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Belief about Medicines among a Sample of Iraqi Patients with Rheumatoid Arthritis

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Abstract

Rheumatoid arthritis is a chronic, progressive, inflammatory autoimmune disease of unidentified etiology, associated with articular, extra-articular and systemic manifestation that requires long-standing treatment. Taking patient's beliefs about the prescribed medication in consideration had been shown to be an essential factor that affects adherence of the patient in whom having positive beliefs is an essential for better adherence. The purpose of the current study was to measure beliefs about medicines among a sample of Iraqi patients with rheumatoid arthritis and to determine possible association between this belief and some patient-certain factors. This study is a cross-sectional study carried out on 250 already diagnosed rheumatoid arthritis patients who Attended Baghdad Teaching Hospital/Medical City/ Rheumatology Department. The mean age of the patients was (50.8 ± 13.1 years). Belief about medicines was measured via the Arabic version of the Beliefs about Medicines Questionnaire. The majority of the patients (88%) had strong beliefs in the necessity of treatment (specific-necessity score greater than specific-concern). There was a significant direct correlation between age, male gender, number of other chronic diseases, disease activity score 28 and clinical disease activity index with specific necessity, and direct correlation between clinical disease activity index with specific concern. Future studies should investigate how interventional approaches addressing these predictors may lead to improve beliefs about medicines among rheumatoid arthritis patients and their impression on disease control.

Keywords: Rheumatoid arthritis, Beliefs about medicines, Specific necessity, Specific concern.

المعتقدات عن الادوية لدى عينة من مرضى التهاب المفاصل الرثوي العراقي

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الخلاصة

أن التهاب المفاصل الرثوي هو مرض مزمن ومتفاقم يصيب جهاز المناعة غير معروف السبب يصاحب بتأثيرات مفصلية وخارج مفصلية وجهازية والتي تتطلب علاج طويل المدى. أن أخذ معتقدات المريض حول الدواء الموصوف بعين الاعتبار يعد واحد من أهم العوامل التي تؤثر على الالتزام بالعلاج .حيث أن المعتقدات الإيجابية حول الادوية تعد عاملا أساسيا لالتزام المريض بالعلاج . ان الهدف من الدراسة الحالية هو تقييم المعتقدات حول الادوية لدى مرضى التهاب المفاصل الرثوي وتحديد الارتباط المحتمل بين هذا الاعتقاد وبعض العوامل الخاصة بالمريض .
الدراسة الحالية هي دراسة مستعرضة أجريت على ٢٥٠ مريض تم تشخيصهم سابقا بمرض التهاب المفاصل الرثوي الذين حضرو الى مستشفى بغداد التعليمي /مدينة الطب /قسم امراض المفاصل . متوسط عمر المرضى (٥٠,٨ ± ١٣,١ سنة). تم تقييم المعتقدات عن الادوية باستخدام النسخة العربية من استبيان المعتقدات عن الادوية. كان لدى غالبية المرضى (٨٨%) معتقدات قوية في ضرورة العلاج (معيار ضرورة العلاج كان أكبر من معيار القلق من الأدوية). كانت هناك علاقة طردية بين العمر وجنس الذكور و عدد الامراض المزمنة الاخرى ودرجة نشاط المرض ومؤشر نشاط المرض السريري مع معيار ضرورة العلاج . وارتباط طردي بين مؤشر نشاط المرض السريري مع معيار القلق من الأدوية. يجب ان تبحث الدراسات المستقبلية كيف يمكن للتداخلات المهتمة بهذه العوامل أن تحسن من المعتقدات حول الادوية لدى مرضى التهاب المفاصل الرثوي وتأثير ذلك على السيطرة على المرض

الكلمات المفتاحية: التهاب المفاصل الرثوي ،المعتقدات حول الادوية، ضرورة العلاج، القلق من العلاج.

Introduction

Rheumatoid arthritis (RA) is a chronic, progressive, inflammatory autoimmune disease[(1)] of unknown etiology[(2)] associated with articular, extra-articular and systemic manifestation[(1)]. It occurs worldwide in virtually all ethnic groups, with a prevalence estimated between 0.5% and 1%[(3)].

