

## Adherence to Treatment of Rheumatoid Arthritis Patients at Zagazig University Hospitals

Huny M. Bakry<sup>1</sup>, Eman H. Waly<sup>1</sup> and Marwa A. Hammad<sup>2</sup>

<sup>1</sup>Public Health and Preventive Medicine, <sup>2</sup>Rheumatology and Rehabilitation Department, Faculty of Medicine, Zagazig University, Egypt.

Received: May 2016 Accepted :July 2016

---

### Abstract

**Background:** Rheumatoid arthritis (RA) is a long-term disease that leads to inflammation of the joints and other organs. Adherence is essential to achieve the two main goals of RA treatment which are lowering disease activity and decreasing radiological progression. **Objective:** Our study aimed to measure rheumatoid arthritis patients' adherence to treatment and factors affecting it. **Methods:** A cross sectional study was conducted on 159 rheumatoid arthritis patients attending rheumatology clinic at Zagazig university Hospitals using 8 items Morisky scale to assess their adherence to treatment and a structured questionnaire to assess barriers to their adherence. **Results:** There is a significant inverse correlation between adherence to treatment and both the age of rheumatoid patients and duration of disease and significant direct correlation with the educational level of patients. There is significant difference between the low and high adherence groups regarding loss of social support, medication cost, medication's side effects, medication's bad taste and long term therapy. **Conclusion and recommendations:** The existence of medication related factors as barriers to adherence necessitate more efforts from health care system to introduce low cost and more effective drugs with fewer side effects to increase patients' adherence to treatment.

**Keywords:** *Rheumatoid arthritis, Adherence, Morisky, Barriers*

**Corresponding author:** Huny Mohammed Bakry **E-mail:** [honey\\_bakry@hotmail.com](mailto:honey_bakry@hotmail.com). **Tel:** +201002627432

---

### Introduction

Rheumatoid arthritis (RA) is a long-term disease that leads to inflammation of the joints and surrounding tissues. It can also affect other organs including the heart, lungs, and kidneys.<sup>1</sup>

Disease-modifying anti-rheumatic drugs (DMARDs) and biologic disease modifying anti-rheumatic drugs (bDMARDs) were introduced to reduce disease activity or even to induce disease remission.<sup>2</sup>

Medication adherence is defined as "the degree to which the person's behavior corresponds with the agreed

recommendations from a health care provider.<sup>3</sup>

Non-adherence hinders the two main goals of RA treatment: lowering disease activity and decreasing radiological progression.<sup>4</sup> Better adherence should mean better disease activity, better function and better quality of life. Unfortunately, rheumatoid arthritis patients may have difficulties with adherence to drugs for many different reasons.<sup>(5)</sup>

Non-adherence may be intentional or unintentional. Intentional non-adherence is when the patient decides not to take medications, and is often based on personal beliefs around the benefit of the drugs or fears about side effects.<sup>6</sup> Whereas

unintentional non adherence is largely driven by lack of capacity or resources to take medications<sup>7</sup> or may be caused by disease features or drug side effects that cause physical disabilities that hinder the patient from taking the medication.<sup>6</sup>

WHO classified factors associated with non-adherence into five domains: socioeconomic factors; healthcare system factors; condition-related factors; therapy-related factors; and patient-related factors<sup>8</sup>. There are many factors that have been shown to contribute to patient adherence, such as medication type and dose, disease duration and severity, and medication side effects.<sup>9-10</sup> Support systems, patient-physician communication and personal understanding of illness also play a role.<sup>11</sup>

According to recent studies conducted in Egypt, the adherence rate among rheumatoid arthritis patients was 9.4%<sup>(12)</sup> and in another study was 62.5%.<sup>13</sup> And on studying the effect of adherence to treatment on disease outcome, adherent patients had significantly lower disease activity score than non-adherent ones.<sup>13</sup>

As medication non adherence remains a poorly studied phenomenon<sup>14</sup> which may differ among different individuals and populations. So the aim of our study was to measure rheumatoid arthritis patients' adherence to treatment and factors affecting it.

## Methods

**Study design and Setting:** a cross sectional study was conducted at Rheumatology Outpatient Clinic at Zagazig University Hospitals over a period of two months (July - August 2015).

**Sample size and Sampling:** Sample size was calculated using Epi Info version 6 software to be 159 out of total population 580 ( number of rheumatoid arthritis patients who regularly attend the outpatient

clinic every month ) and the expected frequency of the factor understudy from the pilot study was 17%. Our participants were selected by systematic random sample at interval 4.

