## PROMs and markers

### POS0181 HOW FIT ARE THE SOCIAL SUPPORT INSTRUMENTS USED IN RMDS: A SYSTEMATIC REVIEW OF VALIDATION STUDIES

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**Background:** Rheumatic and musculoskeletal diseases (RMDs) diminish psychosocial well-being. Social support (SS) is considered to improve this psychosocial wellbeing. Therefore, SS is an important construct to measure in RMDs.
**Objectives:** To systematically review and summarize the psychometric properties of SS instruments developed or validated in RMDs.
**Methods:** A comprehensive search in Medline, Embase, PsycINFO, CINAHL and Epistemonikos was performed from inception to June 8, 2020, with the aid of an experienced librarian (LF). Two researchers (DDC and DB) independently screened articles on title+abstract and next on full text. Reference lists of included studies were reviewed for additional references. Articles were included if covering psychometric properties (detailed in the Table 1) of SS instruments used in RMDs. Studies on questionnaires lacking an English version, unpublished material, case reports, editorials, letters, or reviews were excluded. Risk of bias of studies and instruments was assessed via the COSMIN checklist.
**Results:** From 4986 articles captured, 30 met the predefined inclusion criteria. These articles included 21 SS instruments used in 8 RMDs, mainly rheumatoid arthritis and osteoarthritis.
Table 1 shows the psychometric properties per instrument. Construct validity, structural validity, and internal consistency were assessed for most instruments, while measurement invariance, measurement error, criterion validity and responsiveness in ≤3 instruments each. Development and content validity of the instruments gave consistently high risk of bias by the COSMIN checklist.
The most widely validated instruments were the Arthritis Impact Measurement Scales (AIMS) and the Osteoarthritis Knee and Hip Quality of Life (OAKHQOL), with their respective derived instruments (AIMS2, AIMS2-SF, mini-OAKHQOL and e-OAKHQOL). For the AIMS SS scale, internal consistency ranged between 0.33-0.69 (Cronbach's $\alpha$) and test-retest reliability was estimated 0.92 (Guttman reproducibility coefficient). For the OAKHQOL SS scale, internal consistency ranged between 0.78-0.81 (Cronbach's $\alpha$) and test-retest reliability ranged between 0.5-0.85 (ICC). Responsiveness was only investigated in AIMS and the Sickness Impact Profile (SIP) instrument. Relative efficiency for SS for the SIP was considerably higher than for AIMS (0.74 vs 0.18).
**Conclusion:** This review gives a summary of the psychometric properties of SS instruments in RMDs. Most instruments show sufficient structural validity internal consistency and reliability, but some psychometric properties such as criterion validity, measurement error and invariance, need to be investigated before choosing an optimal SS instruments.
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### POS0182 MINIMAL CLINICALLY IMPORTANT IMPROVEMENT (MCII) AND PATIENT ACCEPTABLE SYMPTOM STATE (PASS) FOR PAIN AND FUNCTION INSTRUMENTS IN HAND OSTEOARTHRITIS (OA)