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The prevalence rate in Iraq is 1%[4]. A global burden study estimated RA prevalence in Middle East North Africa (MENA) region as among the lowest at 0.16 %[5].Like many autoimmune diseases, the etiology of RA is multifactorial[6]. Inflammation and following destruction of synovial joints is the hallmark of RA[3]. Morning stiffness in and around the joints, lasting at least one hour is a characteristic sign of RA. Rheumatoid arthritis can be associated with variable manifestations of extra-articular involvement such as rheumatoid nodules, vasculitis, hematologic abnormalities, and visceral involvement[7]. Rheumatoid arthritis is one such illness where patients must take daily medicine to manage their ache and reduce probabilities of physical disability[8]. The goals of pharmacologic therapy are to induce remission and prevent further loss of joint tissues or function in daily activities. The main drug classes that are currently used for treatment of RA include non-steroidal anti-inflammatory drugs (NSAIDS), glucocorticoids, disease-modifying anti-rheumatic drugs (DMARDS), and biological agents[9].

The main factor that affects patient adherence is his/ her general view about medicines, since it can overrun most of the other factors[10]. Accordingly, taking patient's beliefs about their medication in consideration had been shown to be an important factor that affects adherence of the patient in which holding positive beliefs is essential for better adherence[11-13].

The purpose of the current study was to measure beliefs about medicines among a sample of Iraqi patients with rheumatoid arthritis and to determine possible association between this belief and some patient-certain factors.

Patients and Method

Patients

The current cross-sectional study was carried out on a convenient sample of 250 already diagnosed RA patients (mean age was 50.8±13.1 years) who attended Baghdad Teaching Hospital/Medical City/Rheumatology Department during October 2018 to January 2019.

The number of female patients was 221(88.4%), while the number of male patents was 29 (11.6%).

Inclusion Criteria

The inclusion criteria for the current study were:

1-Patients with RA as defined by the 1987 revised American Rheumatism Association (ARA) criteria[14].

2-RA patients who were aged 20-80 years of either sex who were accepted to participate in the study.

3-Disease duration >1yr.

4-Current treatment with steroids, NSAID and/or DMARDs (including methotrexate, leflunomide, sulfasalazine, hydroxychloroquine, and azathioprine), with or without concomitant administration of biologic agents.

5-Patients had not changed their medication in the last three months.

Exclusion Criteria

The exclusion criteria for the current study were:

1-Patient who had a hearing, speech or cognitive deficits that would impair understanding of the questions.

2-Patient who take antidepressant drugs, or being on treatment for any neurological or psychological diseases.

3-If they were receiving no medication.

4-Pregnant women.

5-Patient who had serious co-morbidity such as, malignancies and end stage organ failure.

6-Patients providing incomplete or conflicting information during completion of the questionnaire.

Method

The questionnaires

Belief about medicine was measured by using an Arabic version of the belief about medicines questionnaire (BMQ) established by Horne *et al* (Figure 1)[15]. It has two parts: the BMQ-Specific evaluating beliefs about medication used for a specific condition and the BMQ-General evaluating beliefs about medicines in general[16]. The BMQ-specific part covers two subjects; specific necessity subject which assesses patients' view about the necessity and importance of their medicine, while specific concern subject covers patients' beliefs about potential harm and adverse effects of their own medications and every one of which has a score extend from 5 to 25. A high score in necessity subject means that patients think their medications are essential to them; on the other hand high score in the concern subject implies that patients are worried and stressed over their very own medicines. Likewise, BMQ-general part has two subjects; general overuse subject which assesses how patients perceive the extent of medication usage, and general harm theme represents patients' beliefs about unsafe nature of medication in general. The scores of the last two subjects extend from 4 to 20, and high score in each subject means negative perception about medications in general[17]. Respondents indicate their degree of concurrence with each individual statement about medicines on a 5-point Likert scale, extend from 1 (strongly disagree) to 5 (strongly agree)[18].

Study design

Administration of questionnaires

The information identified with the investigation were gathered by the analyst herself. When the patients arrived to the hospital/rheumatology department, they were asked if they accept to participate in the study, an explanation of the questionnaire was given to each patient who spent about 5 minutes to fill the research questionnaire completely.

Statistical analysis

Anderson darling test was done to evaluate if continuous variables follow normal distribution, if follow normal distribution than mean and standard deviation used, if did not follow normal distribution than median and interquartile range (25% to 75% percentile range) will be used to present the data. Linear regression analysis performed to evaluate the relationship between different variables, r (correlation coefficient or standardized beta is a representative of magnitude and direction of the relationship), 0.00 - 0.29 = little or no correlation; 0.30-0.49 = weak; 0.50-0.69 = moderate; 0.70-0.89 = strong; and 0.90-1.00 = very strong. Negative sign indicate inverse relationship, but positive sign represent direct relationship.

SPSS 22.0.0 (Chicago, IL), Graph Pad Prism version 8.0.0 for Windows, Graph Pad Software, San Diego, California USA, software package used to make the statistical analysis, p value considered when appropriate to be significant if less than 0.05 .

