

Assessment of disability and medication adherence In patients with Rheumatoid Arthritis (RA)

**Saja Almazrou¹, Hadir Aljohani², Maram Aljbreen³,
Mona Alqahtani⁴ and Sinaa Alageel⁵**

Abstract

Objectives: To explore the adherence level, disability index and pain score in patients with RA and to understand the relationship between patient variables with adherence and Disability.

Methods: A cross-sectional study with self-administered questionnaire to RA patients. Participants gave their consent and were recruited from outpatient pharmacy waiting areas in different tertiary hospitals in Riyadh, Saudi Arabia. This study Included (126) adults with RA. The questionnaire was given to patients and it contains three sections: (1) demographic and clinical data, (2) Adherence measured using 8-item Morisky Medication Adherence Scale (MMAS-8) by using validated Arabic version, (3) Health Assessment Questionnaire (HAQ).

RESULTS: one-half the participants were (n=66) 52.3% non-adhered or show low adherence while (n=12) 9.5% of patients were adhered (high adherence). Those non-adhered almost (n=23) 18.2% of them shows low adherence after the first 5 years of diagnosis. About (n=35) 27.7% of none adhered had from 2-3 medications used for RA. There were no significant differences between clinical and demographic variables between groups.

CONCLUSIONS: The vast majority of RA patients have low to medium adherence score. Advanced age, years of diagnosis and number of medication significantly affect disability score. However, there is no relationship between these factors and pain score.

Keywords: Rheumatoid Arthritis, Adherence, Disability, Pain

¹ Department of clinical pharmacy, collage of pharmacy, Riyadh-Saudi Arabia

² Prince Mohammad Bin Abdulaziz Hospital ,Riyadh- Saudi Arabia

³ King Abdulaziz Medical City - National Guard health affairs, Riyadh- Saudi Arabia

⁴ King Abdullah dialysis care project_ National Guard health affairs, Riyadh-Saudi Arabia

⁵ Department of clinical pharmacy, collage of pharmacy, Riyadh-Saudi Arabia

1 Introduction

Rheumatoid Arthritis is an autoimmune disease characterized by an erosive synovitis differs from country to country, the occurrence of rheumatoid arthritis (RA) with rates ranging from 0.7% to 3% and an average of 1% in the adult population in the Gulf region. The disease has been described as the most common inflammatory arthritis in a hospital-based population study in Saudi Arabia, but the extent of the problem in the general population is not entirely known. According to a study conducted in Qassim, Saudi Arabia, the prevalence of RA is 0.22% and ranges across sexes with 18% in adult males and 0.25% in adult females¹.

Patients with RA are two times more likely to die than are individuals of the same age in the general population of the same age who do not have the illness (standardized mortality ratio 52.26). Adherence to pharmacologic therapy is important to achieve therapeutic goals and improve patient outcomes. Most of medication adherence studies with RA patients have defined adherence as taking 80% or more of prescribed medications.²

Work disability is considered a long-term consequence of RA. Because it increases over time, a high work disability rate is observed in most patients whose average disease period is more than 10 years. First analyzed in the early 1980s in the USA and Finland, work disability has been found to be a frequent problem for patients with RA. Regardless of the broad social and economic differences between these countries, both studies reported that more than 50% of patients with RA developed work disabilities within the first ten years of having the disease.³ some previous studies have found correlations between adherence to medication and patient outcomes using a health assessment questionnaire (HAQ). A study by D. L. Scott and V. Strand (2002) measured the effects of anti-rheumatic drugs on the Health Assessment Questionnaire score and concluded that the HAQ scores are sensitive measures of medication therapy and may be particularly useful early in the treatment process to assess patients' responses.⁴

The objectives of this study are to explore the levels of adherence, disability indexes and pain scores in patients with rheumatoid arthritis and to understand the relationship between certain patient variables and adherence and disability.

2 Methods

2.1 Study Design and Sampling

This cross-sectional study included 126 adults with Rheumatoid Arthritis. Patients were recruited from the outpatient pharmacy waiting areas in different tertiary hospitals in Riyadh, the capital city of Saudi Arabia.

A letter was sent to the director of pharmacy explaining the objective of the study and requesting permission to recruit patients. Participants gave their consent.