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**Background:** Australian/Canadian Hand OA Index (AUSCAN), Michigan Hand Outcomes Questionnaire (MHQ), Functional Index of Hand OA (FIHOA) and visual analogue scale (VAS) are frequently used instruments to measure pain and function in hand OA research. MCII and PASS are useful to interpret results of patient reported outcomes.
**Objectives:** To estimate MCII and PASS for these instruments using anchor-based methods.
**Methods:** Hand OA patients participating in a six-week randomised placebo-controlled trial with prednisolone (RCT; NTR5263) and those attending the two-year follow-up visit of the observational Hand OSTeoArthritiS cohort completed AUSCAN subscales pain and function, MHQ subscales pain, activities of daily living (ADL) and overall function, FIHOA and 100mm VAS pain. RCT participants were asked to indicate whether they changed compared to baseline (improved/no change/worse) and to rate the importance of improvement (very much/moderately/slightly/not at all). MCII was defined as the minimal improvement in symptoms achieved by 75% of participants who stated a slight/moderate improvement during the RCT, calculated as the 75th percentile of the distribution of change scores from baseline in this group. Absolute and relative percentage change were evaluated. For MCII direction of effect was unified, so positive values indicate worse symptoms and vice versa. Participants from both studies rated satisfaction with their state of health (acceptable/unacceptable). PASS was defined as the minimal score considered acceptable for 75% of participants, calculated as the 75th percentile of the distribution of scores in participants who rated their health 'acceptable'.
**Results:** Demographics of the RCT (n=92, mean age 63.9, 79% women) and cohort (n=383, 60.9 years, 84% women) participants were typical for hand OA. RCT participants were more symptomatic (e.g. mean [SD] VAS pain 54.0 [20.5] versus 35.2 [19.1]). Of the function instruments, only AUSCAN had a credible MCII (relative percentage improvement 9.8%), while the (positive) MCII values for FIHOA and MHQ subscales would indicate that worsening was rated as functional improvement (table 1). MCII was negative (corresponding to improvement) for all pain instruments, with relative percentage change around 25% for VAS and MHQ, compared to only 2% for AUSCAN. PASS values of all instruments were comparable in the two populations. Most instruments had a PASS around 50% of the possible maximum score, except for MHQ ADL, in which higher is better and a relatively high PASS is thus indicative of a floor effect (table 1).

**Table 1. psychometric properties per social support instrument**

| Instrument | Face validity | Content Validity | Structural validity | Criterion validity | Internal consistency | Reliability | Measurement error | Hypothesis testing for construct validity | Cross-cultural validity/ Measurement invariance | Responsiveness |
|---|---|---|---|---|---|---|---|---|---|---|
| AIMS | | | ● | | ● | ● | | ● | | ● |
| AIMS2 | ● | ● | ● | | ● | ● | | ● | | |
| AIMS2-SF | | | ● | | ● | | | ● | | |
| Brief Screening Questions | ● | | | ● | | | | ● | | |
| Dyadic Efficacy Scale | ● | ● | ● | | ● | | | | | |
| EIS | | | ● | | ● | ● | | ● | | |
| Flanagan QOL | | | ● | | ● | ● | | ● | | |
| FS | ● | ● | ● | | ● | ● | | ● | ● | |
| IRGL | | | ● | ● | ● | ● | | ● | | |
| ISSI | | | | | ● | ● | | ● | | |
| LISRES | | | | | ● | ● | | ● | | |
| MEPS | ● | ● | ● | | | ● | ● | ● | | |
| MWA | | | ● | | | ● | | ● | | |
| OAKHQOL | ● | ● | ● | | ● | ● | ● | ● | | |
| e-OAKHQOL | | | ● | | ● | | | ● | | |
| Mini-OAKHQOL | ● | ● | ● | | ● | ● | | ● | | |
| PFSSADI | | | ● | ● | ● | ● | | | | |
| RASP | | | ● | | ● | ● | | ● | | |
| SIP | | | | | | | | ● | | ● |
| SPQ | | | ● | | ● | ● | | ● | | |
| SSQT | | | ● | | ● | ● | | ● | ● | |

Arthritis Impact Measurement Scales (AIMS); Short Form (SF); Emotional Intimacy Scale (EIS); Quality of Life (QOL); Friendship Scale (FS); Impact on Rheumatic diseases and General health and Lifestyle (IRGL); Interview Schedule for Social Interactions (ISSI); Life Stressors and Social Resources Inventory (LISRES); Medical Issues, Exercise, Pain, and Social Support (MEPS); Modified Work APGAR (MWA); Osteoarthritis Knee and Hip Quality of Life (OAKHQOL); preferences for formal social support of autonomy and dependence in pain inventory (PFFSADI); Responses and Attitudes to Support during Pain questionnaire (RASP); Sickness Impact Profile (SIP); Social support and Pain Questionnaire (SPQ); Social Support Questionnaire for Transactions (SSQT).

