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An Assessment of the Effect of Adherence on Quality of Life among Rheumatoid Arthritis Patients in Jordan

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Abstract **Original Research Article**

Background: Rheumatoid arthritis is an autoimmune disease with significant effects on patient related quality of life. Adherence to antirheumatic drugs has been shown to ameliorate the effect of rheumatoid arthritis on quality of life. Data regarding the effect of adherence on quality of life among rheumatoid arthritis patients in Jordan is lacking. ***Methods:*** Data from rheumatoid arthritis patients referring to the rheumatology outpatient clinic in King Hussien Medical Center were retrieved and their adherence and quality of life was assessed using the SF-36. ***Results:*** One hundred and seven patients were recruited in this study with a median age of 53.69 years. Females represented more than 75% of the study population. Adherence was reported in more than 85% of the participants. Adherence was associated with better physical functioning score as compared to non-adherent (31.6667 vs. 22.7516, p=0.035). ***Conclusion:*** Adherence has a positive effect on physical functioning among rheumatoid arthritis patients. Patients suffering rheumatoid arthritis alone are more likely to be adherent and achieve the positive effect of adherence on physical functioning.

Keywords: Adherence Rheumatoid Arthritis Patients.

INTRODUCTION

Rheumatoid arthritis is a chronic autoimmune disease with serious consequences on functional capacity and quality of life [1]. The global prevalence of rheumatoid arthritis is about 0.4 to 1.3% whereas the prevalence among patients older than 60 years of age is about 2% [2-4]. In the United States, it estimated that about 2.5% of individuals older than 18 years of age have rheumatoid arthritis [3, 4]. Furthermore, mortality in rheumatoid arthritis is higher than their disease free counterparts[5]. Additionally, rheumatoid arthritis was responsible for more than 9,100 hospital admission in 2012[4]. The total cost of these admissions was reported to be about $374 million [2, 4, 6]. The detrimental effect of rheumatoid arthritis on functional capacity and quality of life is substantial. Dominick *et al.* reported that patients with RA are more likely to require help with their daily life activities and to have a health-related activity limitation [7].

The progressive nature of this disease highlights the importance of having pharmaceutical agents that can modify or slow down the progression of the disease which is expected to reduce its negative impact on patient's quality of life. Furthermore, it is established that early and aggressive introduction of disease modifying anti rheumatic drugs (DMARDs) will have a positive effect on work disability[8]. Unfortunately, many of the DMARDsare not free of side effects [9]. Additionally, costs associated with these agents are high compared with other conventional treatments [2, 6, 10]. Accordingly, assessing the effect of DMARDs on the patient related quality of life as compared to other conventional treatments is of paramount importance.

Recently, it has been recommended that the primary goal of treatment in patient with rheumatoid arthritis is to improve patient reported quality of life [9]. Following this approach many studies has attempted to evaluate the effect of new as well as old DMARDs on patient reported quality of life. Strand, *et al*., evaluated the effect of tofacitinib on patient reported quality of life outcomes in rheumatoid arthritis [11]. They found that tofacitinib resulted in improved quality of life as measured by the Medical Outcomes Survey (MOS) Short Form-36 in addition to other patient reported outcomes[11]. Similarly, Scott *et al*., assessed the effect

of intensive treatment in patients with either early and established rheumatoid arthritis on patient reported quality of life[12]. Their assessment showed that DMARDs improved patient reported quality of life in patients with established disease[12].

Data regarding the effect of DMARDS on patient reported quality of life is lacking. Accordingly, Its very important to assess the effect of drugs used to manage rheumatoid arthritis on patient reported quality of life in Jordan.

METHODS

Patient's recruitment

The study protocol was approved by the human research committee in the Royal Medical Services-Jordan. Patients with a diagnosis of rheumatoid arthritis who are referring to outpatient rheumatoid arthritis clinic in King Hussein Medical City were approached and offered a description of the study to obtain informed consent. Following their consent, patient demographic data as well as their clinical data were retrieved from their medical files. Data regarding their medication adherence was obtained through directly asking the patients about adherence which is compared to their prescription's records.

Quality of life assessment

Quality of life was assessed using the Arabic version of the RAND 36-Item Short Form Health Survey (SF-36). This survey is a generic quality of life assessment tool that has been validated for Arabic language. Furthermore, it has been shown to be sensitive, robust and easily administered tool. The survey is composed of 36 questions that assess different aspect of patient functioning. The results of these questions are used to generate six domains that cover physical functioning, physical role limitation, emotional role limitation, energy, well-being, social functioning, pain, and general health.

STATISTICAL ANALYSIS

All statistical analyses were performed using the statistical package for social sciences (SPSS) version 24, IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp. the significance of the difference between adherent and non-adherent patients was assessed using the t-test. To normalize for the effect patient specific factors on adherence, binary logistic regression analysis was used. A p value of less than 0.05 was considered statistically significant.

