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The adherence questionnaires in chronic inflammatory rheumatic diseases and their psychometric properties: a systematic literature review

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Disclosures of interest

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Key words: patient adherence, compliance, questionnaires, rheumatoid arthritis, spondyloarthritis, inflammatory arthritis

Manuscript: 458 Words, 2 tables and 10 refs

Dear Sir,

In chronic inflammatory rheumatic diseases (CIRDs) including rheumatoid arthritis (RA), spondyloarthritis (SpA), psoriatic arthritis (PsA), crystal-induced arthritis and connective tissue diseases (CTD), adherence to disease-modifying drugs is only moderate over the long term [1,2]. Insufficient patient adherence to treatments may lead to complications, unnecessary treatment switches, and increased costs [3]. Therefore, patient adherence to treatment should be assessed, however the optimal assessment method has not been determined [4].

The objective of this systematic literature review was to assess the psychometric properties of the main drug adherence questionnaires in patients with CIRDs.

In January 2019, a systematic literature review was performed in three databases (Pubmed, Cochrane central register of clinical trials, Embase) and several websites (Clinicaltrials.gov, World Health Organisation and the French High Authority of Health) as well as congress abstracts from the American and European congresses of the previous 3 years. The scope was limited to questionnaires published in English to assess adherence to drugs such as disease-modifying drugs, in CIRDs, i.e., RA, SpA, PsA, CTD, crystal-induced arthritis, vasculitis, and auto-inflammatory diseases [4, 5]. All questionnaires used to assess adherence were collected, then a specific search using the questionnaire name was carried out to obtain data on their psychometric properties according to the OMERACT filter [6]. We assessed overall validity, sensitivity (Se), specificity (Sp), internal consistency by Cronbach coefficient, reliability, and sensitivity to change. To summarise the data, and because a meta-analysis was not possible, properties are presented semi-quantitatively [6].

Of 1209 publications and 194 other documents, 242 papers reported adherence. Of these, 131 articles used questionnaires: 69/154 (44.8%) in RA, 27/40 (67.5%) in systemic lupus erythematosus (SLE), 14/21 (66.6%) in SpA, 9/16 (56.2%) in PsA, 8/35 (22.8%) in crystal-induced arthritis and 4/6 (66.6%) in other CTD. Four questionnaires were used to evaluate drug adherence [7-10] (Table 1). The most used questionnaire was the MMAS (Morisky Medication Adherence Scale). The Compliance Questionnaire of Rheumatology (CQR) was validated in 85 patients with CIRD against an external standard with an electronic medication monitoring; the MASRI (Medication Adherence Self-report Inventory) was validated in 55 patients with SLE against adherence based on pharmacy refill information. The MMAS was validated in 91 patients with gout against medication possession ratio and

the MARS (Medication Adherence Report Scale) in 108 patients with RA. Reproducibility was correct; some questionnaires are subject to copyright (Table 2).

Our results indicate that four questionnaires are being used to measure medication non-adherence in CIRDs; the most used is the MMAS which is unfortunately copyrighted and not fully validated in rheumatology. The CQR and MASRI questionnaires were the most-extensively validated in rheumatology, but the CQR is long and the MASRI only used for SLE. Thus it appears that to date, a simple, reliable and valid questionnaire to assess drug adherence is lacking.

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Table 1. Questionnaires used to evaluate drug adherence in recently published studies

	RA	SpA	Lupus	PsA	Cristal induced arthritis	Vasculitis and auto-inflammatory diseases
Total number of studies	154	21	40	16	35	6
Number of articles using adherence questionnaires	69 (44.8%)	14 (66.6%)	27 (67.5%)	9 (56.2%)	8 (22.8%)	4 (66,6%)
Number of questionnaires	3	3	3	3	3	2
Most used questionnaire	CQR	MMAS	MMAS	MMAS	MMAS	MMAS
Other questionnaires used	MMAS, MARS	CQR, MARS	CQR, MASRI	CQR, MARS	MARS, CQR	CQR

MMAS: Morisky Medication Adherence Scale; MASRI: Medication Adherence Self-Report Inventory; MARS: Medication Adherence Report Scale; CQR: Compliance Questionnaire of Rheumatology

Table 2. Questionnaires performances to assess adherence in chronic inflammatory rheumatic diseases

	Compliance Questionnaire of Rheumatology: CQR-19/5 ⁷	Medication Adherence Report Scale: MARS10/9RA/6/ 5/4 ⁸	Medication Adherence Self-report Inventory: MASRI ⁹	Morisky Medication Adherence Scale: ¹⁰ MMAS-8/4
N studies on the questionnaire	48	13	7	62
Copyright	No	No	Yes	Yes
Reproducibility	++ Cc: 0.630	++ Ratio: 0.65	+++ kappa: 0.54	++ kappa: 0.19
Validity assessed in rheumatology	Yes*	No	Yes**	+ / -
Se/Sp (%)	62-98/67-97	13-53/57-94	87/86	81-93/44-53
Internal consistency	0.71-0.85	0.60-0.75	0.70	0.54
Feasibility	+ / +++	+++	+++	+++

Cc: Correlation Coefficient, Se: sensitivity, Sp: specificity

CQR: adequate test-retest; MARS: good test-retest; MMAS: slight concordance at test-retest

The + represents a semi-quantitative summary of the available literature with more + meaning higher/better results (from - to +++).

* Electronic medication monitoring

**Adherence based on pharmacy refill information