**Table 1. MCII and PASS of pain and function instruments in hand OA patients in two settings.**

| | MCII (95% CI) in RCT† | | | PASS (95% CI) | |
|---|---|---|---|---|---|
| Instrument | Absolute units | Percentage | [n] | RCT (n=68) | Cohort (n=126) |
| MHQ | | | | | |
| Overall function, 0-100* | 3.4 (-2.7;9.5) | 3.6 (-9.1;16.3) | [23] | 55.6 (52.6;58.5) | 48.1 (45.7;50.4) |
| ADL, 0-100* | 1.6 (-4.4;7.6) | 2.8 (-9.6;15.3) | [23] | 71.7 (68.2;75.1) | 62.9 (59.8;66.0) |
| Pain, 0-100 | -12.2 (-17.2;-7.1) | -23.1 (-35.4;-10.8) | [16] | 47.0 (40.5;53.5) | 55.7 (52.0;59.5) |
| AUSCAN | | | | | |
| Function, 0-36 | -3.3 (-5.7;-0.9) | -9.8 (-23.9;4.2) | [23] | 17.1 (15.3;19.0) | 20.9 (19.4;22.3) |
| Pain, 0-20 | -1.1 (-2.6;0.4) | -1.8 (-18.5;14.9) | [27] | 9.0 (8.2;9.9) | 11.1 (10.3;11.8) |
| FIHOA, 0-30 | 0.1 (-1.6;1.7) | 22.7 (-0.7;46.0) | [23] | 12.4 (11.1;13.7) | 13.9 (12.8;15.0) |
| VAS pain, 0-100 | -11.5 (-18.2;-4.7) | -24.4 (-36.1;-12.8) | [27] | 47.7 (42.2;53.3) | 48.8 (44.6;53.0) |

Direction of effect of all instruments is higher is worse, except those with *.†For all MCII direction of effect was unified, so positive values indicate worse symptoms and negative values values indicate improved symptoms.

**Conclusion:** The only function instrument with an acceptable threshold for MCII was AUSCAN function, while for pain MHQ and VAS performed better than AUSCAN. PASS values show a relatively high level of tolerance of 50% of the maximum of the scale.

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## POS0183 SIGLEC1 AS A TYPE I INTERFERON BIOMARKER IN IDIOPATHIC INFLAMMATORY MYOPATHIES

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**Background:** Idiopathic inflammatory myopathies (IIM) are autoimmune diseases that mainly affect skeletal muscle, lung, skin and joints. IIM can be separated into dermatomyositis (DM), inclusion body myositis (IBM), antisynthetase syndrome (AS) and immune-mediated necrotizing myopathy (IMNM). Type I interferons (IFN) are known to play a crucial role in the etiopathogenesis of some of these entities such as DM.[1] Sialic acid binding Ig-like lectin 1 (SIGLEC1, CD169) is part of the type I IFN signature found in SLE and DM and is expressed on the cell surface of monocytes. Thus, analysis of SIGLEC1 expression by flow cytometry enables a straightforward assessment of the type I IFN signature. Its utility has been shown for juvenile and adult SLE and other rheumatic diseases but not in IIM.[2,3] The assessment of the type I IFN system in clinical practice is an unmet need and, in this context, SIGLEC1 might be useful.
**Objectives:** To assess SIGLEC1 expression on monocytes by flow cytometry as a type I IFN biomarker in IIM
**Methods:** Pediatric and adult patients with a clinical diagnosis of DM, AS, IMNM and IBM and at least one measurement of SIGLEC1 who have been treated at the Department of Rheumatology, Charité - Universitätsmedizin Berlin between 2015 and 2020 were included in this retrospective study. Control groups of healthy individuals (n=19) and SLE patients (n=30) were included. Disease activity was assessed by Physician Global Assessment (PGA) and Childhood Myositis Assessment Scale (CMAS). SIGLEC1 expression on monocytes was analyzed by flow cytometry. Cross-sectional analyses (n=74) were performed using Mann Whitney-U test (MWU) and two-level mixed-effects linear regression model was used for longitudinal analyses (n=26, 110 visits). This study was approved by the local ethics committee of the Charité - Universitätsmedizin Berlin.
**Results:** 74 patients (adult/juvenile DM: n=21/n=17; AS: n=19; IMNM: n=8; IBM: n=9) were included. In cross-sectional analysis, SIGLEC1 expression was significantly upregulated in adult and juvenile DM patients with moderate to severe disease activity (PGA≥5) compared with adult/juvenile DM patients with no to moderate disease activity (PGA<5) (both p<0.001). In longitudinal analyses, SIGLEC1 correlated with disease activity in juvenile DM (SIGLEC1 vs. CMAS: betaST=-0.65; p<0.001) and adult DM (SIGLEC1 vs. PGA: betaST=0.52; p<0.001), better than Creatine Kinase (CK) (juvenile DM, CK vs. CMAS: betaST=-0.50; p<0.001; adult DM, CK vs PGA: betaST=0.17; p=0.149). In AS 42,1% of the patients showed elevated SIGLEC1 expression, while it was not upregulated in IMNM and only in two patients with IBM, who were concurrently positive for autoantibodies that affect the type I IFN system (see Figure 1).
**Conclusion:** SIGLEC1 is a useful biomarker to identify an activated type I IFN system in IIM. Flow cytometry is used widely in laboratory medicine, which could facilitate the implementation of SIGLEC1 into clinical routine.