	Strongly disagree	**Disagree**	**Uncertain**	**Agree**	**Strongly agree**
Specific necessity					
1-My life would be impossible without medicine					
2-Without medicine I'll be very ill					
3-My health , at present depend on my medicine					
4-My medicine protected me from becoming worse					
5-My health in the future depends on my medicine					
Specific concern					
6-I sometimes worry about the long term effect of my medicine					
7-Having to take medicine scares me					
8-I sometimes worry about becoming too dependent on my medicine					
9-My medicine disrupt my life					
10-My medicines are mystery to me					
General-Harm					
11-People who take medicines should stop their treatment for a while every now and again					
12-Most medicines are addictive					
13-Medicines do more harm than good					
14-All medicines are poison					
General-Overuse					
15-Natural remedies are safer than medicines					
16-Doctors use too many medicines					
17-Doctors place too much trust on medicines					
18-If doctors had more time with their patients they would prescribe fewer medicines					

Figure 1. The beliefs about medicines questionnaire (BMQ)[15].

Results

Mean age of patients was 50.8 ± 13.1 years. 89.6% were married, and 35.6% were illiterate. 88.4% were female, the majority lived in urban area of residence, and most of the patients were non-smokers, as illustrated in table 1.

Table 1. Socio-demographical characteristics of patients.

Variables	Value
Age (years), mean ± SD	50.8 ± 13.1
Patient's age	**no. (%)**
<30 years	16 (6.4%)
30 – 39 years	33 (13.2%)
40 – 49 years	58 (23.2%)
50 – 59 years	69 (27.6%)
≥60 years	74 (29.6%)
Gender	**no. (%)**
Male	29 (11.6%)
Female	221 (88.4%)
Marital status	**no. (%)**
Single	26 (10.4%)
Married	224 (89.6%)
Education level	**no. (%)**
Illiterate	89 (35.6%)
Primary	64 (25.6%)
Secondary	59 (23.6%)
College	38 (15.2%)
Location	**no. (%)**
Urban	233 (93.2%)
Rural	17 (6.8%)
Smoking	**no. (%)**
Smoker	17 (6.8%)
Non-smoker	233 (93.2%)

The mean of disease duration was (9.6±7.8 years), most patients with disease duration less than ten years (69.6%), and (63.2%) had no other chronic disease. In addition, (52%) of patients had high disease activity (DAS28-ESR) score and (44.8%) had high clinical disease activity index (CDAI) score, as illustrated in table 2.

Table 2. Disease characteristics of the patients

Variables	Value
Disease duration (years), mean ± SD	9.6 ± 7.8
Patient's age	no. (%)
< 10 years	174 (69.6%)
10 – 19 years	43 (17.2%)
≥ 20 years	33 (13.2%)
Medication use duration (years), mean ± SD	7.0 ± 6.4
Number of other chronic diseases,	no (%)
None	158 (63.2%)
1 disease	63 (25.2%)
2 diseases	29 (11.6%)
DAS 28-ESR	3.5 ± 0.6
Remission	1 (0.4%)
Low	11 (4.4%)
Moderate	108 (43.2%)
High	130 (52.0%)
CDAI	
Low	15 (6.0%)
Moderate	123 (49.2%)
High	112 (44.8%)

CDAI: clinical disease activity index; **DAS28-ESR**: disease activity score-erythrocyte sedimentation rate.

The total score with the sub-scores of patients believes for all patients are shown in table 3 as well as figure 2.

Table 3. Beliefs about medicines questionnaire scores of patients.

Scores	Value
Necessity score	21.3 ± 2.5
Concern score	14.2 ± 3.9
Overuse score	10.2 ± 2.7
Harm score	13.6 ± 2.1
Total score	59.3 ± 6.9

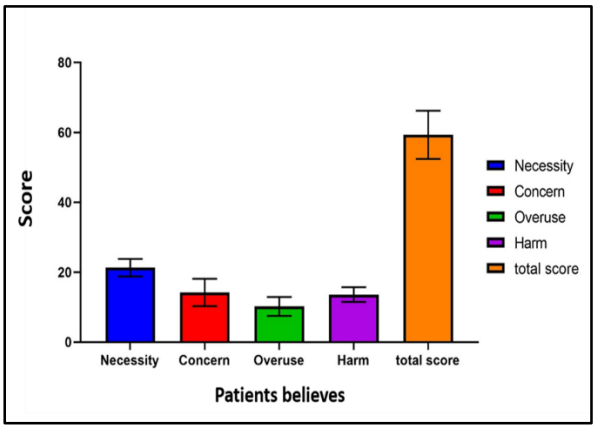

Figure 2. Beliefs about medicines questionnaire scores of patients

The majority of the patients (88%) had strong beliefs in the necessity of treatment (scores BMQ specific-necessity greater than score BMQ specific-concern. However, (4.4%) of the patients reported strong concerns about the treatment (scores BMQ specific-concern greater than score BMQ specific-necessity).The residual of the patients (7.6%), have equal scores for BMQ specific-necessity and specific-concern scores suggests that they have an equal agreement on both concept of the subpart where they share similar score. As clarified in table 4.