A 4-page self-administered questionnaire was given to patients with RA using a special tool that collected demographic and clinical information, adherence levels and outcome assessments. The study inclusion criteria were as follows: (1) 18 years of age or older, (2) diagnosis of rheumatoid arthritis, and (3) Arabic-speaking individuals. Those with obvious cognitive impairments were excluded.

2.2 Instruments

The survey contained three sections. The first section consisted of demographic and clinical data such as age, gender, education level, duration of disease, and the number of medications they used for rheumatoid arthritis (RA).²

In the second section, adherence was measured using the 8-item Morisky Medication Adherence Scale (MMAS-8) with a validated Arabic version. This scale included yes/no questions, where no=1 and yes=0; however, the fifth question consisted of a yes equaling 1 point. The last question included five options from A-E, with A=4, B=3, C=2, D=1, and E=0 point; the corresponding number was then divided by 4. The score of all of the correct answers determined the degree of adherence. In this scale, high adherence=8, medium adherence 5-<8, and low adherence <5. In this study, patients were considered to be adherent when they had a score equal to eight. The third section contained the Health Assessment Questionnaire (HAQ), which measures a broad measure of outcomes in patients with rheumatoid arthritis and contained a validated Saudi version of the HAQ. The HAQ assesses patient outcomes in the following four different domains: A) disability, B) discomfort and pain, C) drug side effects (toxicity) and D) dollar costs. Because the validated Arabic HAQ covers disability and pain, our study covered these two domains.

A) Disability index:

Participants rated their degree of difficulty in completing each activity on a 0-3 scale, where 0 = without any difficulty, 1 = with some difficulty, 2 = with much difficulty, and 3 = unable to perform the activity. A total disability score was derived by summing the scores of each item and dividing by the number of items in which responses were given.

B) Pain score:

The pain scale is measured on a horizontal line, where each opposite end depicts a range consisting of 15 centimeters. The scale is classified from “no pain” (with a score of 0) on one end to “very severe pain” (with a score of 100) on the other end. Patients are instructed to place a perpendicular mark on the line to show their severity of pain. A score from 0 to 3 is obtained based on the location of the mark. To obtain the patient's score, the distance from zero (on the left side) to the patient's mark is measured using a metric ruler and then multiplied by 0.2, which ultimately converts the centimeters into a score from 0-3. However, if patients record a percentage, then the percentage is multiplied by 3.0.⁵

3 Statistical Analysis

The data were entered using Microsoft Excel, and the results of the survey were evaluated using SPSS version 20.0 (IBM Corporation, Armonk, NY, USA). Sociodemographic data were presented as percentages and frequencies. The relationship between the Morisky adherence score (categorized as low, medium and high) and several patient factors was assessed using the chi-square test. The correlation between the disability index/pain score and some patient characteristics was determined by using ANOVA. Statistical significance was determined at ($P < .05$).

4 Main Result

4.1 Sociodemographic information

Of the 126 participants in this study, 67% were female, 69% were married, 33% had an elementary school education level, and almost one-half of the sample (45%) was older than 50 years of age. In addition, the majority of patients had been diagnosed with rheumatoid arthritis five or more years ago (41%), and 49% of patients used 2-3 medications for RA. In total, 66% were unemployed, and the majority of the sample (67%) was female (Table 1).

4.2 Medication Adherence

Overall 52.4% of the participants had a low Morisky adherence score (scores ranged from 0-<5), whereas only 9.5% showed a high adherence (score=8). However, there were no significant relationships between patient demographic characteristics, such as age, gender, education status, years since being diagnosed with the number of RA medications, and medication adherence.

4.3 Disability and pain score:

The disability and pain scores ranged from 0-3 (where zero means no disability and pain, and three means an inability to perform different daily tasks and severe pain).

In our sample, the mean disability and pain scores were (1 ± 0.56) and (1.56 ± 0.8), respectively. Table 2 shows the relationship between the disability score and different patient variables such as age, education level, number of years since being diagnosed and number of medications. Patients older than 50 years of age ($n=57$) and participants who were uneducated ($n=50$) had a higher mean disability score. Those who were diagnosed more than 10 years ago ($n=34$) and those who used more than three medications ($n=35$) were associated with a higher disability mean score.

