

Content and Face Validity and Feasibility of Five Candidate Instruments for Psoriatic Arthritis Randomized Controlled Trials: The PsA OMERACT Core Set Workshop at the GRAPPA 2017 Annual Meeting

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ABSTRACT: The Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA)–Outcome Measures in Rheumatology (OMERACT) Psoriatic Arthritis (PsA) Core Set working group is in the process of selecting core instruments for PsA clinical trials. During a two-hour workshop and breakout group discussions at the GRAPPA 2017 annual meeting in Amsterdam, The Netherlands, stakeholders discussed the first set of candidate instruments to be taken through the OMERACT Filter 2.1 instrument selection process: 66/68 swollen/tender joint count (66/68JC), Spondyloarthritis Consortium of Canada (SPARCC) enthesitis index, patient global assessment (GRAPPA and OMERACT formulations), Health Assessment Questionnaire Disability Index (HAQ-DI), Psoriatic Arthritis Impact of Disease (PsAID) questionnaires 9 and 12, and Functional Assessment of Chronic Illness Therapy (FACIT) Fatigue. Based on the assessment of domain match (content and face validity) and feasibility according to the OMERACT instrument selection criteria, the working group recommends continuing with appraisal of construct validity and discrimination for 66/68JC, SPARCC, PsAID 9 and 12, HAQ-DI, and FACIT-Fatigue. In addition, it recommends repeating the OMERACT Filter 2.1 process for patient global instruments due to insufficient votes. Additional sets of candidate instruments for the PsA core instrument set will be evaluated in a similar process.

Key Indexing Terms: Psoriasis, Psoriatic Arthritis, GRAPPA, OMERACT, Outcome Measures, Core Set

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Introduction

Psoriatic arthritis (PsA) randomized controlled trials (RCTs) measure multiple outcomes in order to assess the safety and efficacy of interventions on multiple disease-specific manifestations.(1) The Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA), in collaboration with Outcome Measures in Rheumatology (OMERACT), developed the first core set of domains to be measured in PsA RCTs in 2006(2) to standardize the measurement of outcomes across PsA RCTs. The PsA core domain set was updated to reflect both patient and physician priorities for PsA domains and to fulfill OMERACT Filter 2.0 criteria for domain selection.(3-5) OMERACT endorsed the updated PsA core domain set in 2016.(6) The updated PsA core domain set includes musculoskeletal (MSK) disease activity, skin disease activity, pain, patient global, physical function, health-related quality of life, fatigue, and systemic inflammation.

The GRAPPA-OMERACT PsA working group is currently developing a PsA core instrument set to guide the selection of outcome measures for PsA RCTs. The Core Outcome Measures for Psoriatic Arthritis Clinical Trials (COMPACT) study will guide this process and comprises several international work streams(7) with two key aims: (1) to identify candidate instruments to measure the PsA core domain set; and (2) to retain instruments that meet OMERACT Filter 2.1 standards (which rely on evidence-based appraisal of candidate instruments using criteria for content validity, feasibility, construct validity, and discrimination).(8) Candidate instruments are being identified and their measurement properties appraised in systematic literature reviews by members of the working group,(9) and additional evidence on construct validity and discrimination is being obtained from RCTs and long-term observational studies (LOS). This evidence will be synthesized and a decision reached as to whether each instrument passes the Filter 2.1 for use in the target trials/research.

OMERACT Filter 2.1 Process Applied to PsA Core Instrument Selection

A comprehensive list of instruments used in PsA RCTs and LOS was drafted in May 2017 based on systematic literature reviews and expanded upon with input from the working group (Supplementary Table 1). The working group piloted the OMERACT instrument selection process with all stakeholders at the GRAPPA 2017 annual scientific meeting with the aim to obtain feedback on the OMERACT process and the content validity and feasibility of pre-selected instruments. Prior to the GRAPPA 2017 annual meeting, steering group members (n=13) discussed the instruments, and a steering group survey was conducted to select one candidate instrument for each core domain (except pain, which is the focus of the Pain OMERACT working group; and skin disease activity, which is the focus of International Dermatology Outcome Measures (IDEOM)).