In univariate analysis; the BMQ-Specific necessity (BMQ-SN) showed significant direct correlation with age, gender (male vs. female), number of other chronic diseases, DAS28-ESR and CDAI. The BMQ-Specific concern (BMQ-SC) showed significant direct correlation with CDAI. The BMQ-General overuse (BMQ-GO) showed a significant direct correlation with gender (male vs. female), and inverse correlation with education levels. While the BMQ-General harm (BMQ-GH) showed significant inverse correlation with medication use duration, and direct correlation with DAS28-ESR as illustrated in table 5.

Table 4. Beliefs about medicines questionnaire necessity – concern differential

Necessity – concern differential	**No.**	**Percentage**
Necessity > concern	220	88%
Necessity < concern	11	4.4%
Necessity = concern	19	7.6%

Table 5.Univariate correlation between BMQ components with various variable.

	BMQ-Specific necessity		**BMQ-Specific concern**		**BMQ-General overuse**		**BMQ-General harm**	
	Regression coefficient	**p-value**	**Regression coefficient**	**p-value**	**Regression coefficient**	**p-value**	**Regression coefficient**	**p-value**
Age	**0.161**	**0.005 [S]**	0.045	0.239	0.053	0.201	0.067	0.145
Gender(male vs. female)	0.222	<0.001 [S]	0.037	0.558	0.146	0.021 [S]	-0.061	0.337
Marital status	0.009	0.441	-0.047	0.228	-0.064	0.158	0.073	0.126
Education level	-0.051	0.210	-0.032	0.306	-0.108	0.044 [S]	0.057	0.186
Residence	-0.022	0.364	-0.042	0.254	-0.042	0.252	0.008	0.451
Smoking	0.022	0.364	0.042	0.254	0.042	0.252	-0.008	0.451
Disease duration	0.080	0.104	-0.003	0.483	-0.056	0.189	-0.094	0.070
Medication use duration	-0.039	0.267	-0.032	0.308	0.037	0.281	-0.109	0.043 [S]
Number of other chronic disease	0.138	0.015 [S]	-0.073	0.125	-0.042	0.253	-0.008	0.450
DAS28-ESR	0.127	0.023 [S]	0.104	0.051	0.101	0.055	0.131	0.019 [S]
CDAI	0.152	0.008 [S]	0.149	0.009 [S]	0.094	0.070	0.014	0.411
Linear regression analysis [S], significant relationship when p value<0.05.								

CDAI: clinical disease activity index; **DAS28-ESR**: disease activity score-erythrocyte sedimentation rate

In multivariate analysis, only age and gender were independently correlate (direct relationship) with BMQ - SN score . While DAS28 - ESR was independently correlate (direct relationship) with BMQ-GH. As illustrate in table 6.

Table 6. Multivariate Linear regression analysis between BMQ components and other variables of patients

	BMQ-Specific necessity		**BMQ-Specific concern**		**BMQ-General overuse**		**BMQ-General harm**	
	Regression coefficient	**p-value**	**Regression coefficient**	**p-value**	**Regression coefficient**	**p-value**	**Regression coefficient**	**p-value**
Age	**0.184**	**0.012[S]**	-	-	-	-	-	-
Gender(male vs. female)	**0.238**	**<0.001[S]**	-	-	0.121	0.081	-	-
Education level	-	-	-	-	-0.041	0.584	-	-
Medication use duration	-	-	-	-	-	-	-0.088	0.363
DAS28-ESR	0.010	0.908	-	-	-	-	**0.273**	**0.004 [S]**
CDAI	0.119	0.187	0.160	0.093	-	-	-	-
R^2	0.172		0.072		0.093		0.080	
[S], significant relationship when p value<0.05.								

CDAI: clinical disease activity index; **DAS28-ESR**: disease activity score-erythrocyte sedimentation rate. The number of other chronic diseases was excluded from multivariate regression table because the tolerance=0 this means that this variables was already contained in or redundant with other independent variables (predictors) i.e. can be perfectly predicted from one or more of the other independent variables.

