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Review

Instruments assessing attitudes toward or capability regarding self-management of osteoarthritis: a systematic review of measurement properties

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SUMMARY

Objective: To make a recommendation on the "best" instrument to assess attitudes toward and/or capabilities regarding self-management of osteoarthritis (OA) based on available measurement property evidence.

Methods: Electronic searches were performed in MEDLINE, EMBASE, CINAHL and PsychINFO (inception to 27 December 2016). Two reviewers independently rated measurement properties using the Consensus-based Standards for the selection of Health Measurement Instruments (COSMIN) 4-point scale. Best evidence synthesis was determined by considering COSMIN ratings for measurement property results and the level of evidence available for each measurement property of each instrument.

Results: Eight studies out of 5653 publications met the inclusion criteria, with eight instruments identified for evaluation: Multidimensional Health Locus of Control (MHLC), Perceived Behavioural Control (PBC), Patient Activation Measure (PAM), Educational Needs Assessment (ENAT), Stages of Change Questionnaire in Osteoarthritis (SCQOA), Effective Consumer Scale (EC-17) and Perceived Efficacy in Patient–Physician Interactions five item (PEPPI-5) and ten item scales. Measurement properties assessed for these instruments included internal consistency ($k = 8$), structural validity ($k = 8$), test–retest reliability ($k = 2$), measurement error ($k = 1$), hypothesis testing ($k = 3$) and cross-cultural validity ($k = 3$). No information was available for content validity, responsiveness or minimal important change (MIC)/minimal important difference (MID). The Dutch PEPPI-5 demonstrated the best measurement property evidence; strong evidence for internal consistency and structural validity but limited evidence for reliability and construct validity.

Conclusion: Although PEPPI-5 was identified as having the best measurement properties, overall there is a poor level of evidence currently available concerning measurement properties of instruments to assess attitudes toward and/or capabilities regarding osteoarthritis self-management. Further well-designed studies investigating measurement properties of existing instruments are required.

Introduction

Healthcare systems currently face a rising number of people living with chronic conditions leading to disability, without causing death[1]. The Chronic Care Model (CCM) has been promoted to assist healthcare systems to meet the escalating demands attributable to chronic conditions[2]. The CCM describes healthcare whereby patients are enabled to manage their condition supported by a

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proactive healthcare delivery system, involving a coordinated team of health professionals with the expertise required to provide decision support, all underpinned by appropriate health information systems[2]. Self-management programmes are interventions based on the tenets of the CCM; they aim to improve self-management capabilities. It follows that the efficacy of these programmes should be measured by assessing change in participants' attitudes toward and/or capabilities to manage their health. However, there are few recommendations guiding which instruments accurately measure self-management[3]. The widespread heterogeneity in standardised instruments measuring self-management programs is surprising given that the primary aim of these programs is to directly influence the attitudes toward and abilities to manage one's health.

This situation is apparent in self-management programmes for osteoarthritis (OA). Research examining the efficacy of OA self-management programmes has focussed on measures of pain and function[4]. While these outcomes are obviously important to this population, there appears to be disparity in the aims of self-management programmes and the outcomes used to assess efficacy[5]. Self-management programs aim to provide participants with the necessary tools to manage their own condition rather than "cure" OA. Although these programmes may not dramatically reduce pain and enhance functional ability, this does not necessarily reflect a failed strategy if the participants improve their attitudes towards and ability to manage symptoms and live with an acceptable quality of life despite their disease[5].

A systematic review reported low-to-moderate quality evidence of no or small benefits to participants of OA self-management education programmes[5]. The authors highlighted the heterogeneity of outcomes used to quantify the effects of self-management programmes and that work is needed to establish which outcomes are important to patients. This review recommended rigorous evaluation of OA self-management programmes with validated instruments fit to measure attitudes towards/capabilities to self-manage OA, and advised that to achieve this, the measurement properties of the existing instruments need further investigation[5].

Measurement properties refer to the ability of the instrument to truthfully and comprehensively measure the specified construct[6]. In addition, it is necessary to demonstrate that the instrument is discriminative, sensitive, reliable and deemed feasible in terms of cost and time constraints[7]. It is important to consider that the measurement properties of an instrument are not universal across different populations; hence, it cannot be assumed that one with good measurement properties in a specific population will demonstrate the same results in a different population[8]. Therefore, the measurement properties of an instrument must be considered within the specific context of the population of interest.

The aims of this systematic review were to: (1) identify studies reporting measurement properties of instruments assessing attitudes toward and/or capabilities regarding self-management of OA; (2) systematically critique the studies evaluating instruments using the Consensus-based Standards for the selection of Health Measurement Instruments (COSMIN) tool; and (3) synthesize the evidence available with the possibility of making rudimentary recommendations concerning the best evidence-based instruments to assess attitudes toward and/or capabilities regarding self-management of OA.

Methodology

Terminology

Self-management was defined as the individual's ability to manage their physical and psychological symptoms, treatments, consequences and lifestyle changes required to live with their OA[9]. Attitudes toward and/or capabilities regarding self-management of OA included the following constructs: knowledge, skills, beliefs, behaviours, activation, self-efficacy, health locus of control, readiness to change healthcare behaviours, healthcare navigation, participation, engagement, and motivation. This list of possible constructs was developed *a priori* using existing content knowledge about available instruments of the authors, and new constructs identified during the review were also included.

Review protocol

The review protocol was developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and prospectively registered with PROSPERO on 24 November 2015 (CRD42015019074).

Literature search

The review search strategy was developed and refined by the study authors according to the PRISMA statement and recommendations made for conducting systematic reviews of measurement properties[8,10]. Electronic searches were conducted of the following four bibliographic databases from inception to 27 December 2016: MEDLINE (PubMed), EMBASE (OvidSP), CINAHL (Ebsco), PsychINFO (OvidSP). An initial search was conducted using four main filters containing key search terms as briefly summarised below (see Appendix 1 PubMed search strategy):

I. **Construct** – attitudes toward and capabilities regarding self-management of OA using terms such as: "self-treatment OR self-management OR patient education…" Names of known instruments measuring attitudes and/or capabilities regarding self-management were added using 'OR': "health education impact questionnaire OR patient activation measure OR effective consumer scale …"
II. **Target population** – osteoarthritis OR osteoarth* OR degenerative arthritis OR arthrosis.
III. **Measurement instrument filter** – designed for PubMed to retrieve more than 97% of publications related to measurement properties[11] using terms such as: "instrumentation OR methods OR validation studies…" The filter was translated into the language of the other databases used.
IV. **Exclusion filter** – an exclusion filter was used to improve the precision of the measurement instrument filter[11].

Secondary searching was conducted for all instruments measuring attitudes toward and capabilities regarding self-management of OA identified during the initial search. The name of each instrument was used as the keyword combined (AND) with the target population filter in PubMed. Targeted hand searching of reference lists was also used. Results of the database searches were imported into Endnote X7 (Thomson Reuters, Philadelphia, USA).

Eligibility criteria

Study titles were screened by one reviewer (JE). Two reviewers (JE & SM) independently screened abstracts, followed by the full text of potentially eligible studies. Disagreements were discussed and resolved with a third reviewer (KM). Studies were included if they met the following criteria:

1. **Construct** – at least one instrument attempted to measure the participants' attitudes and/or capabilities regarding self-management of their OA.