**Tools:** (1) A structured questionnaire to assess the socio-demographic characteristics of the studied sample. (2) A structured questionnaire consisted of 12 questions to assess the knowledge of the patients about the disease, each correct answer scored 1 and wrong answers scored 0 with a total score 12. (3) Morisky 8-item scale<sup>15</sup> was used to assess the adherence to treatment which consisted of 8 questions, answers for questions 1–7 were presented as 'yes/no' and scored 0/1 respectively except for question number 5 the scoring was reversed. Question 8 was presented in 5-point Likert scale (never scored 1, other responses scored 0). Scores on the Morisky Medication Adherence Scale range from 0 to 8, scores < 6 were considered to be low adherence, scores  $\geq 6$  - < 8 represent medium adherence, and scores = 8 represent high adherence<sup>16</sup>. Morisky Medication Adherence Scale was translated to Arabic language then back translation by two blinded experts. (4) A structured questionnaire consisting of 10 question to assess barriers to medication adherence regarding social support, other coinciding diseases, relation with physician, medication availability and cost, taste of drugs, duration of treatment, medication side effects and transportation to the hospital.

**Pilot Study:** Before starting data collection a pilot study was conducted with 10 rheumatoid patients who were not included in the study to calculate the prevalence of the factor understudy and to test the applicability and clarity of the questionnaire then changes were made accordingly.

**Statistical Analysis:** Statistical analysis was conducted using SPSS software version 19. Descriptive statistics were used such as percentages. Correlation analysis was used to measure the relationship between adherence to treatment and some variables of the interviewed rheumatoid patients. Also Chi square was used to measure the association between adherence to treatment and barriers to adherence. P value ( $\leq 0.05$ ) was considered significant difference and P value ( $\leq 0.01$ ) was considered highly significant difference.

#### **Ethical consideration**

Before carrying out our study, official permission from the ethical committee and the head of rheumatology and rehabilitation department was obtained. Verbal consent was taken at the beginning of the study from participants and their identities were kept anonymous. Also, participants were assured about the confidentiality of their data and that it will be used for the purpose of the research only.

#### **Results**

The total number of the rheumatoid patients who were interviewed in the study was 159. Most of them were in the adult group (20 - 59 years) (84.9%). Females represented 81% of the studied sample and 60.4% were illiterate. Most of the sample was not working and their income wasn't satisfactory (79.2% - Table 1).

More than half of our sample had low adherence scores (58.5%) and had a relatively short duration of disease (1-10 years) (50.9 %). All patients had barriers to adherence in spite of their good knowledge (Table 2).

The correlation coefficient revealed a significant direct correlation between adherence to treatment and educational level of patients. On the other hand, there was a significant inverse correlation

between adherence to treatment score and both the age of rheumatoid patients and duration of disease (Table 3).

There is a significant difference between the adherence groups regarding social support, medication cost, medication's side effects, medication's bad taste and long term therapy (Table 4).

#### **Discussion**

This study was conducted upon 159 rheumatoid arthritis patients; the majorities were females, married, illiterate and not working.

Our results revealed that the majority of our sample recorded low adherence which is in accordance with another study conducted in Ain Shams University Hospitals which reported that all their studied rheumatoid arthritis participants were low and moderately adherent with the majority on the low side<sup>12</sup>. Our results showed positive correlation between adherence to treatment and level of education which was consistent with another study that reported the association of low adherence with low educational level<sup>17</sup> and we explained that as low level of education is usually associated with low social class and low income and this was confirmed by the presence of medication cost as a barrier for adherence.

Our results revealed negative correlation between adherence to treatment and the age of rheumatoid patients which could be explained by the effect of confounding factors such as multiple comorbidities and complex medical regimens<sup>18</sup>. Another explanation is that, the old patients become more dependent on their family to visit hospitals for follow up and medication dispensary. Our finding was in contrary with another study which stated that the older patients have better compliance as they become wiser<sup>19</sup>.

Also, there was negative correlation with duration of the disease which could be explained by lack of motivation by time and this was confirmed after that by the presence of long term therapy as a barrier for adherence.

Our findings revealed some factors as barriers to adherence as medication cost, medication's side effects, medication's bad taste and long term therapy which was similar to another study reported medication related factors as barriers to adherence<sup>12</sup> and we attributed that to the availability of free drugs in the hospital's pharmacy but of very bad taste and a lot of side effects.

Our results revealed significant association between adherence to treatment and social support which was similar to another study reported that, social support increase the adherence to treatment<sup>20</sup> and we attributed that to the effect of social support on self-esteem and the ability to adjust to the management regimen.