At the GRAPPA core instrument set workshop, the working group piloted the first two steps of the instrument selection process. Six breakout groups discussed the following domain-instrument pairs: (1) MSK disease activity arthritis: 66/68 swollen/tender joint count (SJC/TJC);(10) (2) MSK disease activity enthesitis: Spondyloarthritis Consortium of Canada (SPARCC) Enthesitis Index;(11) (3) patient global: OMERACT(5) and GRAPPA(12) patient global assessment visual analogue scales; (4) physical function: Health Assessment Questionnaire Disability Index (HAQ-DI);(13) (5) health-related quality of life (HRQoL): Psoriatic Arthritis Impact of Disease questionnaires 9 and 12 (PsAID9, PsAID12);(14) and (6) fatigue: Functional Assessment of Chronic Illness Therapy (FACIT) Fatigue.(15)

Four questions must be answered to ascertain if an instrument has passed the OMERACT Filter 2.1. The assessment of face and content validity addresses the first question: Is the instrument a good match with the target domain. Participants (rheumatologists, dermatologists, patient research partners, industry representatives, rheumatology trainees) were asked for their opinions about whether there was sufficient overlap between the content of the domain intended to be measured and the information captured by the instrument.(7) To illustrate domain content, the working group used domain definitions developed for the nominal group technique consensus meeting conducted as part

of the PsA core domain set update.(4) These definitions, where relevant, were supplemented with patient quotes from international focus groups that described the domains from the patient perspective.(4) Materials for use during the breakout groups included printouts of the instrument with instructions and an explanation of method of data collection and scoring, the domain to be measured, and additional domain content information such as patient descriptions so participants could compare and discuss domain content with instrument content (Supplementary Figure 1). In collaboration with patient research partners (PRPs), the working group developed a booklet for PRPs that contains OMERACT process information, domain definitions, and the instruments with details on their use and scoring. This booklet was distributed to PRPs (n=12) two weeks prior to the meeting to optimize PRP participation in the meeting. Twelve PRPs participated in two OMERACT webinars conducted and organized by Dr. Maarten de Wit, an expert in participatory research, prior to the annual meeting to familiarize PRPs with the instrument appraisal and selection process. Further, in a four-hour pre-meeting workshop, PRPs were introduced to the OMERACT instrument selection process and instrument psychometric property appraisal. PRPs then assessed four instruments using the OMERACT scoring system.

GRAPPA Meeting PsA Core Instrument Set Workshop

The PsA Core Instrument Set Workshop was structured into an introductory plenary session (20 minutes), followed by six breakout group discussions (60 minutes), and ending with a plenary session that reported initial results from the breakout groups (30 minutes). At the introductory session, Drs. Ana-Maria Orbai, Alexis Ogdie, Katy Leung, and William Tillett presented the COMPACT study and the OMERACT Filter 2.1 process. They also demonstrated the use of the OMERACT domain match (encompassing content and face validity) and the feasibility questionnaires for the patient-reported outcomes, such as the PsAID instrument. Working group members (one moderator and one rapporteur) then facilitated six breakout groups that each focused on one PsA domain and one corresponding instrument. GRAPPA stakeholders, including patients (with two PRPs per group), clinicians,

trialists, methodologists, and payers were spread evenly among the groups. PRPs helped facilitate discussion and voting during the breakout sessions.

In each breakout group, facilitators introduced the domain definition and its corresponding instrument. Participants were then asked to review and discuss the pre-selected instrument and individually appraise the instrument by completing paper-based OMERACT questionnaires that examine domain match and feasibility. These anonymous questionnaires were collected at the end, and votes for each aspect of domain match and feasibility were centralized by instrument. At the conclusion of each breakout group, a global vote was taken from participants (through show of hands) on whether the assigned instrument met the requirements for domain match and feasibility using the OMERACT traffic-light scoring system for a final assessment (quantity, consistency, and performance on that property) of the available evidence for each measurement property (green: instrument meets requirements to proceed with collecting evidence for additional measurement properties; amber: there is concern, caution, or weakness, but the instrument is good enough to go forward; red: should not proceed, does not meet content validity and/or feasibility standards).(5) Traditionally, OMERACT consensus is defined as more than 70% agreement within a group. The working group also examined majority agreement, defined as more than 50% agreement within a group. These levels of agreement then determined the strength of the evidence for the overall conclusion on domain match and feasibility based on these votes (evidence for domain match and feasibility being stronger (green level) if consensus versus majority (amber level) agreement was achieved).

Workshop Outcome

There were 145 participants across all breakout groups. Anonymized votes on content validity and feasibility are summarized across groups and instruments in Tables 1 and 2, respectively. There was a breakout group discussion on patient global, however only two participants completed the anonymized questionnaires in this group (data not reported due to this small number).