**REFERENCES:**

[1] Gallay L, Mouchiroud G, Chazaud B. Interferon-signature in idiopathic inflammatory myopathies: *Current Opinion in Rheumatology* 2019;**31**:634–42. doi:10.1097/BOR.0000000000000653
[2] Rose T, Grutzkau A, Hirseland H, *et al.* IFNalpha and its response proteins, IP-10 and SIGLEC-1, are biomarkers of disease activity in systemic lupus erythematosus. *Ann Rheum Dis* 2013;**72**:1639–45. doi:10.1136/annrheumdis-2012-201586
[3] Stuckrad SL von, Klotsche J, Biesen R, *et al.* SIGLEC1 (CD169) is a sensitive biomarker for the deterioration of the clinical course in childhood systemic lupus erythematosus. *Lupus* 2020;:961203320965699. doi:10.1177/0961203320965699

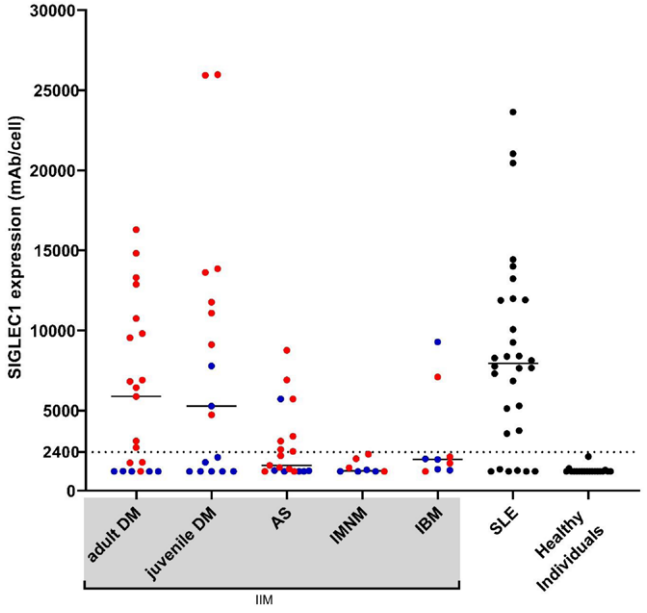


**Figure 1.** SIGLEC1 expression on monocytes in IIM subgroups and control groups; in IIM subgroups, patients with low disease activity (PGA<5) are marked in blue, patients with high disease activity (PGA≥5) are marked in red; mAb/cell, monoclonal antibodies bound per cell

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## POS0184 URINE-GALECTINE 3 BINDING PROTEIN (U-GAL3BP) IS A SENSITIVE MARKER OF KIDNEY INFLAMMATION AND RESPONSE TO TREATMENT IN LUPUS

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