The HAQ pain scores showed that the majority of participants (44%, $n=55$) had a moderate pain score ranging from 1-2, but only 13.4% ($n=17$) of them reported a moderate pain score of (1.5). Those who had a low pain score ranging from 0-1 comprised 22% ($n=28$) of the total participants, and ten (7.9%) had a zero pain score. Almost one-third (34%) of the participants had a high pain of 2-3, and only 5.5% had a pain score of three indicative of high pain. However, there was no major correlation between pain score and demographic factors.

Approximately 50% of patients needed help in walking and standing, using devices such as a cane, walker or wheelchair. Approximately one-fifth of the participants (20.6%, $n=26$) needed a cane for walking assistance, whereas 46% of the participants needed help from another person. Further, 34% of the total participants needed help from another person in hygiene and daily chores, and 71% needed devices for hygiene and daily chores.

5 Discussion

In our study, 90.5% of patients had low to medium adherence scores. Some studies have previously assessed adherence in patients with RA. In research conducted by Elizabeth Salt and Susan Frazier, the medication adherence report scale (MARS) was used to assess adherence among 108 patients. In this study, 90% of participants reported adherence to their medications. The only demographic and clinical difference between the adherent and non-adherent groups was ethnicity ($P=.04$); non-white individuals reported significantly less adherence to their prescribed DMARDs compared with white individuals. Logistic regression models identified ethnicity ($P<.05$) and the number of medications taken ($P<.05$) as predictors of medication non-adherence.² However, the current study revealed that there was no significant relationship between adherence score and patient variables. Our findings are similar to a study by Bemt et al. who studied 228 patients with RA using DMARDs and who received self-reported questionnaires to assess adherence [Compliance Questionnaire on Rheumatology (CQR) and the Medication Adherence Scale (MARS)]. Overall, 32%-40% of their patients did not adhere to their DMARD prescription. Because none of the possible risk factors was strongly associated with adherence, no general risk factor seems to be sufficiently strong to be a potential screening tool or target for adherence-improving interventions.⁶

Functional disability is one of the major factors influencing the health status of patients with rheumatoid arthritis (RA). Several studies have been conducted to assess the effect of

different patient variables on the HAQ. One such study concluded that the HAQ was sensitive to differences in demographic characteristics, lifestyle, and disease and therapy-related factors.⁷

Another research study reported that disease duration is a stronger correlate of functional disability⁸, which is comparable to our results. The mean disability score of patients who have had RA for more than 10 years was (1.27 ± 0.604) compared with newly diagnosed patients (0.89 ± 0.563), ($P=.001$).

Patient age and relationship with the disability score was observed by Sokka et al. In this study, patients with RA were compared with controls in terms of change in the HAQ score over 5 years. The overall increase in the mean HAQ score was 0.01 units per year in patients with RA and in controls. The mean HAQ scores in the cohort of patients with RA increased very slightly over 5 years (from 0.71 to 0.76), as did the scores in the control population (from 0.17 to 0.22). Almost all of the mean change was attributable to persons older than age 70 years of age in both the RA and control cohorts.⁹

Similarly, in our study, patients aged more than 50 years of age had significantly higher disability scores than did younger patients ($P=.01$).

Regarding educational status, we found that uneducated patients had higher mean disability scores ($1.44 (\pm 0.995)$), which was statistically significant ($P=.002$). This finding might be attributed to low socioeconomic class, which has been found to be directly related to poor patient outcomes and disability scores.^{10,12}

We also discovered the use of assistive devices and the need for personal aids. In our study, 50% of our patients used assistive devices in walking, and 71% used assistance in hygiene; 46% needed other people to help them walk, and 34% required help in their hygiene and daily chores. The high number of assistive devices could be partially because governmental hospitals freely provide them. Functional status and societal systems for the prescribing and reimbursement of assistive devices in each country are the major determinant for their possession among patients with RA.¹³ Non-pharmacological lifestyle interventions are as important as drug therapy in improving RA outcomes. One study reported that the possession of assistive devices was positively related to the psychological well-being of patients with rheumatic diseases after controlling for differences in functional status.¹⁴

6 Limitations

This study was conducted in the outpatient pharmacy waiting area in different tertiary hospitals in Riyadh, the capital city of Saudi Arabia. The small size of sample may not have been sufficient to assess the effect of variables on medication adherence, Time limits with research ethical committees.