RESULTS

Patient demographics

During the study period, data from 107 patients referring to rheumatology outpatient clinic in King Hussein Medical Center who gave informed consent were retrieved. The median age of the participants was 53.69 years (IQR: 45-67) with males representing 22.6% of the study sample. The median duration of the disease was 10 years (IQR: 5-18) and 41 patients (38.5%) were complaining of comorbid diseases. The majority of patients (88.8%) were found to be adherent to their prescribed anti rheumatic therapy. Patient demographics are summarized in table 1.

Table-1: Baseline Characteristics of Participants

Age, Median (IQR)	**53.69 (45-67)**
Gender	
Male, N (%)	24 (22.6)
Female, N (%)	82 (77.4)
Disease Duration, Median (IQR)	10 (5-18)
Educational Level	
High School, N (%)	(81.3)
University Education, N (%)	20 (18.7)
Comorbid Diseases	
Yes, N (%)	41 (38.8)
No, N (%)	66 (61.2)
Adherence, N (%)	
Yes, N (%)	95 (88.8)
No, N (%)	12 (11.2)

The effect of adherence on different domains of quality of life

To assess the effect of adherence on different domains of quality of life, the mean of each domain was compared between adherent and non-adherent participants (Table 2). Adherent patients showed better physical functioning as compared to non-adherent patients (31.6667 vs. 22.7516, p=0.035). The positive effect of adherence on physical functioning was not detected across the other domains.

Table-2: The Effect of Adherence on Different Domains of Quality of Life

Domain	t-test	p value	95% confidence interval
Physical Functioning	2.060	.035	0.63187-17.19830
Physical Role Limitation	-1.324	.121	-42.42945-5.01717
Emotional Role Limitation	1.112	.344	-13.58904-38.61828
Energy	-0.487	.604	-14.90062-8.70500
Well being	0.148	.879	-11.08925-12.93592
Social Functioning	-0.510	.588	-20.97162-11.94092
Pain	0.245	.784	-13.89826-18.37984
General Health	-1.058	.307	-17.16854-5.46222

The effect of patient specific factors on adherence

To assess the effect of patient's specific factors on adherence level, binomial regression analysis was performed with adherence as a dependent variable (Table 3). Lack of comorbid conditions was associated with higher adherence to anti rheumatic therapy (OR: 0.038, p=0.019). The probability of adherence was not different among males vs. females (OR: 0.85, p=0.8). Educational level did not alter the adherence rates in rheumatoid arthritis patients. The probability of adherence was similar between patients with university level education vs. high school or less education (OR: 0.424, p=0.276).

Table-3: Patient Factors Effects on Adherence

Variable	OR	p-value
Gender	0.805	0.8
Education	0.424	0.276
Age	1.008	0.706
Disease Duration	1.021	0.614
Comorbid Conditions	0.038	0.019

DISCUSSION

The main aim of this study is to assess the effect of adherence on patient reported quality of life among Rheumatoid Arthritis patients. Adherence was detected in more than 80% of the patients and this was translated into higher probability of better physical functioning. Interestingly, this effect was not detected on the other domains of quality of life. Furthermore, patients without any comorbid diseases were more likely to be adherent to their prescribed anti-rheumatic therapy.

Adherence to anti rheumatic therapy has been shown to be essential for clinical and radiological improvement in rheumatoid arthritis patients [12-14]. The majority of patients in this study had high adherence rates. This high adherence rate is unusual in patients with rheumatoid arthritis. Murage *et al.*, reported low levels of adherence among this patient group [15]. Furthermore, they reported that females and patients with younger ages had higher adherence rate [15]. In contrast, our data did not show a difference in adherence with regard to gender or age. This discrepancy might be due to differences between the two populations.

Loss of physical functioning and chronic pain has been shown to be major issues in patients with rheumatoid arthritis [2, 7, 13, 14, 16]. Furthermore, Rheumatoid arthritis has been shown to negatively affect all the domains of quality of life as measured on the SF-36 survey [13, 14, 16]. Additionally, it has been shown that Rheumatoid arthritis has the worst effect on quality of life when compared to other rheumatic diseases [7, 13, 16, 17]. Adherence has been shown to positively affect different aspects of quality of life [6, 8, 11, 12, 15, 18, 19]. In contrast, our data showed that adherence improved physical functioning with no effect on other aspects of quality of life. Kuipers *et al.* assessed the effect of adherence on different patient reported outcomes [20]. In their study, they reported a positive effect of adherence on physical and psychological domains in patients with high levels of adherence as compared to patients with lower levels of adherence or no adherence[20]. Interestingly, patients who were classified as adherent in their study did not report a positive effect on quality of life [20]. Similarly, our data did not show a positive effect of adherence on quality of life except for physical functioning. The discrepancy between our data and previous reports on quality of life and adherence might be due to differences in classifying adherence. In our study, we divided the patients into adherent and non-adherent. We did not further divide adherent patients according to their adherence level. This assumption is supported by the findings from Kuipers *et al.*, who reported variability of the positive effect of adherence on quality of life depending on the extent of adherence[20].

In conclusion, adherence has a positive effect on physical functioning among rheumatoid arthritis patients. Patients suffering rheumatoid arthritis alone are more likely to be adherent and achieve the positive effect of adherence on physical functioning.

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