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Validation of the Educational Needs Assessment Tool in Four Rheumatic Diseases

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Background

The Arthritis Educational Needs Assessment Tool (the ENAT) was developed in the UK¹ and was validated in rheumatoid arthritis (RA).² The ENAT has 39 items consisting of 5-point likert scales ranging from "not important" = 1 to "extremely important" = 5.

Objectives

The aim of this study was to validate the ENAT in other rheumatic diseases by using Rasch analysis.

Methods

The ENAT was completed by a sample of patients with ankylosing spondylitis (AS), scleroderma (SSc), systemic lupus erythematosus (SLE) and osteoarthritis (OA) attending outpatient clinics in two large hospitals in the UK. The data were first summarised and analysed descriptively using the SPSS, then entered into RUMM2020 software for psychometric testing. The datasets for individual diagnostic groups were tested by Rasch analysis using the unrestricted (Andrich) rating scale model.³ When they were found to fit the model, they were pooled together and analysed again to determine their overall fit. This would validate the ENAT as a generic questionnaire in assessing educational needs of patients with major rheumatic diseases.

Results

The sample size of 532 consisted of 133 patients with AS, 128 with SSc, 144 with SLE and 127 with OA. Their male:female ratio and medians for age and disease duration were adjusted for diagnostic groups. See table 1.

The pooled data displayed significant differences from the expectations of the Rasch measurement model ($X^2=634.008$, $df = 312$, $p < 0.001$). There were differential item functioning (DIF) by diagnosis, gender and educational background. Examination of the

thresholds and category probability curves indicated that the existing category structures for items of the ENAT (5-point likert scales) did not work as intended. The 2 categories "a little important" and "fairly important" were Amalgamated for all items to form 4-point likert scales, the thresholds were ordered and the overall fit statistics improved slightly. However, most items were found to load together displaying a local response dependency which was responsible for the misfitting. A subtest was performed, where all items were grouped their respective domains (pain management, movement, feelings, disease process, treatments, self-help measures, and support systems) and analysed at the domain level. Fit statistics from this analysis demonstrated an acceptable fit to the Rasch model ($X^2 = 73.43$; $df = 56$; $p = 0.059$). The resulting ENAT was a 7-item questionnaire with varying number of sub-items. The proportion of significant t-tests 0.051 (95%CI = 0.032 - 0.070) confirmed its unidimensionality.

Table 1: Male:Female Ratio and Disease Specific Medians for Age and Disease Duration

	<i>AS</i>	<i>Ssc</i>	<i>SLE</i>	<i>OA</i>
Male:Female ratio	2:1	1:4	1:9	1:3
Median age (yrs)	44	53	45	65
Median disease duration (yrs)	20	10	7	10

Conclusion

The ENAT is a robust tool for measuring educational needs of patients with AS, SSc, SLE and OA. Further work needs to focus on its user acceptability and sensitivity to change.

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