7 Labels of figures and tables

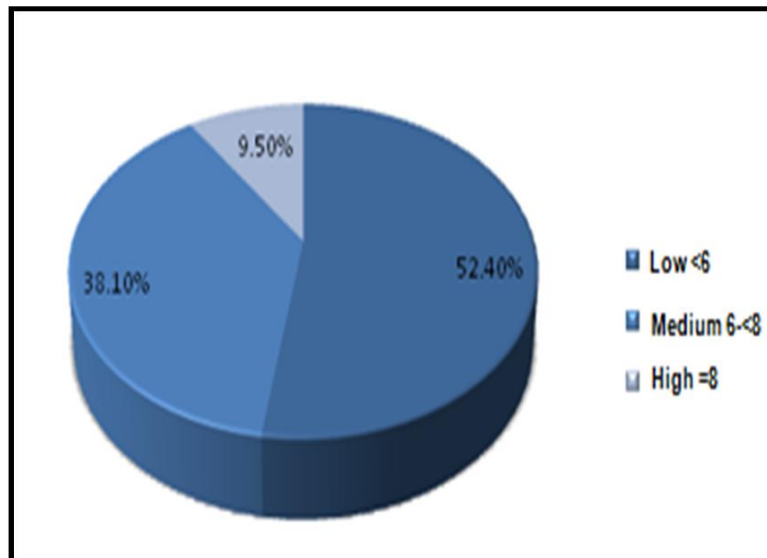


Figure 1: Morisky adherence score percentages

Table 1: sociodemographic data and Participant's characteristics

Patients characteristics	(n=126)	Percentage %
Age		
(25 years or less)	10	8%
(26 years to 35)	16	13%
(36 years to 50)	43	34%
(more than 50)	57	45%
Gender		
Male	42	33%
Female	84	67%
Level of Education		
non-educated	5	4%
Elementary	42	33%
Intermediate	17	13%
High school	19	15%
diploma	7	6%
bachelor's degree	36	29%
Occupation		
Employee	43	34%
Unemployed	83	66%
Marital status		
married	87	69%
single	16	13%
widowed	19	15%
divorced	4	3%
Years since diagnosis		
Less than 5 years	52	41%
Between 5-10 years	40	32%
More than 10 years	34	27%
Number of medications used for RA		
one medication	29	23%
Two to three	62	49%
more than three	35	28%

Table 2: Relationship between disability score and demographic data

Patient demographics		Disability mean score (SD)	P value
Age			0.010
(25 years or younger)	0	0.63 (0.366)	
(26 to 35 years)	6	0.88 (0.687)	
(36 to 50 years)	3	0.90 (0.482)	
(Over 50 years)	7	1.18 (0.567)	
Level of Education			0.002
Non-educated		1.44 (0.995)	
Elementary	2	1.22 (0.546)	
Intermediate	7	0.96 (0.569)	
High school	9	0.71 (0.442)	
Diploma		1.11 (0.873)	
Bachelor's degree	6	0.84 (0.356)	
Marital status			0.002
Married	7	1.04 (0.577)	
Single	6	0.50 (0.306)	
Widowed	9	1.24 (0.450)	
Divorced		0.82 (0.688)	
Number of years since being diagnosed			0.001
(5 years or less)	2	0.89 (0.563)	
(5-10 years)	0	0.87 (0.435)	
(More than 10 years)	4	1.27 (0.604)	
Number of medications used for RA			0.038
One medication	9	0.84 (0.544)	
(From 2-3 medications)	2	0.98 (0.521)	
More than 3 medications	5	1.18 (0.623)	

8 Conclusion

The vast majority of patients with RA have low to medium adherence scores, which may negatively affect their long-term outcomes, particularly with the progressive nature of the disease. Advanced age, number of years since being diagnosed and the number of medications significantly affected the disability score. However, no relationship was observed between the demographic factors and pain score.

9 Implication for research and practice

Further research is needed to investigate the other domains in the health assessment questionnaire, such as its side effects and cost. In addition, a comparison should be made between patient-reported outcomes and clinical parameters such as C-reactive protein (CRP) and the erythrocyte sedimentation rate (ESR). The effect of the type of treatment (biological and DMARDs) on adherence and patient outcomes should also be determined.

