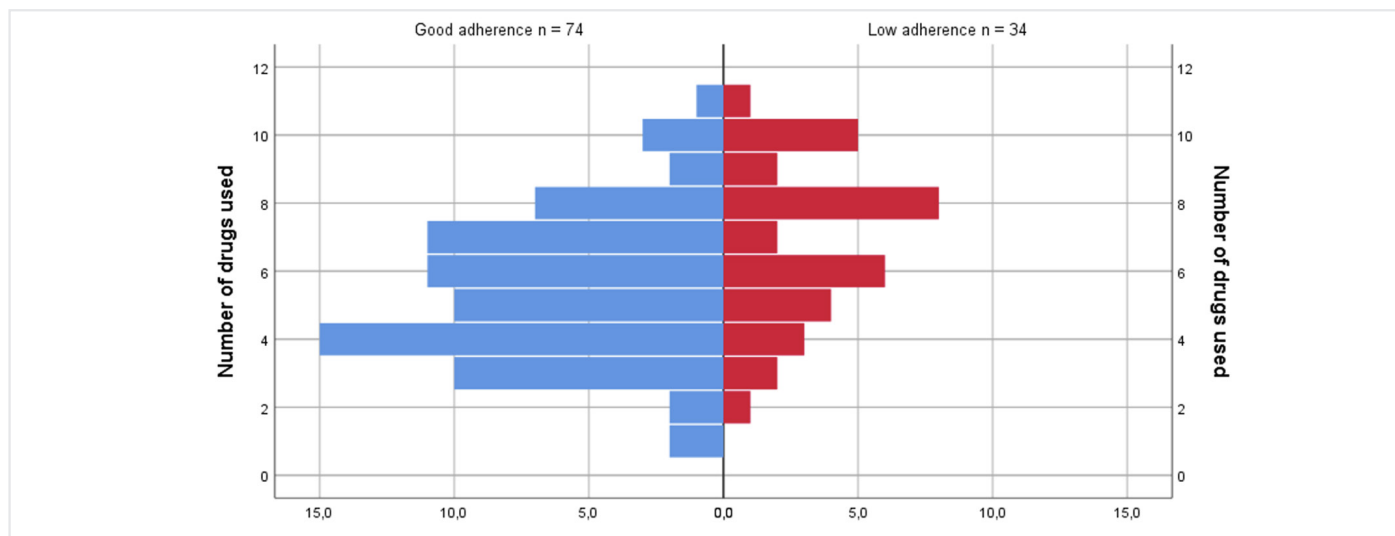


Figure 2. Graphical distribution of the number of drugs used in the low and good adherence groups

Table 2. Demographic characteristics and accompanying diseases according to medication compliance in elderly patients

	Low adherence, (n=34)	Good adherence, (n=74)	p
Age, years	71 (67-76)	70 (67-75)	0.530
Sex			
Male	14 (41.2%)	19 (25.7%)	0.104
Female	20 (58.8%)	55 (74.3%)	
Educational level			
Illiterate/primary school	23 (67.6%)	45 (60.8%)	0.428
Middle school	2 (5.9%)	11 (14.9%)	
High school	2 (5.9%)	7 (9.5%)	
University graduate	7 (20.6%)	11 (14.9%)	
Marital status			
Married	20 (58.8%)	45 (60.8%)	0.716
Single/divorced/widowed	14 (41.2%)	29 (39.2%)	
Occupation			
Employed	3 (8.8%)	6 (8.1%)	0.690
Unemployed/housewife	14 (41.2%)	37 (50%)	
Retired	17 (50%)	31 (41.9%)	
Social support			
Yes	24 (70.6%)	68 (91.9%)	0.004
No	10 (29.4%)	6 (8.1%)	
Smoker			
Yes	7 (20.6%)	9 (12.2%)	0.252
No	27 (79.4%)	65 (87.8%)	
Disease duration in months	63 (37-130)	65 (30-109)	0.576
Treatment duration in months	63 (36-130)	65 (30-120)	0.660
Number of drugs used	7 (5-8)	5 (4-7)	0.004

Table 2. Continued

	Low adherence, (n=34)	Good adherence, (n=74)	p
Presence of active disease	8 (23.5%)	14 (18.9%)	0.581
Comorbid diseases			
Hypertension	29 (85.3%)	54 (73%)	0.159
Diabetes mellitus	15 (44.1%)	25 (33.8%)	0.304
Coronary artery disease	14 (41.2%)	19 (25.7%)	0.109
HADS	14 (10-18)	10 (6-15)	0.012
Normal	6 (17.6%)	24 (32.4%)	0.054
Borderline	4 (11.8%)	16 (21.6%)	
Upnormal	24 (70.6%)	34 (45.9%)	
The answers of the patients to the possible reasons for medication non-adherence			
Forgetfulness	29 (85.3%)	15 (20.3%)	<0.001
Insufficient information	6 (17.6%)	0	0.001
Drug side effects	17 (50.0%)	13 (17.6%)	0.001
Doubt about the efficacy of medications	12 (35.3%)	6 (8.1%)	<0.001
Concern about side effects	19 (55.9%)	8 (10.8%)	<0.001
Cost of medicines/social support	12 (35.3%)	0	<0.001

Values are presented as number (%) or median (interquartile range). HADS: Hospital Anxiety and Depression Scale

arthritis, 64% of 13,613 patients with RA and 57% of 1,116 patients with psoriatic arthritis (PsA) were women (10). Similarly, in a study in which rheumatological diseases were evaluated in geriatric patients, 70% of the patients were female and 30% were male (11). In our cohort, 69.4% (n=75) of patients were female, and this female predominance may be attributed to the fact that autoimmune RD tends to affect women more frequently than men, thus hormonal differences, genetic predisposition, and immune system differences between the sexes.