Domain Match: More than 70% of participants in the respective breakout groups endorsed the PsA instrument 66/68 SJC/TJC as a good match with the target domain of MSK disease activity arthritis, the FACIT-Fatigue as a good match with Fatigue, and the PsAID12 as a good match with HRQoL. More than 50% of participants voted for SPARCC as a good match with MSK disease activity enthesitis and PsAID9 as a good match with HRQoL. There were concerns about the redundancy of items for PsAID9 and FACIT-Fatigue where no majority vote was achieved (all options <50% agreement). In addition, the working group noticed a significant spread of opinions regarding instrument redundancy in all groups. There were also concerns over the adequacy of content (“Have all important elements been included (consider breadth and depth needed)?”) for SPARCC, HAQ-DI, and PsAID9. The voting results suggest that a better description of elements and technique for the 66/68 SJC/TJC may be helpful. There was consensus (>70% voted yes) that response options were adequate for the SPARCC, PsAID9, PsAID12, and FACIT-Fatigue, and majority agreement (>50% voted yes) for the 66/68 SJC/TJC and HAQ-DI. There was consensus (>70% voted yes) that scoring was adequate for the 66/68 SJC/TJC and SPARCC, and majority agreement (>50% voted yes) for the HAQ-DI. The vote was “uncertain” for adequacy of scoring (41-46% voted yes, 38-50% voted uncertain) for the PsAID9, PsAID12, and FACIT-Fatigue (Table 1).

Feasibility: There was consensus (>70% voted yes) that the 66/68 SJC/TJC, HAQ-DI, and FACIT-Fatigue were easy to understand and majority agreement (>50% voted yes) for both the PsAID9 and PsAID12. There was no consensus for SPARCC (note missing votes). Time to complete, method of administration, and equipment needs were found adequate (by 64% to 100% in each group) for all six instruments considered. The majority voted that cost, copyright, and availability in languages needed were feasible for 66/68 SJC/TJC, SPARCC, HAQ-DI, PsAID9, and PsAID12. Participants felt they needed more information on these aspects for FACIT-Fatigue.

Stakeholders participated in a facilitated discussion of content/face validity and feasibility while addressing the OMERACT criteria. Important considerations from breakout group discussions are summarised for each instrument in Table 3. A show of hands vote that was taken at the end of the breakout group discussions is summarized in Table 4.

OMERACT Process: Participants reported the domain matching process was complex and that contextual/confounding factors (see Table 3 for examples) play an important role when instrument to domain match is assessed. Although some contextual/confounding factors are accounted for in clinical trials, it is important to carefully consider these at the stage of clinical trial design for each study population, intervention, and outcome of interest. Domain definitions and patient quotes, where applicable, were found generally helpful. In addition, for instruments where technique was important (66/68 SJC/TJC), there was a suggestion to use demonstrational videos in addition to or instead of printed materials. When voting for domain match and feasibility, participants asked whether the appraisal process would be best performed for each instrument individually versus examining multiple instruments concomitantly and comparatively that measure the same domain. Participants found the group discussion process essential in evaluating candidate instruments.

Discussion

PsA is a rheumatologic disease manifesting with arthritis, enthesitis, dactylitis, axial arthritis, and skin and nail psoriasis. There is significant variability among individuals with PsA in their combination of clinical manifestations, response to treatment, prognosis, and reported life impact, which makes the comprehensive assessment of this disease especially important in both RCTs and LOS. Disease heterogeneity and timeline for availability of instruments for disease-specific manifestations (e.g., dactylitis, enthesitis) has resulted in the use of a multitude of instruments and a relative lack of standardization across RCTs and LOS. The updated PsA core domain set has now defined which core domains should be assessed routinely in RCTs, and the GRAPPA-OMERACT PsA working group is developing a core instrument set to measure these domains.

At the GRAPPA 2017 annual meeting, the working group completed the first two steps of the OMERACT instrument selection process (domain match and feasibility) for five candidate instruments, and 145 GRAPPA members participated in a workshop and breakout group discussions. GRAPPA stakeholders selected the first set of candidate instruments to undergo the OMERACT Filter 2.1 construct validity and discrimination appraisal: 66/68 SJC/TJC, SPARCC, PsAID9, PsAID12, HAQ-DI, and FACIT-Fatigue instruments. The limitations of this process were that only a limited number of instruments could be discussed within the time constraints, and only GRAPPA members who were present at the 2017 annual meeting could participate. Completion of anonymous domain match and feasibility questionnaires was limited for patient global (n=2), and the process will have to be repeated with the inclusion of more participants for these instruments. Importantly, following the workshop at the GRAPPA 2017 annual meeting, GRAPPA members will participate in the assessment and rating of additional PsA measurement instruments. Based on evidence from systematic literature reviews and RCTs, a multi-step consensus process with relevant stakeholders reviewing the evidence will follow with the objective of selecting the optimal instruments to be included in the core instrument set for PsA clinical trials.

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