### Conclusion and Recommendation

Despite of good knowledge about the disease among the studied sample, but the majority was of low adherence which necessitates educational intervention not to increase the knowledge of the patients but to increase their self-efficacy. In addition more health care policy efforts are needed to increase the availability of subsidized drugs which have better efficacy and low side effects.

### References

1. Harris and Firestein (2009): Clinical Features of Rheumatoid Arthritis. In Kelley's Textbook of Rheumatology. 8th ed. Philadelphia: Saunders, an imprint of El Sevier Inc.; 66: 1087-1115.
2. Singh J , Furst D, Bharat A et al.,(2012): 2012 update of the 2008

American College of Rheumatology recommendations for the use of disease-modifying antirheumatic drugs and biologic agents in the treatment of rheumatoid arthritis. *Arthritis Care & Research*, vol. 64, no. 5, pp. 625–639.

3. Dobbels F, Van Damme-Lombaert R, Vanhaecke J, De Geest S.(2005): Growing pains: non-adherence with the immunosuppressive regimen in adolescent transplant recipients. *Pediatr Transplant*. Jun;9(3):381-390 10.1111/j.1399-3046.2005.00356.x [PubMed]

4. Krueger K, Felkey B, and Berger B. (2003): Improving adherence and persistence: a review and assessment of interventions and description of steps toward a national adherence initiative," *Journal of the American Pharmacists Association*, vol. 43, no. 6, pp. 668–679.

5. Blum M, Koo D, and Doshi J. (2011): Measurement and rates of persistence with and adherence to biologics for rheumatoid arthritis: a systematic review," *Clinical Therapeutics*, vol. 33, no. 7, pp. 901–913.

6. Kumar K, Gordon C, Toescu V, Buckley CD, Horne R, Nightingale PG, Raza K. (2008): Beliefs about medicines in patients with rheumatoid arthritis and systemic lupus erythematosus: a comparison between patients of South Asian and White British origin". *Rheumatology (Oxford)*. May; 47(5):690

7. Clifford S, Barber N, Horne R. (2008): Understanding different beliefs held by adherers, unintentional nonadherers, and intentional nonadherers: application of the necessity-concerns framework. *J Psychosom Res*. 64:41–46. [PubMed]

8. World Health Organization. (2003): Adherence to long-term therapies: evidence for action. [www.who.int/chp/knowledge/publications/adherence\\_full\\_report.pdf](http://www.who.int/chp/knowledge/publications/adherence_full_report.pdf)

9. Sewitch MJ, Abrahamowicz M, Barkun A, et al.(2003): Patient nonadherence to medication in inflammatory bowel disease. *Am J Gastroenterol*.98:1535–44. [PubMed]
10. Hawthorne AB, Rubin G, Ghosh S.(2008): Review article: Medication non-adherence in ulcerative colitis – strategies to improve adherence with mesalazine and other maintenance therapies. *Aliment Pharmacol Ther*. 27:1157–66. [PubMed]
11. Taddeo D, Egedy M, Frappier J-Y. (2008): Adherence to treatment in adolescents. *Paediatr Child Health*. 13:19–24. [PubMed]
12. Gadallah MA, Boulos DN, Gebrel A, Dewedar S, Morisky DE.(2015): Assessment of rheumatoid arthritis patients' adherence to treatment. *Am J Med Sci*: Feb;349(2):151-6.
13. Ragaba O, Zayeda H, Abdelaleemb E, Girgis A.(2016): Effect of early treatment with disease-modifying anti-rheumatic drugs and treatment adherence on disease outcome in rheumatoid arthritis patients. *The Egyptian Rheumatologist*. Accepted November 2016 ( article in press). <http://dx.doi.org/10.1016/j.ejr.2016.11.004>
14. Butow P., Sharpe L.(2013): The impact of communication on adherence in pain management. *Pain*. 154 (Supplement 1):S101–S107.
15. Morisky D, Green L, Levine D. (1986): Concurrent and predictive validity of a self-reported measure of medication adherence; *Med. Care*, 24, pp. 67–74
16. Morisky D, Ang A, Krousel-Wood M, and Ward H. (2008): Predictive validity of a medication adherence measure in an outpatient setting,” *Journal of Clinical Hypertension*, vol. 10, no. 5, pp. 348–354.
17. Joplin S, Zwan R, Joshua F, Wong P.(2015): Medication Adherence in Patients with Rheumatoid Arthritis: The Effect of Patient Education, Health Literacy, and Musculoskeletal Ultrasound, *BioMed Research International*
18. Bemt B, Zwikker H & Ende C (2012): Medication adherence in patients with rheumatoid arthritis: a critical appraisal of the existing literature, *Expert Review of Clinical Immunology*, 8:4, 337-351, DOI: 10.1586/eci.12.23
19. Park, D. C., Hertzog, C., Leventhal, H., Morrell, R. W., Leventhal, E., Birchmore, D., Martin, M. and Bennett, J. (1999): Medication Adherence in Rheumatoid Arthritis Patients: Older Is Wiser. *Journal of the American Geriatrics Society*, 47: 172–183. doi:10.1111/j.1532-5415.1999.tb04575.x
20. De Klerk E, Heijde D, Landewé R, Tempel H, Urquhart J, Linden S(2003): Patient compliance in rheumatoid arthritis, polymyalgia rheumatica, and gout.*J Rheumatol*. 2003 Jan; 30(1):44-54.