Table 3. The independent effects of some possible predictors in relation to good adherence according to univariate/multivariate analysis

	Univariate		Multivariate	
	OR (95% CI)	p	OR (95% CI)	p
Social support	4,722 (1,550-14,386)	0.006	4,995 (1,458-17,110)	0.010
Number of drugs used	0.761 (0.629-0.921)	0.005	0.782 (0.639-0.958)	0.017
HADS	0.930 (0.877-0.986)	0.014	0.930 (0.874-0.989)	0.022

HADS: Hospital Anxiety and Depression Scale, OR: Odds ratio, CI: Confidence interval

The prevalence of non-inflammatory musculoskeletal diseases, such as osteoarthritis, has increased in the geriatric population. Regarding RD, RA, PMR, and crystal arthropathies are considered common in geriatric patients (12). Of the 148 geriatric patients with rheumatological diseases evaluated in the study, the highest number of patients was RA with 61, followed by 25 seronegative arthritis and 24 crystal arthritis (11). The distribution of rheumatological disease diagnoses in our study, the 3 most common diseases were RA (41.67%), gout (14.81%), and polymyositis/rheumatica (11.11%).

Li et al. (13) showed that higher adherence to medical treatment in patients with RA was associated with lower disease activity. Similarly, in patients with gout, of whom approximately one-seventh constitute our study population, there is a statistically significant relationship between medication adherence and achievement of treatment goals (14). Therefore, patient adherence to treatment is of paramount importance in the management of RD. Assessing patient adherence to treatment and implementing necessary interventions to increase adherence rates are also crucial in achieving treatment success.

RD is a chronic illness that requires long-term monitoring and often requires the use of multiple medications. They present various medical, social, and economic challenges for patients. In particular, psychological issues, such as depression and anxiety, are more frequently observed in these patients than in the general population (15). Indeed, psychosocial interventions have been shown to have positive effects during the treatment of patients with RA (16). In addition to the positive effects of social support on treatment, one of the most notable findings of our study is that it also enhances patient adherence to treatment.

Polypharmacy is associated with clinical outcomes in patients with RA. As the number of medications used increases, both the rate of side effects and the response to treatment diminishes (17). Additionally, polypharmacy has been found to be associated with disease activity in patients with rheumatoid and PsA (18). Within the scope of RD, polypharmacy occurs at varying rates across different clinical entities, and these rates are significant enough to be taken seriously. Given its relationship with both disease activity and clinical outcomes, polypharmacy presents a challenge in the treatment of RD (19). Considering that our study found that polypharmacy predicted medication non-adherence, the effects of polypharmacy on disease activity and clinical outcomes may be associated with poor treatment adherence.

In 1983, HADS was first introduced by Zigmond and Snaith (20) to assess anxiety and depression in the general patient population. The higher the HADS score, the more severe the symptoms of depression and anxiety

can be considered (20). Since then, HADS has been used in various clinical situations. In our study, the HADS score was higher in patients with low treatment adherence than in those with high treatment adherence. In accordance with our study, Du et al. (21) showed that patients with systemic lupus erythematosus who were non-compliant with treatment had higher HADS scores than those who adhered to treatment. This could be due to depressive mood or anxiety triggering a reluctance to adhere to treatment. In this case, the importance of social support should be highlighted.

Study Limitations

The main limitations of this study are its cross-sectional, observational, and single-center design. Another limitation is that there may be biases due to patients' self-reported measures of adherence, such as the MMAS-8. Future studies with longitudinal designs and more diverse, multicentre samples may provide robust evidence for understanding this relationship.

Conclusion

This study provides valuable information on the diagnostic patterns, clinical and demographic characteristics, and medication adherence of elderly patients with RD. Medication adherence remains a critical factor in the effective management of RD, with demographic factors such as comorbidities and socioeconomic status playing influential roles. Future research should investigate the interactions between clinical, demographic, and behavioral factors and the factors that influence medication adherence in this patient group.

Ethics

Ethics Committee Approval: Before the study was conducted, ethics committee approval was obtained from Marmara University Faculty of Medicine Research Ethics Committee (approval number: 09.2019.1079, date: 06.12.2019).

Informed Consent: Informed consent was obtained from patients who agreed to participate in the study.

Footnotes

Authorship Contributions: Concept - N.Ö., M.T.D.; Design - N.Ö., M.T.D.; Data Collection or Processing - N.Ö., M.T.D.; Analysis or Interpretation - N.Ö., M.T.D.; Literature Search - N.Ö.; Writing - N.Ö., M.T.D.

Conflict of Interest: No conflict of interest was declared by the authors.

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