The implication for practice based on patient-reported outcomes (PROs), the physician can determine suitable strategies for monitoring patients at each visit because the scores are available on a flow sheet, which allows comparing the latest visit with the previous visits before seeing the patient. The main features of the PROs are being easy to apply, low cost, valid and effective. The questionnaire should be distributed each visit to the patients, which can help the patient prepare by completing it in the waiting area before seeing the physician. The clinician, in turn, review the PROs before seeing the patients and assess their latest medical history to improve the accuracy and completeness of critical information.

ACKNOWLEDGEMENTS: Authors thank the participating hospitals (King Khalid University Hospital, Security Forces Hospital and King Abdul-Aziz Medical City), pharmacist Saeed Alghamdi and pharmacist Nourah Alshehri.

References

- [1] Abdullah Al-Dalaan, Suliman Al Ballaa, Sultan Bahabri, T. Biyari, M. Al Sukait, M. Mousa. THE PREVALENCE OF RHEUMATOID ARTHRITIS IN THE QASSIM REGION OF AUDI ARABIA. *Annals of Saudi Medicine*. 18(5), (1998), 396.
- [2] Elizabeth Salt, Susan K. Frazier. Predictors of Medication Adherence in Patients With Rheumatoid Arthritis. *DRUG DEVELOPMENT RESEARCH*. 72, (2011), 756-759.
- [3] Tuulikki Sokka, MD, PhD. Work disability in early rheumatoid arthritis. *Clin Exp Rheumatol*. 21(31), (2003), 71.
- [4] D. L. Scott, V. Strand. The effects of disease -modifying anti -rheumatic drugs on the Health Assessment Questionnaire score. Lessons from the leflunomide clinical trials database. *rheumatology*. 41(8), (2002), 899-909.
- [5] James FRIES, M.D.. HAQ HEALTH ASSESSMENT QUESTIONNAIRE. *Mapi Research Trust*., 4, (2011), 2-7.

- [6] Van den Bemt BJ, van den Hoogen FH, Benraad B, Hekster YA, van Riel PL, van Lankveld W. Adherence rates and associations with nonadherence in patients with rheumatoid arthritis using disease modifying antirheumatic drugs. *J Rheumatol.* 36(10),(2009), 2164-70.
- [7] Eswar Krishnan, Peter Tugwell ,James F Fries. Percentile benchmarks in patients with rheumatoid arthritis: Health Assessment Questionnaire as a quality indicator (QI). *Clinical Research Center of Reading.* 6(6),(2004),513.
- [8] Linde L, Sørensen J, Østergaard M, Hørslev-Petersen K, Rasmussen C, Jensen DV, et al. What factors influence the health status of patients with rheumatoid Health Survey and the Health Assessment Questionnaire?. *US National Library of Medicine.* 36(10),(2009).
- [9] Sokka T, Kautiainen H, Hannonen P, Pincus T. Changes in Health Assessment Questionnaire disability scores over five years in patients with rheumatoid arthritis compared with the general population. *Arthritis Rheum.* 54(10),(2006),3113-8.
- [10] Vliet Vlieland TP, Buitenhuis NA, van Zeben D, Vandenbroucke JP, Breedveld FC, Hazes JM. Sociodemographic factors and the outcome of rheumatoid arthritis in young women. *Ann Rheum Dis.*53(12),(1994),803–6.
- [11] McEntegart A, Morrison E, Capell HA, Duncan MR, Porter D, Madhok R, et al. Effect of social deprivation on disease severity and outcome in patients with rheumatoid arthritis. *Ann Rheum Dis.* 56(7), (1997), 410–3.
- [12] Pincus T, Callahan LF. . Formal education as a marker for increased mortality and morbidity in rheumatoid arthritis. *J Chronic Dis.* 38(12),(1985),973-84.
- [13] Veehof MM, Taal E, Rasker JJ, Lohmann J, Van De Laar MA. What determines the possession of assistive devices among patients with rheumatic diseases? The influence of the country-related health care system. *Disabil Rehabil.* 28(4), (2006)205-11.
- [14] Veehof M, Taal E, Rasker J, Lohmann J, Van de Laar M.Possession of assistive devices is related to improved psychological well-being in patients with rheumatic conditions. *J Rheumatol.* 33(8),(2006)1679-83.