Discussion

Rheumatoid arthritis is a chronic inflammatory joint disease, with a higher prevalence observed in both older age groups and women[19]. Patients with rheumatoid arthritis need to take daily medication to relieve their pain and reduce chances of physical disability[8]. As shown in socio-demographical date of the patients, about 88.4% of patients were female and 57.2% were above 50 year. Study in Rochester, Minnesota, 1955-1985 found that the incidence of RA was nearly twofold in women compared with that in men and increased steadily with age, until age 85 years, after which the rate of RA diminished[20]. Findings of the current study showed that positive beliefs about the necessity of medication (specific necessity score) had recorded the highest mean among the rest of the scores followed by specific concern score about potential adverse effects of medication and the majority of the patients (88%) had BMQ specific-necessity score greater than BMQ specific-concern score. As most of RA medications are life sustaining and it is not surprising that most of the recipients rated their beliefs on the necessity of taking medications higher than concerns about the medication (a positive necessity-concerns differential). Study done by (R. Neame and A. Hammond) demonstrated that 75% of individuals with RA have positive belief about the need of their medicines[21]. Study done by Zwikker HE, shown increasing need belief about prescription in clinical practice may be advantageous in improving medicine adherence in RA patients[22]. Similarly, a study done by Mardby, *et al*, concluded that increase awareness of the patient's beliefs about medicines is needed and that healthcare providers ought to urge patients to express their perspectives about medicines so as to invigorate concordance and adherence to prescription[23].

In this study, there are direct correlations between age, male gender, number of other coexisting chronic disease, and disease activity estimated by both DAS28-ESR and CDAI with BMQ specific-necessity scores, which could be clarified that when patients became older they tend to be more wiser and had sufficient cognitive function to manage medications[24], and once disease became more violent, or when coexisting with other chronic disorder, patients tend to be more careful and realize the necessity for their medications[25]. Also, this study showed that male patients had more specific necessity about RA medications than female patients while another study showed no association between them[21].

The current study show a significant positive correlation between CDAI and specific-concerns. A possible explanation of this result is that patients with high concerns about therapy tend to be non-adherent to their medication which might lead to increase disease activity[26]. A study done by (R.

Neame and A. Hammond) showed that high levels of concern are associated with helplessness and non-adherence, likewise they detailed a similar finding of the present examination that worries about unfavorable outcomes of prescriptions is independent of patients' age and education level[21]. In this way, worries about RA drugs should be tended to paying little mind to the age or education level of the patient.

In the current study, patients who lack adequate education had opinion that medicines are overused .A possible reason is the absence of information to assist a greater understanding of medicines and their effects.

As medication use duration increase, general harm belief about medicines decrease, a possible is that when patients become more familiar with their treatment, their influence might diminish about general harm belief about medicines[27].

Also, this study demonstrates a positive association between both general harm belief about medicines and DAS28-ESR score. A conceivable clarification is patients with a view that their medicines are harmful tend to be afraid to use their therapy appropriately as a consequence start to be poor adherent and so the activity of the disease will increase.

Univariate analysis showed that disease activity estimated by both DAS28-ESR and CDAI significant correlate directly with specific necessity belief. However this relationship is absent in multiple regression model. This means that disease activity score is an important predictor for belief about medication necessity when considered as a single factor but such factors become insignificant when considered in the presence of other stronger factors like age and gender. In addition only DAS28-ESR is independently correlated (significant direct relationship) with general harm belief in multiple regression regardless of the presence of other factors.

The belief about medicine questioner may distinguish individuals in danger of poor prescription adherence and give a concentration to patients to talk about their convictions, giving chances to improve medicine adherence[21].

Limitations of the study

This study had some limitations. Patients were incorporated from only one department of internal medicine and the main diagnosis was rheumatoid arthritis. Subsequently the outcomes can't be summed up to other patient gatherings with other sicknesses. In addition, the sample of RA patients had a disease duration above one year, making the results not generalizable to patients with recently diagnosed RA. Lastly, the present investigation was a cross-sectional study, which makes it impossible to draw causal conclusions.

More researches are needed to explore other factors (e.g., disease burden) that could affect the degree of belief about medication.

Conclusions

The majority (88%) of Iraqi RA patients sample had strong beliefs in the necessity of their RA treatment where the medication-necessity score was greater than medication-concern score, were older people, male gender, presence of other chronic illnesses and those who had high disease activity score tend to had more specific necessity score about RA medications.

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