**Table 1: Socio-demographic characteristics of the interviewed rheumatoid patients**

<b>Items</b>	<b>Number (T = 159)</b>	<b>%</b>
<b>Age: (years)</b>		
Adolescent (10-)	9	5.7
Adult (20-)	135	84.9
Old (60+)	15	9.4
<b>Gender:</b>		
Male	30	18.9
female	129	81.1
<b>Marital status:</b>		
Married	141	88.7
Non married	6	3.8
Widow	12	7.5
<b>Educational level:</b>		
Illiterate	96	60.4
Read and write	3	1.9
Primary and preparatory	3	1.9
Secondary	48	30.2
High education	9	5.7
<b>Occupation:</b>		
Not working	126	79.2
Working	33	20.8
<b>Income:</b>		
Not satisfy	126	79.2
Satisfy	33	20.8

**Table 2: Adherence to treatment scores and some related factors among the interviewed rheumatoid patients**

<b>Items</b>	<b>Number (T = 159)</b>	<b>%</b>
<b>Morisky score:</b>		
Low adherence	102	58.5
Medium adherence	36	15.1
High adherence	21	26.4
<b>Duration of disease:(years)</b>		
(1-10)	81	50.9
(11-20)	63	39.6
(21-30)	15	9.4
<b>Knowledge about disease:</b>		
Bad	0	0.00
Good	159	100
<b>Barriers to adherence:</b>		
Present	159	100
Not present	0	0.00

**Table 3: Relationship between socio-demographic characteristics and some related factors of the interviewed rheumatoid patients and their adherence to treatment**

Adherence		Low N=102	Medium N=36	High N=21	r*	P
<b>Age: (years)</b>	Adolescent (10-)	9 (8.8)	0 (0)	0 (0)	-0.335	<0.001
	Adult (20-)	90 (88.2)	33 (91.7)	12 (57.1)		
	Old (60+)	3 (2.9)	3 (8.3)	9 (42.9)		
<b>Educational level</b>	Illiterate	48 (7.1)	30 (83.3)	18 (85.7)	0.357	<0.001
	Read and write	3 (2.9)	0 (0)	0 (0)		
	Prim. & Prepar.	0 (0)	3 (8.3)	0 (0)		
	Secondary	45 (44.1)	3 (8.3)	0 (0)		
	High education	6 (5.9)	0 (0)	3 (14.3)		
<b>Duration of disease</b>	(1-10)	63 (61.8)	9 (25)	9 (42.9)	-0.373	<0.001
	(11-20)	39 (38.2)	15 (41.7)	9 (42.9)		
	(21-30)	0 (0.00)	12 (33.3)	3 (14.3)		

**Table 4: Relationship between barriers to adherence of the interviewed rheumatoid patients and Morisky score**

<b>Barriers</b>	<b>Low and medium adherence 138 (%)</b>	<b>High adherence 21 (%)</b>	<b>X<sup>2</sup></b>	<b>P value</b>
<b>Social support</b>	114 (82.6)	12 (57.1)	7.187	<0.01*
<b>Medication cost</b>	99 (71.7)	9 (42.9)	5.716	<0.01*
<b>Medication availability</b>	123 (89.1)	18 (85.7)	0.008	0.928
<b>Medication's side effects</b>	66 (47.8)	0 (0)	26.78	<0.01*
<b>Medication's taste</b>	60 (43.5)	0 (0)	21.82	<0.01*
<b>Long term therapy</b>	69 (50)	0 (0)	29.67	<0.01*
<b>Understanding doctor instructions</b>	69 (50)	15 (71.4)	2.55	0.11
<b>Transportation problems</b>	63 (45.7)	6 (28.6)	1.52	0.217

\*Significant difference